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# Software Industry Accounting

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# Software Industry Accounting



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*Second Edition*

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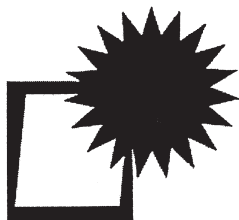
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*This book is dedicated to Lt. Col. Edwin R.  
Campbell, US Army (Ret).*

*And to the contributing authors, with admiration  
and appreciation.*





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# Acknowledgments

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The definitions included in Appendix 1-A, Software Industry Glossary of Terms, have been excerpted with the permission of Microsoft Press from the Third Edition of *Microsoft Press Computer Dictionary*. Microsoft Press is a division of Microsoft Corporation. The complete dictionary, which contains more than 7,600 definitions, can be obtained from Microsoft Press at 1-800-MS PRESS. The dictionary is also sold in most bookstores.

J. M. M.

# Preface

The first edition of *Software Industry Accounting*, published in 1993, was recognized as the “*Best New Book in Accounting Practice for 1993*” by the Association of American Publishers. We had a very dynamic topic to work with and a uniquely qualified team of contributing authors. Things haven’t changed a bit (so to speak) through 2001. Our topic continues to be dynamic and the team of contributing authors for this second edition are uniquely qualified.

When we published the first edition, AICPA Statement of Position (“SOP”) 91-1, *Software Revenue Recognition*, had just come into being after many years of work by the AICPA Task Force. That was a landmark accounting pronouncement for the software industry and it has run its entire life cycle. It was replaced by SOP 97-2, also named *Software Revenue Recognition*, which comes at the subject from a completely different direction. It essentially says to forget almost everything in SOP 91-1 and start over. Don Keller and Dean Martinez, of PricewaterhouseCoopers LLP, have prepared a very insightful chapter on software revenue recognition under the new rules of SOP 97-2. They explore the implications of each rule and give extensive illustrations that are comparable to real-life situations faced in practice. The depth of their insight into software revenue recognition is only possible because of their significant experience in practice in the software industry.

Paul Munter, Chairman of the Accounting Department of the University of Miami, has updated and enhanced the software capitalization chapter, which covers an area that stands alongside revenue recognition as a truly unique software industry accounting subject. The updates include the addition of an in-depth analysis of AICPA SOP 98-1 on accounting for internal-use software and the continuing developments related to large one-time charges taken for allocation to in-process research and development projects acquired in purchase method business combinations.

Frank O’Brien, CFO of ICU Medical, Inc., and a member of the original AICPA Task Force that developed SOP 91-1, has prepared a chapter that traces the development of accounting principles for the software industry through the completion of SOP 91-1 and then through SOP 97-2.

Jim Brendel, of Hein + Associates LLP, has prepared two chapters, one specifically devoted to the complex application of contract accounting in the software industry and a second chapter that covers the independent auditor’s perspective in audits of software companies.

Jim Shanahan, Mark Singer, Brad Silver, and Alicia Wilkinson, of PricewaterhouseCoopers LLP, have collaborated in preparing a chapter that describes and gives insight into issues of taxation that are unique to software companies, including certain tax ramifications for taxation that were created by SOP 97-2.

Doug Jerger, CEO of Jerger Associates and former President of the American Software Association, has prepared an updated chapter on the many software industry associations that continue to take an important role in industry developments.

Ed Wittman, CEO of Wittman Associates, Inc., has prepared an updated chapter that discusses the software industry in general. Dave Weinstein, Esq., has carried forward his chapter which deals with the legal aspects of the software industry. Having the general business perspectives provided by these two chapters is essential for accountants and financial professionals who work in the software industry.

The second edition also has chapters on accounting for research and development arrangements and special concerns of the Securities and Exchange Commission.

Welcome to the new contributing authors, thanks to all the contributing authors for their outstanding chapters, and thanks to everyone at John Wiley & Sons.

Joseph M. Morris  
Denver, Colorado  
February 2001

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## INTRODUCTION

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## CHAPTER ONE

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# General Industry Perspective

Edward S. Wittman, MBA  
Wittman Associates, Inc.

### 1.1 A GENERAL INDUSTRY PERSPECTIVE

This chapter provides a general perspective on the software industry, its relationship with the computer industry as a whole, the various types of software that are produced today, how software is developed, how it is licensed, and how it is distributed.

The software industry is unique, and its special characteristics should be understood by the accountant practicing in this field. Only with a clear understanding of the industry can the accountant properly apply the software industry's specialized accounting practices. This discussion assumes that the reader has some familiarity with computers, computer hardware, and computer software, and provides the information necessary to allow the accountant to actively participate in discussions affecting the accounting treatment of events occurring in the subject business.

The computer industry, consisting of computer hardware, computer software, and computer-related services, has become one of the most important industries in the world. Computer software, in fact, has become an industry by itself with the developments in computer software frequently driving the changes that take place in computer hardware, telecommunications, and electronics. The computer software industry will continue to grow in importance, particularly as modern business continues to evolve from the old manufacturing and conversion business to the modern-era economy, based on information and automation technology. It is almost impossible to estimate the number of computers in use today. Computers, and the software that provides their intelligence, are found in automobile control devices, watches, textile mills, hand-held electronic devices, microwave ovens, just about everywhere. Of course, that includes in our homes, on our office desks, and in large-scale, dedicated computer rooms providing massive computing power, mass storage facilities, and, ever important to the Internet, server functions.

## 1.2 ROOTS OF THE COMPUTER SOFTWARE INDUSTRY

### (a) Origins of the Computer Industry

The beginnings of the computer industry can be traced back almost 4,000 years, to the time when Babylonian mathematicians developed the first algorithms, or mathematical formulae, to solve numerical problems. In the early seventeenth century, John Napier, a Scottish inventor, found that division could be performed by a series of additions. Approximately 30 years later, a Frenchman, Blaise Pascal, developed the first numerical calculating machine, and approximately 30 years after that, Gottfried Leibniz built the first numerical calculating machine that could multiply and divide as well as add and subtract. In 1780, Benjamin Franklin discovered electricity, completing the discovery of the necessary fundamentals which, with further development and application, ultimately led to the creation of the computer industry and, shortly thereafter, the software industry.

### (b) Early Computers and Software Technology

The technology of software itself seems to have had its origin in the middle of the eighteenth century, when Joseph-Marie Jacquard used perforated cards to manage a weaving loom and, in the United Kingdom, Charles Babbage designed a machine capable of rudimentary analysis that followed logical instructions from a perforated tape. Programs, independent of the machine's inherent functionality, were written for this analytical machine.

Shortly thereafter, George Boole published the basis for the use of the binary system, *The Mathematical Analysis of Logic*. In Sweden, in 1855 the first practical mechanical computer was introduced. In tabulating machines—which utilized punch cards, known then as Hollerith cards and later as IBM cards—the now obsolete 80-column cards were used extensively until the early 1980s.

In 1886, William Burroughs introduced the first commercial-grade mechanical adding machine; in 1890, Herman Hollerith constructed an electrically powered mechanical system, using the perforated cards for tabulating the U.S. census. In 1896, Hollerith founded the Tabulating Machine Company, which then merged with two other firms in 1911 to form the Computer-Tabulating-Recording Company (CTRC). In 1924, CTRC changed its name to International Business Machines Corporation (IBM).

In 1936, Turing, working at Princeton University, published the concept of applying algorithms to the computation of complex mathematical functions and created the idea of independent sets of instructions capable of computing any relationship that can be mathematically described.

The first electrical digital computer is attributed to the work completed in 1939 at Iowa State University. This claim is disputed by some who attribute the first electrical digital computer to George Stibitz, working at Bell Telephone Laboratories.

### (c) Acceleration of Computer and Software Development

Following the developments discussed in the preceding sections, the rate of new advances and developments accelerated. In 1945, the idea of stored programs appeared. In 1946 BINAC was introduced, being the first computer to perform in real time. At about that time ENIAC, which used 18,000 vacuum tubes, was commissioned at the University of Pennsylvania, and the predecessor company of Universal Automatic Computer Company (Univac) was formed. In 1948, the first stored-program computer, said by some to be the first true computer, was developed. This was the IBM SSEC (selective sequence electronic calculator), so named because it was driven by software. Credit for the original development of the stored program, or software concept, is attributed to the team of von Neumann, Mauchly, Eckert, and Goldstine at IBM.

Development of electronic components followed over the next few years, and in 1953 IBM shipped the first commercial stored-program computer, the Model 701, a vacuum-tube, first-generation computer. In 1954, FORTRAN, the first “high level” rather than binary code computer language, was created by John Backus at IBM, and Gene Amdahl developed the first operating system, which was then used on the IBM 704. Two years later, Automatic Programmed Tool (APT) and Information Processing Language (IPL) were introduced. ALGOL and LISP were released in 1958, and in the same year Seymour Cray completed the first fully transistorized supercomputer for Control Data Corporation.

### (d) Splitting Off of the Software Industry

The first packaged software program was sold by Computer Science Corporation in 1959. In the same year, IBM introduced the Model 1401, of which more than 10,000 units were sold, and the first patents were filed for the integrated circuit. In 1960, the first minicomputer, the PDP 1, was introduced by Digital Equipment Corporation. Intel, the giant integrated circuit microprocessor developer, was formed in 1968, and in that year, Data General introduced the predecessor to the personal computer, the first 16-bit computer, the first of the Nova series.

In 1969, IBM began the practice of “unbundling,” or charging separate prices for hardware and software—the event that really set the computer software industry apart from the computer hardware industry. In 1975, Microsoft was founded; it is now the largest independent software supplier, with fiscal 2000 sales of approximately 23 billion, with 16% growth over the prior year.

Computer developments continued at a rapid pace. In 1976, the first CRAY 1, developed by Seymour Cray, was delivered. This computer was capable of performing calculations at what was then considered an extremely fast rate of 100 million floating point calculations per second. Digital Equipment Corporation (DEC) introduced the VAX 11/780 and a new operating system, VAX, in 1977; at the same time Apple, Commodore, and Tandy released their lines of personal computers. During the late 1970s, electronic spread sheets and word processing programs developed specifically for the personal computer were released. In 1980, Microsoft licensed the UNIX

operating system from Bell Laboratories and released XENIX as an operating system for the scientific use of personal computers.

In 1981, IBM introduced its first personal computer, setting a new standard for personal computer performance. In 1982, Microsoft licensed MS-DOS to approximately 50 personal computer manufacturers for resale with their computers. In 1983, Compaq shipped its first computer; it sold more than \$100 million in the first year following introduction. Also in 1983, the CRAY 2 was introduced, which was capable of one billion floating point operations per second, representing a tenfold increase in speed over a seven-year period.

It is interesting to note that in 1980, the total number of stand-alone computers in use in the United States was estimated to have been about 1,000,000 units, and by the end of 1983 more than 10,000,000 units were in use. In 1998, this number exceeded 100,000,000 in the United States, and about the same number in the rest of the world. So began the dramatic growth of computer software technologies and of the software industry.

### 1.3 SOFTWARE INDUSTRY TODAY

#### (a) Growing Importance of the Software Industry

Originally, the power of a computer determined the power of the functions that could be performed, as well as how fast those functions could be completed. Over the past 10 years, computer hardware technology has matured, with many computer hardware manufacturers providing comparable, standardized products. Computer hardware is now generally considered a commodity. Software now provides much of the value to the features, operating characteristics, and overall functionality of a computer system. A further indication of the increasing dominance of the software component of a computer system is that user spending on software has been growing at more than twice the rate of spending on hardware. Despite the dominance of Microsoft Corporation in the late 1990s, the computer industry is more fragmented today than in the 1950s and 1960s, when IBM dominated. It is expected that end-user software sales will increase at a 15 percent compound growth rate from \$169 billion in 1999 to \$343 billion in 2004.

In general, the software industry is viewed as having several sectors, including packaged applications (“shrink-wrapped software”); operating systems for individual and networked computers; administration tools for networks; enterprise software for large-scale data handling; and customized software to meet specific company and industry requirements.

The worldwide packaged software industry has been estimated by International Data Corp. at \$140 billion in 1998, with a 15 percent growth rate over 1997 revenues. Of this, the United States is estimated to hold approximately a 70 percent share. United States software companies lead the world in the development and production of software. The packaged personal computer software market in the United States is esti-

mated at nearly \$30 billion; of this \$24 billion is business software, \$5 billion is home-use products, and \$800 million is designed for schools. The packaged software industry has experienced an average growth rate of 12 percent per year during the 1990s. Computer penetration has grown substantially in the last three years: PC ownership has increased 52 percent, modem ownership has grown 140 percent, and E-mail access has expanded by 400 percent.

### (b) Economic Impact of the Software Industry

The Business Software Alliance ([www.bsa.org](http://www.bsa.org)) provides the following summary of the software industry in their report, *Building an Information Economy—Software Industry Positions U.S. for New Digital Era*, June, 1997.

The computer software industry is literally transforming the way individuals interact with one another, how business is conducted, and how we gain access to information the world over. The software industry has a fundamental impact on the U.S. economy—with an even greater potential for the future. The direct effects of the U.S. computer software industry in 1996 included a \$102.8 billion market for software and software-related services, payment of \$15.1 billion in taxes, and 619,400 jobs. In addition, the Business Software Alliance (BSA) member companies alone represented 8.7 percent of all industry research and development dollars spent in the United States.

As impressive as these numbers are, however, they actually understate the real impact of the software industry on the U.S. economy as a whole. Viewed in a broader, and perhaps more appropriate context, the software industry has a significant impact on other segments of the economy. The software industry's "ripple effect" created a total of 2,065,000 jobs and \$83.7 billion wages in 1996. By the year 2005, total direct and indirect employment will reach 3,345,000 jobs, paying \$139.3 billion in wages—accounting for nearly 3 percent of all U.S. employment. The industry serves as the engine for technical progress and productivity gains in every other segment of the U.S. economy by improving worker productivity and redefining the workplace.

To understand the growth of the software industry and its independence from the hardware industry, it is interesting to note that in 1972, stand-alone software accounted for less than seven percent of the computer industry. Today, software spending equals or exceeds spending on computer hardware, depending on how the statistics are gathered.

Not only independent software suppliers compete in the software market. Hardware vendors have recognized the importance of independent software in enhancing hardware sales, and have invested heavily in software development. In 1996 and 1997, IBM, the world's leading computer hardware company, reported approximately \$13 billion from sales of software, with a gross profit of over 70 percent. In recent years, IBM has also invested directly in software vendors, like its purchase of Lotus Corporation.

The largest independent software supplier, Microsoft Corporation, reported sales of \$14.5 billion for 1998 with a gross profit of 75 percent. Microsoft markets Windows,

the operating system used by substantially all suppliers of hardware in the personal computer market, except for Apple Computers. Microsoft also supplies many different business and home applications software products as well as products serving the Internet market.

The third largest supplier of software, Computer Associates, Inc., provides more than 500 products for business applications. Computer Associates reported \$4.7 billion in revenues for fiscal year 1998.

Industry-wide information is available for the year ending 1996. During that year, the software industry was the third largest in the United States, ranking behind the automobile and electronics industry. Wages paid in the software industry were among the highest in the United States, averaging almost \$60,000 per year. It is estimated that in 1999, the average salary in the industry will be near \$70,000.

The Business Software Alliance (BSA) reports that during 1996, more than 2 million employees were at work in the U.S. economy as a result of the software industry, earning wages totaling more than \$83 billion. By 2005, more than 3 million workers will be employed due to the software industry, with more than \$139 billion in wages.

### (c) Role of the Internet

The Internet and the World Wide Web, a graphics-based subsystem of the Internet, have substantially revolutionized the software industry and its products. On the Internet today almost 200 million people are communicating, exchanging information, and sharing common sets of data with each other without regard to hardware systems, operating systems, applications, or languages. The same attributes that attract these people to the Internet have also allowed many companies to transform their current in-house communication networks into Intranets, a topic discussed further in this update section.

Now that information content can readily be shared, it appears that it will only be a matter of time until software can be shared by all. When that occurs, the effect on the software industry will be as great as the introduction of the personal computer. Just as with the Internet, barriers to entry are minimized to simply having a modem, with costs of distribution, packaging, and reproduction reduced to near zero. The Internet could bring about an entire restructuring of the software industry as we know it today.

The industry has experienced several trends, all of which support this possible restructuring. Simplified systems, called by some “communication appliances” or “information appliances,” are being carefully evaluated with several versions of systems available today. The cable TV industry, the telecommunications field, and the computer manufacturers are all looking carefully at the specifications for a new “household appliance” that might replace the functions of the PC, the telephone, the modem, and the television. Ultimately, the product must be as easy to use as the telephone. Today, one does not think about programming in a telephone call; we do not consider getting on the network (dialing 1), then making contact with the interim switching stations along the way, and then activating a mechanism to indicate the arrival of our message at the other end. In the same way, the hardware, software, industrial design, and intelligent decision-making will be designed into the information appliance. According to

International Data Corporation, by the year 2000, there will be as many as 100 million units accessing the Internet, and at least 22 million of them will be something other than a PC.

The introduction and success of these information appliances require that the software provider recognizes that its market growth will be curtailed and that new avenues of distribution requiring new concepts in software architecture must be considered.

Many companies are currently looking for the right mechanism, hardware or software, actual or virtual, to allow for billing for the information or service in small increments. Bill Gates, founder of Microsoft, wrote in 1995, "A major reason paying for content doesn't work very well yet is that it's not practical to charge small amounts. The cost and hassle of electronic transactions makes it impractical to charge less than a fairly high subscription rate. But within a year, the mechanism will be in place that allows content providers to charge just a cent or a few cents for information. If you decide to visit a (web site) page that costs a nickel, you won't be writing a check or getting a bill in the mail for a nickel. You'll just click on what you want, knowing you'll be charged a nickel on an aggregated basis." What Mr. Gates did not indicate was that the same mechanism will also be available for assessing fees for limited use of software available on the Internet. While this software could be used after downloading on the user's own local computer, more significantly, with the high-speed transmission rates available to the general user, the software could be used on a timed basis. The user will pay a license fee only for the time when the software is actually used, rather than on an as-purchased basis. *Business Week* refers to this possible scenario as "just-in-time software."

Much as the computer itself is becoming more transparent to the user, so might the software become transparent. In such a case, the user selects the content (data) that is of interest and simply assumes that the software is there to allow access and manipulation of the content. The style of MS-Windows 95/98, having the user select the "Document" from the Explorer and allowing the computer to select the software, clearly reflects this concept. Regardless of the shape of the information appliance, only software can assure its success. Software for browsing the World Wide Web (WWW) has already made great advances in covering over the complexity of the Internet from a communications standpoint, but continuing software improvements will be the key to providing the simplicity required for the growth of both the PC and the information appliance.

#### (d) Intranets: Ease of the Internet Brought In-House

Corporations throughout the world have determined that the benefits of the Internet—communications among unlike computers, ease of moving data, ease in document retrieval, and general ease of use—are attributes that their local corporate networks should have as well. These companies are now setting up their own internal "internets," nominally referred to as Intranets. These Intranets use the same protocols, standards, and basic infrastructure as does the Internet, but with boundaries in place to assure security of data and to prevent unauthorized access by the public.



With these protections, or “firewalls,” the World Wide Web (WWW) has become a low-cost alternative in creating internal communication networks. Not only does the use of an Intranet, at least theoretically, reduce paper like any other alternative, but Web browsers allow all types of computers to interface with each other, a major hurdle for any other type of local network. For the first time, data stored on various systems, under differing formats, as scanned documents or within databases, can now be retrieved and displayed by virtually all the computers in the corporation. Not only can all types of information be made available, but they can be continuously updated at low cost and with a single entry be available to everyone on an intranet.

The software industry is reacting. Market researchers estimate that 56 percent of advanced Internet suites will be used in an intranet environment. It is estimated that the Intranet server market could grow to \$8 billion by 2000, four times the size of the Internet server market within three years. Costs for applications packages, programming tools, and other software systems could easily double these sales. As a result, all the major software companies and many smaller ones are concentrating on this market. All software companies have to consider the effect of the Intranet on distribution and licensing since the paradigm of site and per seat fees is no longer valid. A survey by Forrester Research Inc. of 50 major corporations found that 16 percent have an Intranet in place and 50 percent either have an Intranet in process or are considering an investment in an Intranet.

### (e) Mainframe Market

For years the industry pundits have predicted that the mainframe market would continue its gradual decline, ending in obsolescence. In fact, during 1994, IBM itself predicted declines in mainframe sales of as much as 50 percent. During 1995, IBM modified its prediction, asserting that mainframe sales would remain stable. Later, during 1998, IBM produced more than \$9 billion in sales of mainframe systems, now generally referred to as servers, and their related peripherals. At the same time, sales of software for the larger computers continue in high demand. Companies continue to store business and scientific records on these servers and use lower cost PCs with smaller local storage, with distribution available on the Internet or through Intranets or other networks. Computer Associates, a major supplier of server and mainframe applications, has experienced increases in sales in the range of 30 to 40 percent each in recent years. Other server software suppliers are experiencing similar growth.

## 1.4 KEY TERMS USED IN THE SOFTWARE INDUSTRY

Accountants and other professionals who work in or who provide services to the software industry must make and support decisions about the accounting treatment of transactions relating to revenue recognition, capitalization, and amortization of software development costs. Typically, this work includes discussions with and review of documents prepared by software engineering, development, and marketing personnel.

Usually, this review requires that the accounting and other professionals have a good understanding of the specialized industry jargon, technical terms, and acronyms.

Appendix 1-A is a software industry glossary of terms. The definitions have been excerpted with the permission of Microsoft Press from the third edition of *Microsoft Press Computer Dictionary*. Microsoft Press is a division of Microsoft Corporation. The complete dictionary, which contains more than 7,600 definitions, can be obtained from Microsoft Press at 1-800-MS PRESS. The dictionary is also sold in most bookstores.

## 1.5 SOFTWARE DEVELOPMENT PROCESS

### (a) Distinguishing Between Research and Development Activities

In many software companies, the department principally responsible for the creation of new products is referred to as the research and development (R&D) department, even if no research is conducted. The word *research* generally refers to scientific or scholarly investigation. *Development* generally refers to bringing into being or to making active, more available, or effective.

Very few software companies actively engage in research in the sense of its usual meaning. If such research activities are conducted, they are usually associated with an underlying technology, rather than with a software product itself. For example, creation of a software system for process control in the petrochemical arena requires knowledge of the chemical process. The development of that knowledge may require research activities such as sophisticated chemical experimentation, including field studies and laboratory evaluations, and subcontracted university-based analysis.

Although these distinctions are important to understanding the software development process, the words *research* and *development* are not used in accounting literature to describe activities afforded different accounting treatment. Instead, the term *research and development costs* as used in FASB Statement No. 2, *Accounting for Research and Development Costs*, refers to an aggregation of costs to be expensed because they meet certain criteria. An ambiguity in accounting terminology is that software development costs meeting certain criteria, called *production costs* in FASB Statement No. 86, *Accounting for the Cost of Computer Software to Be Sold, Leased, or Otherwise Marketed*, must be capitalized.

### (b) Six Phases of the Software Development Process

There are six phases in the software development process:

1. *Problem Statement*. Recognition of the objectives of the product
2. *Design*. Evaluation of alternatives, development of fundamental relationships within the product design, completion of a feasibility study, and the development of a prototype and the creation of test plans

3. *Programming and System Development.* Coding and testing of the software programs based on the results of Phase 2 above
4. *System Testing.* Testing of the overall system in simulated user environments and testing at selected user sites
5. *Release for Production and Distribution.* Finalization of the product, including the corrections of errors in coding or design identified in Phase 4 above
6. *Product Enhancement.* Products enhanced to expand their application and to develop new functionalities (note that this effort does not include the efforts to correct identified coding or design errors [bugs])

The development process described is relatively structured. There are many variations in the process, often depending on the particular experience of those administering it. Often, especially in development of microcomputer software, the process is significantly less structured than the one described here. As discussed in other chapters, the accountant or auditor of a software company must understand the software development process and be able to identify key events, and prepare and evaluate the documentation required for accounting for capitalization of software development costs. Each phase is discussed in the following sections. Section (ii) includes an exhibit summarizing the principal activities and types of documentation usually developed during each phase. Exhibit 1.1 summarizes the activities and documentation usually associated with each of the six phases of the software development process.

**(i) Problem Statement.** Phase 1 in the software development process may involve many departments, including marketing, product management, engineering, development, and general management. The sources of ideas for software products are legion—ideas can come from existing customers, sales prospects who decided not to buy from the subject company, the software development staff, market research personnel, employee suggestions, or a creative third party. Ideas for software products are usually first evaluated by marketing personnel for economic feasibility, for fit with existing channels of distribution, for possible effects on existing product lines, and for fit with the company's marketing objectives. From this evaluation, the company then prepares a problem statement, a document outlining the software needs to be solved by the new software product's capability.

Next, the development department evaluates the cost and time assumptions used in the marketing evaluation. A decision is reached early in this phase as to whether, based on the more detailed information generated by the marketing and development staffs, the project should be pursued further.

**(ii) Design Phase.** From an accounting point of view, the design phase is the most critical, because it is in this phase that the activities relevant to the issue of capitalization of development costs are performed. Design decisions are made, including those relating to system architecture and general design. Also during this phase, a working prototype is developed, which is one of the ways of determining technological fea-

sibility for capitalization. The existence of a working prototype does not mean that the product is fully developed, but rather that the technical risk of the development has been minimized. The prototype is a set of code, generally without documentation and without comments, created only for the purpose of demonstrating that the design document incorporating the design decisions remains valid.

The first step in the design phase is preparation of a preliminary design document, which includes a description of the software functionality to be developed and the system configuration, or architecture, which describes the overall data flow through the system. Preliminary design documents may identify existing software, if any, available within the company or from others, that can be used as is or with modification to meet some of the design requirements.

In this stage, many fundamental design decisions about the software product are made, including confirmation of the platform on which the software will run and the computer languages and syntax conventions to be used. The design phase also includes determining the functionalities of the software that will be library-based, meaning available as a utility subroutine to all programmers working on development of the software product, which will not require rewriting each time the functionality is required.

A feasibility study may be performed concurrently with the development of the preliminary design document, or immediately following its approval, to evaluate the capability of the software company's development team to create a product meeting the requirements of the problem statement, within budgetary cost limitations. A feasibility study may include the first detailed description of areas of technical concern and risk, details and results of experimentation done to demonstrate that the design objectives can be reasonably achieved.

See Exhibit 1.1 for a representation of the software development process.

Sometimes a prototype of the product functionality is developed. It is usually not necessary to develop a prototype of an entire product—prototypes are often developed for only portions of functionality in which technical success is not considered certain. Prototypes are usually developed with a minimum of design documentation, that is without software comments or user documentation, and only to the stage that the technical risk of the functionality being demonstrated is minimized. Usually, a prototype is sufficiently functional to demonstrate that the known inputs can be processed to produce predictable and numerically correct results. For a prototype to serve as a working model as contemplated in FASB Statement 86, it should not be necessary that the prototype demonstrate that all combinations of inputs can be processed and that all possible outcomes can be computed. Rather, the prototype should be able to demonstrate that the technological risk of its inability to process is remote.

Upon successful completion of the feasibility study and, if applicable, prototyping, a detail program design may be prepared, which includes all information required for the assignment of specific tasks in the development of the software product. This document includes detailed design information for the modules to be developed or modified from existing modules, the development required for each module, the flow of data required for each module, and the flow of data created by the module. Tasks may

**EXHIBIT 1.1** Software Development Process

<i>Phase</i>	<i>Activities</i>	<i>Documentation</i>
1. Problem Statement	Define problem and require functionality	Basic design concept statement
	Plan the development project	Project plan and budget
	Determine applicable acceptance criteria	Quality assurance requirements
2. Design	Prepare preliminary design document	Detailed product design statement
	Determine system architecture	Data flow diagrams, system integration plan
	Determine feasibility of the designed product	Technical description of study, results of experimentation
	Develop prototype	Results of working model demonstration
	Develop final system specification	Final detailed design specification
	Develop test plan	Details of quality assurance program, including unit, integration, alpha, beta, and final acceptance testing
3. Programming and System Development	Code and unit test	Source code, comments, test results, acceptance by software librarian
	Prepare documentation	Drafts of user guides, technical reference manuals, and on-line help screens
	Integrate modules to system specifications	Fully compiled system with data available for transfer or sharing between modules, acceptance of system by software librarian
	Integration testing	Results of testing of the working completed product
4. System Testing	Alpha testing	Test results
	Beta testing	Test results from use of product in an unmanaged environment
	Final acceptance testing	Test result and release of product

EXHIBIT 1.1 Continued

Phase	Activities	Documentation
5. Release for Production and Distribution	Completion of all documentation and making product and documentation available for reproduction	Documentation release notes, production records, and serial release number
6. Product Enhancement	Depending on magnitude and complexity, the activities and documentation of Phase 1 through 5 may be partially or entirely completed for the enhancement	

be identified for individual system designers, programmers, and coders. In addition, tasks may be assigned to scientific professionals for the development of mathematical formulae, or to hardware professionals to assure maximum utilization of the chosen platform capabilities. Statement 86 requires the capitalization of development costs incurred subsequent to completion of the detail design document.

At this point in the development process, detailed test plans may be developed to assure that the software product will meet quality standards identified in the problem statement phase. Test plans may include five levels of testing. First, each function or subfunction is *unit tested*. The originator of the code is required to test the operation of each function within the full range of use specified in the design document. Second, *integration tests* may be performed to evaluate whether data and functioning as a whole will operate properly. These tests are generally performed by the product development team.

Third, *alpha testing* evaluates operation of a system in a simulated user environment, employing team members who generally were not previously involved in development of the product. The primary purpose of alpha testing is to identify remaining shortcomings in the software product’s design or implementation that could prevent the product from achieving the commercial goals identified in the problem statement. Product refinements and corrections may be made as a result of alpha testing, such as improvements to ease of use, menu clarity, elimination of endless loops, and the addition of help aids.

Fourth, the test plan usually identifies potential test sites for *beta testing*, where that software product will undergo extensive testing in live situations at user sites. A beta test plan may specify the extent of testing to be performed and the reporting expected from the testers, the amount of technical support to be provided by the development team, and plans for monitoring the test sites.

The fifth and final test stage is the *acceptance test*, in which internal quality control personnel review all results of previous tests, and review all product documentation, both internal comments to the code ensuring proper software maintenance, and the documentation to be provided with the software product to the end user.

(iii) **Programming and System Development.** Based on the planning, feasibility studies, and testing program determined during the problem statement and design phases, coding and development of the individual components of the system are then completed. During this phase, the project development staff creates a source code for each of the functions specified in the product design, performs unit tests as specified, and incorporates comments in the source code to ensure product maintenance and minimization of future corrective actions. Work on product documentation is usually done simultaneously with the completion of the software product, including on-line, computer-provided aids, as well as hard copy manuals such as user guides, technical reference manuals, packaging, installation procedures, and any other descriptive materials, in any form of media.

When individual modules are completed, they are then integrated in a single system, and the software product takes on its own identity. The system is compiled and data transfers between modules are demonstrated. Integration testing, as discussed earlier, is performed, and refinements, corrections, and modifications are made as necessary to meet the design criteria.

(iv) **System Testing.** During Phase 4, alpha testing at the development team site and beta testing at various user sites are performed. Results of alpha testing or beta testing may require that portions of the development cycle be reiterated because one or more of the system's functions do not meet its design specification; the product documentation is tested and evaluated for readability, correctness of description, completeness, and usefulness under end user conditions.

(v) **Release for Production and Distribution.** Upon successful completion of all testing, quality assurance personnel approve the software product and documentation for production and distribution. The product is now available for general market release, and at this point Statement 86 requires cessation of the capitalization of development costs. The software product and documentation are usually assigned a "version 1.0" release number, and reproduction for marketing and distribution in the marketplace is authorized. Control of the product is transferred from development to customer support.

(vi) **Product Enhancement.** Following the release of a product and its use in the marketplace, future improvements to the product—in the form of enhancements—are defined. Enhancements are distinguished from bug fixes or error corrections in that they often expand that functionality of the software product, adding new capabilities and widening that spectrum of solutions for existing functions. Enhancements may be improvements to the existing functionality that increase the marketability of the product and extend its life.

## 1.6 MARKETING AND DISTRIBUTION OF SOFTWARE PRODUCTS

### (a) How Software Companies Derive Revenues

The preceding sections discuss the software development process; how software companies go about developing their intellectual property. The rest of this chapter discusses how software companies derive revenues from marketing that intellectual property. Most software and software-related revenues are derived through the following methods of marketing:

- Issuing software licenses, which are similar to product sales in other industries
- Providing postcontract customer support or maintenance
- Providing software in projects that combine software with hardware or services or both
- Providing software development services, in which software development activities and revenue generation overlap
- Providing services that accompany software products
- Providing services that use software, such as data processing services, or consulting services that require specialized software

### (b) Software Licenses

Although the terms *software sales* and *leases* are frequently used in the industry, they are generally misapplied. Except in very unusual circumstances, software is almost always licensed. Software is an intangible item consisting of intellectual property, the proprietary rights to which are almost never sold. Instead, the software company, as the owner of the proprietary intellectual property, grants a license for the customer to use the software. A license to use software may be restricted in any of several ways. A defined period of months or years; number of users or number of times a software program can be run; specific users; or nontransferability may be stipulated.

Exhibit 1.2 provides key terms often included in a software license agreement.

Illustrative software license agreements are provided in Chapter 10. Software license agreements should be prepared with the advice of legal counsel.

### (c) Channels of Distribution for Software Licenses

Software products are generally marketed through the following four channels of distribution.

1. *End user licensing.* The software developer provides and licenses the software directly to the end user.



**EXHIBIT 1.2** General Provisions in a Software License Agreement

<i>Key Term</i>	<i>General Provisions</i>
Grant of License	States the term and key restrictive elements of the right to use granted to the licensee by the licensor.
Consideration	States the amount and terms of the license fee or royalty to be paid to the software supplier.
Title of Materials	Provides that all rights, title, and interest in the software and documentation remain with that licensor. Includes acknowledgment by the licensee that the software and documentation contain proprietary information of the licensor.
Limitation on Use	Limits the software to internal use by the licensee, and may prohibit sublicensing, relicensing, and use in processing data for others for a fee. Prohibits transferability without approval of the licensor.
Limited Warranty	Limits modification to eliminating errors (bugs) in the code. Includes a specific warranty that the software does not infringe on any patents, copyrights, or trade secrets.
Maintenance	Provides for modification to software to correct for errors during the warranty period. Sometimes provides for update services to data content, enhancements, or customer support services.

2. *Retail sales.* Most personal computer software is provided by the developer to wholesale or retail distributors, which include mail order companies, retail chains, independent computer dealers on the Internet, and software stores, which are given the right to pass the license for the software to the end user.
3. *Value-added reseller (VAR) licensing.* The software developer licenses a software program to another software vendor, giving the other vendor the right to re-license the software as part of a system marketed by the VAR that includes the licensed product. This type of arrangement is most common in the incorporation of utility programs into applications software.
4. *Original equipment manufacturer (OEM) licensing.* The software developer licenses the software to a hardware supplier, giving the hardware supplier the right to re-license the software as part of a complete system that the hardware supplier provides to an end user.

### (d) Postcontract Customer Support (Maintenance)

What has commonly been referred to in the software industry as “maintenance” has been renamed “postcontract customer support” (PCS) in the American Institute of Certified Public Accountants (AICPA) Statement of Position (SOP) 91-1, Software Revenue Recognition. The contributing author believes that the word *maintenance* will continue to be used in the industry, perhaps more frequently than postcontract customer support. In this discussion, however, the contributing author will conform to using the new term suggested by the AICPA Task Force.

Postcontract customer support typically includes providing telephone or on-site support of the customer in the use of software, which includes “bug” fixing. Moreover, postcontract customer support often includes providing to customers ongoing product enhancements developed during the term of the postcontract customer support agreement that are far more than routine changes and additions, or updating for current information.

Postcontract customer support is an important source of revenue to software companies because it enables them to continue to derive a revenue stream from existing customers. To the extent that postcontract customer support relates to providing enhancements, software companies are in essence able to re-license their products annually to the same customers by simply providing them with an enhanced version of the product they have developed for licensing to new customers. To the extent that PCS relates to telephone and on-site support, the PCS customers represent an established customer base for ongoing consulting services. The continuing revenue stream from PCS arrangements with existing customers can become increasingly important as products mature and the number of possible new customers declines. At this point, the pressure for development of enhancements is generated by existing customers as well as by the desire of the software company to sell to new customers.

PCS arrangements cover a defined term, typically ranging from a few months to several years. Most PCS arrangements are for periods of one year, with the software company anticipating annual renewals. PCS agreements are generally offered as separate contracts in conjunction with perpetual licenses and are sometimes bundled with limited-term software licenses. They are generally offered through the same channels of distribution as software licenses, which are describe in the preceding section.

### (e) Providing Software in Projects that Combine Software with Hardware or Services or Both

Some software companies market their software products by providing software to the end user in a “turnkey” package that includes the software and some or all of the following: hardware, installation and commissioning of the software and hardware, integration of the system with the end user’s existing systems, and other services. An example of this type of contract is one in which a supplier of an accounting software package also provides the computer hardware, sets up the initial database and processing, designs and facilitates reports generation, and implements a chart of

accounts. Typically, the software company expects to make most of its margin or profit on the software element of the contract. Although other elements, such as hardware and services, are normally priced to generate some profit margin, they are usually small in comparison with the gross margin contemplated for the software element. Essentially, a combined contract can be viewed economically as another vehicle for transporting software from the shelf, into the marketplace, and onto the bottom line.

#### **(f) Providing Software Development Services**

Sometimes software companies enter into contracts to develop software for an end user. Where services of this type are performed, the software development activities and revenue generation overlap. A software company is often entitled to market the software it develops under a contract to others. This arrangement is typically called a “funded development” contract.

#### **(g) Providing Services that Accompany Software Products**

Providing software products to their customers affords software companies the opportunity to sell a great many related services, including installation, training, assistance in integration and implementation, and a host of other services. Although these are generally not large profit-margin services, they can make a consistent contribution to a software company’s operations. To some extent, such services provide incremental revenue that can, at least in part, be generated by personnel already on the company’s payroll.

#### **(h) Providing Services Using Software**

Some software companies market their software by providing services in which they use the software for others. Examples are processing data for others through data-processing services, and providing consulting services utilizing specialized software.

## APPENDIX 1-A

# Software Industry Glossary of Terms

The definitions included in this appendix have been excerpted with the permission of Microsoft Press from the third edition of *Microsoft Press Computer Dictionary*. Microsoft Press is a division of Microsoft Corporation. The complete dictionary, which contains more than 7,600 definitions, can be obtained from Microsoft Press at 1-800-MS PRESS. The dictionary is also sold in most bookstores.

- \*.\* n. A file specification using the asterisk wildcard, which means “any combination of filename and extension” in operating systems such as MS-DOS.
- / 1. A character used to delimit parts of a directory path in UNIX and FTP or parts of an Internet address in Web browsers. 2. A character used to flag switches or parameters that control the execution of a program invoked by a command-line interface.
- @ The separator between account names and domain name addresses in Internet E-mail addresses. When spoken, @ is read as “at.” Therefore user@host.com would be read as “user at host dot com.”
- \ n. The character may be used to separate directory names in MS-DOS path specifications. When used as a leading character, it means that the path specification begins from the topmost level for that disk drive.
- 16-bit application** n. An application written to run on a computer with a 16-bit architecture or operating system, such as MS-DOS or Windows 3.x.
- 16-bit machine** n. A computer that works with data in groups of 16 bits at a time. A computer may be considered a 16-bit machine either because its microprocessor operates internally on 16-bit words or because its data bus can transfer 16 bits at a time. The IBM PC/AT and similar models based on the Intel 80286 microprocessor

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are 16-bit machines in terms of both the word size of the microprocessor and the size of the data bus. The Apple Macintosh Plus and Macintosh SE use a microprocessor with a 32-bit word length (the Motorola 68000) but have 16-bit data buses and are generally considered 16-bit machines.

**2000 time problem (Y2K)** n. A potential problem for computer programs when the year 2000 is reached, in that a variety of logic checks within programs may suddenly fail if they rely on two-digit year indicators. For example, suppose a computer does routine logic checks on whether report dates are valid by checking if a report's date follows the date for a report the previous year. Such a check will fail when the report for year "00" (interpreted as year zero by the computer) follows year "99." In the past, before RAM became much cheaper, one way to conserve memory was to indicate years with only two digits, and this method of handling dates has remained at the core of much software. Other possible faults include unanticipated shortening of index numbers, stock numbers, and the like, when the digits for the year occur first and are accidentally read as leading zeros, and so deleted. For example, ABC-97001, for part number 1 in 1997, could first become ABC-00001 and then get shortened to ABC-1, for part number 1 in year "00." Since the internals of programs' construction are not generally visible, such problems may not be evident until programs start failing after 12:00 A.M., January 1, 2000. It remains practically impossible to test all extant software for this problem, but, as a precaution, critical software can be tested by changing the date and time set in the computer to the year 2000.

**32-bit application** n. An application written to run on a computer with a 32-bit architecture or operating system, such as Mac OS or Windows 95.

**32-bit machine** n. A computer that works with data in groups of 32 bits at a time. The Apple Macintosh II and higher models are 32-bit machines, in terms of both the word size of their microprocessors and the size of the data buses, as are computers based on the Intel 80386 and higher-level microprocessors.

**3GL** n. Short for third-generation language. A programming language one step above assembly language, characterized by being readable by humans. Some examples are C, Pascal, and Basic. Also called high-level language (HLL). Compare 4GL, assembly language.

**4GL** n. A language designed for interacting with a computer programmer. The designation is often used to specify languages used with relational databases and is intended to imply that such languages are a step up from standard high-level programming languages such as C, Pascal, and COBOL. See also application development language, high-level language. Compare 3GL, assembly language.

**64-bit machine** n. A computer that works with data in groups of 64 bits at a time. A computer may be considered a 64-bit machine either because its CPU operates internally on 64-bit words or because its data bus can transfer 64 bits at a time. A 64-bit CPU thus has a word size of 64 bits, or eight bytes; a 64-bit data bus has 64 data lines, so it ferries information through the system in sets of 64 bits at a time. Examples of 64-bit architecture include the Alpha AXP from Digital Equipment Corporation, the Ultra workstation from Sun, and the PowerPC 620.

- access time** n. 1. The amount of time it takes for data to be delivered from memory to the processor after the address for the data has been selected. 2. The time needed for a read/write head in a disk drive to locate a track on a disk. Access time is usually measured in milliseconds and is used as a performance measure for hard disks and CD-ROM drives.
- algorithm** n. A finite sequence of steps for solving a logical or mathematical problem.
- alpha** n. A software product that has been completed and is ready for initial testing in a laboratory. Compare beta test.
- analog** adj. Pertaining to or being a device or signal having the property of continuously varying in strength or quantity, such as voltage or audio.
- applet** n. A small piece of code that can be transported over the Internet and executed on the recipient's machine. The term is used especially to refer to such programs as they are embedded in line as objects in HTML documents on the World Wide Web.
- application development environment** n. An integrated suite of programs for use by software developers. Typical components of application development environments include a compiler, file browsing system, debugger, and text editor for use in creating programs.
- array** n. In programming, a list of data values, all of the same type, any element of which can be referenced by an expression consisting of the array name followed by an indexing expression. Arrays are part of the fundamentals of data structures, which, in turn, are a major fundamental of computer programming.
- artificial intelligence** n. The branch of computer science concerned with enabling computers to simulate such aspects of human intelligence as speech recognition, deduction, inference, creative response, the ability to learn from experience, and the ability to make inferences given incomplete information. Two common areas of artificial-intelligence research are expert systems and natural-language processing. See also expert system, natural-language processing. Acronym: AI.
- assembly language** n. A low-level programming language using abbreviations or mnemonic codes in which each statement corresponds to a single machine instruction. An assembly language is translated to machine language by the assembler and is specific to a given processor. Advantages of using an assembly language include increased execution speed and direct programmer interaction with system hardware.
- asynchronous transmission** n. In modem communication, a form of data transmission in which data is sent intermittently, one character at a time, rather than in a steady stream with characters separated by fixed time intervals. Asynchronous transmission relies on the use of a start bit and stop bit(s), in addition to the bits representing the character (and an optional parity bit), to distinguish separate characters.
- authoring language** n. A computer language or application development system designed primarily for creating programs, databases, and materials for computer-aided instruction (CAI). A familiar example in relation to microcomputers is PILOT, a language used to create lessons.

**backbone** n. 1. A network of communication transmissions that carries major traffic between smaller networks. The backbones of the Internet, including communications carriers such as Sprint and MCI, can span thousands of miles using microwave relays and dedicated lines. 2. The smaller networks (compared with the entire Internet) that perform the bulk of the packet switching of Internet communication. Today these smaller networks still consist of the networks that were originally developed to make up the Internet—the computer networks of the educational and research institutions of the United States—especially NSFnet, the computer network of the National Science Foundation in Oak Ridge, Tennessee. 3. The wires that carry major communications traffic within a network. In a local area network, a backbone may be a bus. Also called collapsed backbone.

**backslash** n. The character (\) used to separate directory names in MS-DOS path specifications. When used as a leading character, it means that the path specification begins from the topmost level for that disk drive.

**bandwidth** n. 1. The difference between the highest and lowest frequencies that an analog communications system can pass. For example, a telephone accommodates a bandwidth of 3,000 Hz: the difference between the lowest (300 Hz) and highest (3,300 Hz) frequencies it can carry. 2. The data transfer capacity of a digital communications system.

**batch processing** n. 1. Execution of a batch file. 2. The practice of acquiring programs and data sets from users, running them one or a few at a time, and then providing the results to the users. 3. The practice of storing transactions for a period of time before they are posted to a master file, typically in a separate operation undertaken at night.

**batch program** n. A program that executes without interacting with the user.

**baud rate** n. The speed at which a modem can transmit data. The baud rate is the number of events, or signal changes, that occur in one second—not the number of bits per second (bps) transmitted. In high-speed digital communications, one event can actually encode more than one bit, and modems are more accurately described in terms of bits per second than baud rate. For example, a so-called 9,600-baud modem actually operates at 2,400 baud but transmits 9,600 bits per second by encoding four bits per event ( $2,400 \times 4 = 9,600$ ) and thus is a 9,600-bps modem.

**benchmark** n. A test used to measure hardware or software performance. Benchmarks for hardware use programs that test the capabilities of the equipment—for example, the speed at which a CPU can execute instructions or handle floating-point numbers. Benchmarks for software determine the efficiency, accuracy, or speed of a program in performing a particular task, such as recalculating data in a spreadsheet. The same data is used with each program tested, so the resulting scores can be compared to see which programs perform well and in what areas. The design of fair benchmarks is something of an art, because various combinations of hardware and software can exhibit widely variable performances under different conditions. Often, after a benchmark has become a standard, developers try to optimize

a product to run that benchmark faster than similar products run it in order to enhance sales.

**beta test** n. A test of software that is still under development, accomplished by having people actually use the software. In a beta test, a software product is sent to selected potential customers and influential end users (known as beta sites), who test its functionality and report any operational or utilization errors (bugs) found. The beta test is usually one of the last steps a software developer takes before releasing the product to market; however, if the beta sites indicate that the software has operational difficulties or an extraordinary number of bugs, the developer may conduct more beta tests before the software is released to customers.

**BIOS** n. Acronym for basic input/output system. On PC-compatible computers, the set of essential software routines that test hardware at startup, start the operating system, and support the transfer of data among hardware devices. The BIOS is stored in read-only memory (ROM) so that it can be executed when the computer is turned on. Although critical to performance, the BIOS is usually invisible to computer users. Compare toolbox.

**black box** n. A unit of hardware or software whose internal structure is unknown but whose function is documented. The internal mechanics of the function do not matter to a designer who uses a black box to obtain that function. For example, a memory chip can be viewed as a black box. Many people use memory chips and design them into computers, but generally only memory chip designers need to understand their internal operation.

**block diagram** n. A chart of a computer or other system in which labeled blocks represent principal components and lines and arrows between the blocks show the pathways and relationships among the components. A block diagram is an overall view of what a system consists of and how it works. To show the various components of such a system in more detail, different types of diagrams, such as flowcharts or schematics, are used.

**boot** n. The process of starting or resetting a computer. When first turned on (cold boot) or reset (warm boot), the computer executes the software that loads and starts the computer's more complicated operating system and prepares it for use. Thus, the computer can be said to pull itself up by its own bootstraps. Also called bootstrap.

**bottom-up design** n. A program development design methodology in which the lower-level tasks of a program are defined first; the design of the higher-level functions proceeds from the design of the lower-level ones.

**bottom-up programming** n. A programming technique in which lower-level functions are developed and tested first; higher-level functions are then built using the lower-level functions, and so on. Many program developers believe that the ideal combination is top-down design and bottom-up programming. See also top-down design.

**bridgware** n. Hardware or software designed to convert application programs or data files to a form that can be used by a different computer.



**bubble chart** n. A chart in which annotated ovals (bubbles) representing categories, operations, or procedures are connected by lines or arrows that represent data flows or other relationships among the items represented by bubbles. In systems analysis, bubble charts, rather than block diagrams or flowcharts, are used to describe the connections between concepts or parts of a whole, without emphasizing a structural, sequential, or procedural relationship between the parts.

**bug** n. 1. An error in coding or logic that causes a program to malfunction or to produce incorrect results. Minor bugs, such as a cursor that does not behave as expected, can be inconvenient or frustrating, but do not damage information. More severe bugs can require the user to restart the program or the computer, losing whatever previous work had not been saved. Worse yet are bugs that damage saved data without alerting the user. All such errors must be found and corrected by the process known as debugging. Because of the potential risk to important data, commercial application programs are tested and debugged as completely as possible before release. After the program becomes available, further minor bugs are corrected in the next update. A more severe bug can sometimes be fixed with a piece of software called a patch, which circumvents the problem or in some other way alleviates its effects. See also beta test, debug, hang, inherent error. 2. A recurring physical problem that prevents a system or set of components from working together properly. While the origin of this definition is in some dispute, computer folklore attributes the first use of bug in this sense to a problem in the Harvard Mark I or the Army/University of Pennsylvania ENIAC that was traced to a moth caught between the contacts of a relay in the machine (although a moth is not entomologically a true bug).

**bundled software** n. 1. Programs sold with a computer as part of a combined hardware/software package. 2. Smaller programs sold with larger programs to increase the latter's functionality or attractiveness.

**byte** n. Abbreviated B. Short for binary term. A unit of data, today almost always consisting of eight bits. A byte can represent a single character, such as a letter, a digit, or a punctuation mark. Because a byte represents only a small amount of information, amounts of computer memory and storage are usually given in kilobytes (1,024 bytes), megabytes (1,048,576 bytes), or gigabytes (1,073,741,824 bytes).

**cache** n. A special memory subsystem in which frequently used data values are duplicated for quick access. A memory cache stores the contents of frequently accessed RAM locations and the addresses where these data items are stored. When the processor references an address in memory, the cache checks to see whether it holds that address. If it does hold the address, the data is returned to the processor; if it does not, a regular memory access occurs. A cache is useful when RAM accesses are slow compared with the microprocessor speed, because cache memory is always faster than main RAM memory.

**call** n. In a program, an instruction or statement that transfers program execution to some section of code, such as a subroutine, to perform a specific task. Once the task is performed, program execution resumes at the calling point in the program.

**canned routine** n. A previously written routine that is copied into a program and used as is, without modification.

**canned software** n. Off-the-shelf software, such as word processors and spreadsheet programs.

**CASE** n. Acronym for computer-aided software engineering. A comprehensive label for software designed to use computers in all phases of computer program development, from planning and modeling through coding and documentation. CASE represents a working environment consisting of programs and other development tools that help managers, systems analysts, programmers, and others to automate the design and implementation of programs and procedures for business, engineering, and scientific computer systems.

**client** n. 1. In object-oriented programming, a member of a class (group) that uses the services of another class to which it is not related. 2. A process, such as a program or task, that requests a service provided by another program—for example, a word processor that calls on a sort routine built into another program. The client process uses the requested service without having to “know” any working details about the other program or the service itself. 3. On a local area network or the Internet, a computer that accesses shared network resources provided by another computer (called a server).

**client/server architecture** n. An arrangement used on local area networks that makes use of distributed intelligence to treat both the server and the individual workstations as intelligent, programmable devices, thus exploiting the full computing power of each. This is done by splitting the processing of an application between two distinct components: a “front-end” client and a “back-end” server. The client component is a complete, stand-alone personal computer (not a “dumb” terminal), and it offers the user its full range of power and features for running applications. The server component can be a personal computer, a minicomputer, or a mainframe that provides the traditional strengths offered by minicomputers and mainframes in a time-sharing environment: data management, information sharing between clients, and sophisticated network administration and security features. The client and server machines work together to accomplish the processing of the application being used. Not only does this increase the processing power available over older architectures but it also uses that power more efficiently. The client portion of the application is typically optimized for user interaction, whereas the server portion provides the centralized, multiuser functionality.

**cluster** n. 1. An aggregation, such as a group of data points on a graph. 2. A communications computer and its associated terminals. 3. In data storage, a disk-storage unit consisting of a fixed number of sectors (storage segments on the disk) that the operating system uses to read or write information; typically, a cluster consists of two to eight sectors, each of which holds a certain number of bytes (characters).

**code** n. 1. Program instructions. Source code consists of human-readable statements written by a programmer in a programming language. Machine code consists of numerical instructions that the computer can recognize and execute and that were converted from source code. 2. A system of symbols used to convert information

from one form to another. A code for converting information in order to conceal it is often called a cipher. 3. One of a set of symbols used to represent information.

**code conversion** n. 1. The process of translating program instructions from one form into another. Code may be converted at the source-language level (for example, from C to Pascal), at the hardware-platform level (for example, from working on the IBM PC to working on the Apple Macintosh), or at the language level (for example, from source code in C to machine code). See also code (definition 1). 2. The process of transforming data from one representation to another, such as from ASCII to EBCDIC or from two's complement to binary-coded decimal.

**comment** n. Text embedded in a program for documentation purposes. Comments usually describe what the program does, who wrote it, why it was changed, and so on. Most programming languages have a syntax for creating comments so that they can be recognized and ignored by the compiler or assembler. Also called remark.

**communications protocol** n. A set of rules or standards designed to enable computers to connect with one another and to exchange information with as little error as possible. The protocol generally accepted for standardizing overall computer communications is a seven-layer set of hardware and software guidelines known as the OSI (Open Systems Interconnection) model. A somewhat different standard, widely used before the OSI model was developed, is IBM's SNA (Systems Network Architecture). The word protocol is often used, sometimes confusingly, in reference to a multitude of standards affecting different aspects of communication, such as file transfer (for example, XMODEM and ZMODEM), handshaking (for example, XON/XOFF), and network transmission (for example, CSMA/CD).

**compatibility** n. 1. The degree to which a computer, an attached device, a data file, or a program can work with or understand the same commands, formats, or language as another. True compatibility means that any operational differences are invisible to people and programs alike. 2. The extent to which two machines can work in harmony. Compatibility (or lack thereof) between two machines indicates whether, and to what degree, the computers can communicate, share data, or run the same programs. For example, an Apple Macintosh and an IBM PC are generally incompatible because they cannot communicate freely or share data without the aid of hardware and/or software that functions as an intermediary or a converter. 3. The extent to which a piece of hardware conforms to an accepted standard (for example, IBM-compatible or Hayes-compatible). In this sense, compatibility means that the hardware ideally operates in all respects like the standard on which it is based. 4. In reference to software, harmony on a task-oriented level among computers and computer programs. Computers deemed software-compatible are those that can run programs originally designed for other makes or models. Software compatibility also refers to the extent to which programs can work together and share data. In another area, totally different programs, such as a word processor and a drawing program, are compatible with one another if each can incorporate images or files created using the other. All types of software compatibility become increasingly important as computer communications, networks, and program-to-program

file transfers become near-essential aspects of microcomputer operation. See also upward-compatible.

**computer power** n. The ability of a computer to perform work. If defined as the number of instructions the machine can carry out in a given time, computer power is measured in millions of instructions per second (MIPS) or millions of floating-point operations per second (MFLOPS). Power is measured in other ways too, depending on the needs or objectives of the person evaluating the machine. By users or purchasers of computers, power is often considered in terms of the machine's amount of random access memory (RAM), the speed at which the processor works, or the number of bits (8, 16, 32, and so on) handled by the computer at one time. Other factors enter into such an evaluation, however; two of the most important are how well the components of the computer work together and how well they are matched to the tasks required of them. For example, no matter how fast or powerful the computer, its speed will be hampered during operations involving the hard disk if the hard disk is slow (for example, with an access time of 65 milliseconds or higher).

**convention** n. Any standard that is used more or less universally in a given situation. Many conventions are applied to microcomputers. In programming, for example, a language such as C relies on formally accepted symbols and abbreviations that must be used in programs. Less formally, programmers usually adopt the convention of indenting subordinate instructions in a routine so that the structure of the program is more easily visualized. National and international committees often discuss and arbitrate conventions for programming languages, data structures, communication standards, and device characteristics.

**conversion** n. The process of changing from one form or format to another; where information is concerned, a changeover that affects form, but not substance. Types of conversion include: k:\compdict\database\4573.doc

**copyright** n. A method of protecting the rights of an originator of a creative work, such as a text, a piece of music, a painting, or a computer program, through law. In many countries the originator of a work has copyright in the work as soon as it is fixed in a tangible medium (such as a piece of paper or a disk file); that rule applies in the United States for works created after 1977. Registration of a copyright, or the use of a copyright symbol, is not needed to create the copyright but does strengthen the originator's legal powers. Unauthorized copying and distribution of copyrighted material can lead to severe penalties, whether done for profit or not. Copyrights affect the computer community in three ways: the copyright protection of software, the copyright status of material (such as song lyrics) distributed over a network such as the Internet, and the copyright status of original material distributed over a network (such as a newsgroup post). The latter two involve electronic media that are arguably not tangible, and legislation protecting the information disseminated through electronic media is still evolving.

**database** n. A file composed of records, each containing fields together with a set of operations for searching, sorting, recombining, and other functions.

**database engine** n. The program module or modules that provide access to a database management system.

**database management system** n. A software interface between the database and the user. A database management system handles user requests for database actions and allows for control of security and data integrity requirements. Also called database manager. Acronym: DBMS.

**database structure** n. A general description of the format of records in a database, including the number of fields, specifications regarding the type of data that can be entered in each field, and the field names used.

**debug** vb. To detect, locate, and correct logical or syntactical errors in a program or malfunctions in hardware. In hardware contexts, the term troubleshoot is the term more often used, especially when the problem is a major one.

**device dependence** n. The requirement that a particular device be present or available for the use of a program, interface, or protocol. Device dependence in a program is often considered unfortunate because the program either is limited to one system or requires adjustments for every other type of system on which it is to run. Compare device independence.

**device independence** n. A characteristic of a program, interface, or protocol that supports software operations that produce similar results on a wide variety of hardware. For example, the PostScript language is a device-independent page description language because programs issuing PostScript drawing and text commands need not be customized for each potential printer. Compare device dependence.

**distributed processing** n. a form of information processing in which work is performed by separate computers linked through a communications network. Distributed processing is usually categorized as either plain distributed processing or true distributed processing. Plain distributed processing shares the workload among computers that can communicate with one another. True distributed processing has separate computers perform different tasks in such a way that their combined work can contribute to a larger goal. The latter type of processing requires a highly structured environment that allows hardware and software to communicate, share resources, and exchange information freely.

**domain** n. 1. In database design and management, the set of valid values for a given attribute. For example, the domain for the attribute AREA-CODE might be the list of all valid three-digit numeric telephone area codes in the United States. 2. For Windows NT Advanced Server, a collection of computers that share a common domain database and security policy. Each domain has a unique name. 3. In the Internet and other networks, the highest subdivision of a domain name in a network address, which identifies the type of entity owning the address (for example, .com for commercial users or .edu for educational institutions) or the geographical location of the address (for example, .fr for France or .sg for Singapore). The domain is the last part of the address (for example, www.acm.org).

**dribbleware** n. Updates, patches, and new drivers for a software product that are released one at a time, as they become available, rather than being issued together in a new version of the product. A company using the dribbleware technique may

distribute new and replacement files on diskette or CD-ROM, or make them available for download through the Internet or a private network. See also patch.

**dummy routine** n. A routine that performs no action but that can be rewritten to do so at some future time. Top-down program development usually involves the creation of dummy routines that are turned into functional routines as development proceeds. Also called stub.

**editor** n. A program that creates files or makes changes to existing files. An editor is usually less powerful than a word processor, lacking the latter's capability for text formatting, such as use of italics. Text or full-screen editors allow the user to move through the document using direction arrows. In contrast, line editors require the user to indicate the line number on which the text is to be edited.

**electronic commerce** n. Commercial activity that takes place by means of connected computers. Electronic commerce can occur between a user and a vendor through an online information service, the Internet, or a BBS, or between vendor and customer computers through electronic data interchange (EDI). Also called e-commerce.

**embedded** adj. In software, pertaining to code or a command that is built into its carrier. For example, application programs insert embedded printing commands into a document to control printing and formatting. Low-level assembly language is embedded in higher-level languages, such as C, to provide more capabilities or better efficiency.

**end user** n. The ultimate user of a computer or computer application in its finished, marketable form.

**End-User License Agreement** n. A legal agreement between a software manufacturer and the software's purchaser with regard to terms of distribution, resale, and restricted use. Acronym: EULA.

**engine** n. A processor or portion of a program that determines how the program manages and manipulates data. The term engine is most often used in relation to a specific program; for example, a database engine contains the tools for manipulating a database.

**enterprise computing** n. In a large enterprise such as a corporation, the use of computers in a network or series of interconnected networks that generally encompass a variety of different platforms, operating systems, protocols, and network architectures. Also called enterprise networking.

**event-driven processing** n. A program feature belonging to more advanced operating-system architectures such as the Apple Macintosh operating system, Microsoft Windows, UNIX, and OS/2. In times past, programs were required to interrogate, and effectively anticipate, every device that was expected to interact with the program, such as the keyboard, mouse, printer, disk drive, and serial port. Often, unless sophisticated programming techniques were used, one of two events happening at the same instant would be lost. Event processing solves this problem through the creation and maintenance of an event queue. Most common events that occur are appended to the event queue for the program to process in turn; however, certain types of events can preempt others if they have a higher priority.

An event can be of several types, depending on the specific operating system considered: pressing a mouse button or keyboard key, inserting a disk, clicking on a window, or receiving information from a device driver (as for managing the transfer of data from the serial port or from a network connection).

**executable program** n. A program that can be run. The term usually applies to a compiled program translated into machine code in a format that can be loaded into memory and run by a computer's processor. In interpreter languages, an executable program can be source code in the proper format.

**expert system** n. An application program that makes decisions or solves problems in a particular field, such as finance or medicine, by using knowledge and analytical rules defined by experts in the field. It uses two components, a knowledge base and an inference engine, to form conclusions. Additional tools include user interfaces and explanation facilities, which enable the system to justify or explain its conclusions as well as allowing developers to run checks on the operating system.

**extranet** n. An extension of a corporate intranet using World Wide Web technology to facilitate communication with the corporation's suppliers and customers. An extranet allows customers and suppliers to gain limited access to a company's intranet in order to enhance the speed and efficiency of their business relationship. See also intranet.

**feasibility study** n. An evaluation of a prospective project for the purpose of determining whether or not the project should be undertaken. Feasibility studies normally consider the time, budget, and technology required for completion and are generally used in computing departments in large organizations.

**firewall** n. A security system intended to protect an organization's network against external threats, such as hackers, coming from another network, such as the Internet. A firewall prevents computers in the organization's network from communicating directly with computers external to the network and vice versa. Instead, all communication is routed through a proxy server outside of the organization's network, and the proxy server decides whether it is safe to let a particular message or file pass through to the organization's network.

**firmware** n. Software routines stored in read-only memory (ROM). Unlike random access memory (RAM), read-only memory stays intact even in the absence of electrical power. Startup routines and low-level input/output instructions are stored in firmware. It falls between software and hardware in terms of ease of modification.

**flowchart** n. A graphic map of the path of control or data through the operations in a program or an information-handling system. Symbols such as squares, diamonds, and ovals represent various operations. These symbols are connected by lines and arrows to indicate the flow of data or control from one point to another. Flowcharts are used both as aids in showing the way a proposed program will work and as a means of understanding the operations of an existing program.

**free software** n. Software, complete with source code, that is distributed freely to users who are in turn free to use, modify, and distribute it, provided that all alterations are clearly marked and that the name and copyright notice of the original

author are not deleted or modified in any way. Unlike freeware, which a user might or might not have permission to modify, free software is protected by a license agreement. Free software is a concept pioneered by the Free Software Foundation in Cambridge, Massachusetts. Compare freeware, public-domain software, shareware.

**freeware** n. A computer program given away free of charge and often made available on the Internet or through user groups. An independent program developer might offer a product as freeware either for personal satisfaction or to assess its reception among interested users. Freeware developers often retain all rights to their software, and users are not necessarily free to copy or distribute it further.

**Gantt chart** n. A bar chart that shows individual parts of a project as bars against a horizontal time scale. Gantt charts are used as a project-planning tool for developing schedules. Most project-planning software can produce Gantt charts.

**graphical user interface** n. A type of environment that represents programs, files, and options by means of icons, menus, and dialog boxes on the screen. The user can select and activate these options by pointing and clicking with a mouse or, often, with the keyboard. A particular item (such as a scroll bar) works the same way to the user in all applications, because the graphical user interface provides standard software routines to handle these elements and report the user's actions (such as a mouse click on a particular icon or at a particular location in text, or a key press); applications call these routines with specific parameters rather than attempting to reproduce them from scratch. Acronym: GUI.

**groupware** n. Software intended to enable a group of users on a network to collaborate on a particular project. Groupware may provide services for communication (such as e-mail), collaborative document development, scheduling, and tracking. Documents may include text, images, or other forms of information.

**guru** n. A technical expert who is available to help solve problems and to answer questions in an intelligible way.

**handler** n. 1. A routine that manages a common and relatively simple condition or operation, such as error recovery or data movement. 2. In some object-oriented programming languages that support messages, a subroutine that processes a particular message for a particular class of objects.

**handshake** n. A series of signals acknowledging that communication or the transfer of information can take place between computers or other devices. A hardware handshake is an exchange of signals over specific wires (other than the data wires), in which each device indicates its readiness to send or receive data. A software handshake consists of signals transmitted over the same wires used to transfer data, as in modem-to-modem communications over telephone lines.

**hard-coded** adj. 1. Designed to handle a specific situation only. 2. Depending on values embedded in the program code rather than on values that can be input and changed by the user.

**hardware** n. The physical components of a computer system, including any peripheral equipment such as printers, modems, and mouse devices. Compare firmware, software.



**hardware-dependent** adj. Of or pertaining to programs, languages, or computer components and devices that are tied to a particular computer system or configuration. Assembly language, for example, is hardware-dependent because it is created for and works only with a particular make or model of microprocessor.

**hardwired** adj. 1. Built into a system using hardware such as logic circuits, rather than accomplished through programming. 2. Physically connected to a system or a network, as by means of a network connector board and cable.

**heuristic** n. An approach or algorithm that leads to a correct solution of a programming task by nonrigorous or self-learning means. One approach to programming is first to develop a heuristic and then to improve on it. The term comes from Greek *heuriskein* (“to discover, find out”) and is related to “eureka” (“I have found it”).

**hierarchical database** n. A database in which records are grouped in such a way that their relationships form a branching, treelike structure. This type of database structure, most commonly used with databases for large computers, is well suited for organizing information that breaks down logically into successively greater levels of detail. The organization of records in a hierarchical database should reflect the most common or the most time-critical types of access expected. Acronym: HDF.

**high-level language** n. A computer language that provides a level of abstraction from the underlying machine language. Statements in a high-level language generally use keywords similar to English and translate into more than one machine-language instruction. In practice, every computer language above assembly language is a high-level language. Also called high-order language.

**independent content provider** n. A business or organization that supplies information to an online information service, such as America Online, for resale to the information service’s customers.

**independent software vendor** n. A third-party software developer; an individual or an organization that independently creates computer software. Acronym: ISV.

**infinite loop** n. 1. A loop that, because of semantic or logic errors, can never terminate through normal means. 2. A loop that is intentionally written with no explicit termination condition but will terminate as a result of side effects or direct intervention.

**input/output** n. The complementary tasks of gathering data for a computer or a program to work with, and of making the results of the computer’s activities available to the user or to other computer processes. Gathering data is usually done with input devices such as the keyboard and the mouse, as well as disk files, while the output is usually made available to the user via the display and the printer and via disk files or communications ports for the computer. Acronym: I/O.

**instruction set** n. The set of machine instructions that a processor recognizes and can execute.

**integrated software** n. A program that combines several applications, such as word processing, database management, and spreadsheets, in a single package. Such software is “integrated” in two ways: it can transfer data from one of its applications to another, helping users coordinate tasks and merge information created with the different software tools; and it provides the user with a consistent interface for

choosing commands, managing files, and otherwise interacting with the programs so that the user will not have to master several, often very different, programs. The applications in an integrated software package are often not, however, designed to offer as much capability as single applications, nor does integrated software necessarily include all the applications needed in a particular environment.

**interface** n. 1. The point at which a connection is made between two elements so that they can work with each other. 2. Software that enables a program to work with the user (the user interface, which can be a command-line interface, menu-driven, or a graphical user interface), with another program such as the operating system, or with the computer's hardware. 3. A card, plug, or other device that connects pieces of hardware with the computer so that information can be moved from place to place. For example, standardized interfaces such as RS-232-C standard and SCSI enable communications between computers and printers or disks. See also RS-232-C standard, SCSI. 4. A networking or communications standard, such as the ISO/OSI model, that defines ways for different systems to connect and communicate.

**intermediate language** n. A computer language used as an intermediate step between the original source language, usually a high-level language, and the target language, usually machine code. Some high-level compilers use assembly language as an intermediate language.

**Internet** n. The worldwide collection of networks and gateways that use the TCP/IP suite of protocols to communicate with one another. At the heart of the Internet is a backbone of high-speed data communication lines between major nodes or host computers, consisting of thousands of commercial, government, educational, and other computer systems, that route data and messages. One or more Internet nodes can go offline without endangering the Internet as a whole or causing communications on the Internet to stop, because no single computer or network controls it. The genesis of the Internet was a decentralized network called ARPANET created by the Department of Defense in 1969 to facilitate communications in the event of a nuclear attack. Eventually other networks, including BITNET, Usenet, UUCP, and NSFnet, were connected to ARPANET. Currently, the Internet offers a range of services to users, such as FTP, E-mail, the World Wide Web, Usenet news, Gopher, IRC, telnet, and others. Also called Net. See also World Wide Web.

**InterNIC** n. Short for NSFnet (Internet) Network Information Center. The organization that is charged with registering domain names and IP addresses as well as distributing information about the Internet. InterNIC was formed in 1993 as a consortium involving the U.S. National Science Foundation, AT&T, General Atomics, and Network Solutions Inc. (Herndon, Va.). The latter partner administers InterNIC Registration Services, which assigns Internet names and addresses. InterNIC can be reached by E-mail at [info@internic.net](mailto:info@internic.net) or on the Web at <http://www.internic.net/>.

**interoperability** n. Referring to components of computer systems that are able to function in different environments. For example, Microsoft's NT operating system is interoperable on Intel, DEC Alpha, and other CPUs. Another example is the SCSI

standard for disk drives and other peripheral devices that allows them to interoperate with different operating systems. With software, interoperability occurs when programs are able to share data and resources. Microsoft Word, for example, is able to read files created by Microsoft Excel.

**interpreted language** n. A language in which programs are translated into executable form and executed one statement at a time rather than being translated completely (compiled) before execution. BASIC, LISP, and APL are generally interpreted languages, although BASIC can also be compiled.

**Intranet** n. A network designed for information processing within a company or organization. Its uses include such services as document distribution, software distribution, access to databases, and training. An Intranet is so called because it usually employs applications associated with the Internet, such as Web pages, Web browsers, FTP sites, E-mail, newsgroups, and mailing lists, accessible only to those within the organization.

**intraware** n. Groupware or middleware for use on a company's private Intranet. Intraware packages typically contain E-mail, database, workflow, and browser applications.

**IP** n. Acronym for Internet Protocol. The protocol within TCP/IP that governs the breakup of data messages into packets, the routing of the packets from sender to destination network and station, and the reassembly of the packets into the original data messages at the destination. IP corresponds to the network layer in the ISO/OSI model.

**ISDN** n. Acronym for Integrated Services Digital Network. A worldwide digital communications network evolving from existing telephone services. The goal of ISDN is to replace the current telephone network, which requires digital-to-analog conversions, with facilities totally devoted to digital switching and transmission, yet advanced enough to replace traditionally analog forms of data, ranging from voice to computer transmissions, music, and video. ISDN is built on two main types of communications channels: a B channel, which carries data at a rate of 64 Kbps (kilobits per second), and a D channel, which carries control information at either 16 or 64 Kbps. Computers and other devices connect to ISDN lines through simple, standardized interfaces. When fully implemented (possibly around the turn of the century), ISDN is expected to provide users with faster, more extensive communications services.

**ISO** n. Short for International Organization for Standardization (often incorrectly identified as an acronym for International Standards Organization), an international association of countries of which each is represented by its leading standard-setting organization—for example, ANSI (American National Standards Institute) for the United States. The ISO works to establish global standards for communications and information exchange. Primary among its accomplishments is the widely accepted ISO/OSI model, which defines standards for the interaction of computers connected by communications networks. ISO is not an acronym; rather, it is derived from the Greek word *isos*, which means “equal” and is the root of the prefix “iso-.”

- Java** n. An object-oriented programming language, developed by Sun Microsystems, Inc. Similar to C++, Java is smaller, more portable, and easier to use than C++ because it is more robust and it manages memory on its own. Java was also designed to be secure and platform-neutral (meaning that it can be run on any platform) due to the fact that Java programs are compiled into bytecodes, which are similar to machine code and are not specific to any platform. This makes it a useful language for programming Web applications, since users access the Web from many types of computers. Currently, the most widespread use of Java is in programming small applications, or applets, for the World Wide Web.
- job** n. A specified amount of processing performed as a unit by a computer. On early mainframe computers, data was submitted in batches, often on punched cards, for processing by different programs; work was therefore scheduled and carried out in separate jobs, or operations.
- kernel** n. The core of an operating system—the portion of the system that manages memory, files, and peripheral devices; maintains the time and date; launches applications; and allocates system resources.
- LAN** n. Acronym for local area network. A group of computers and other devices dispersed over a relatively limited area and connected by a communications link that enable any device to interact with any other on the network. LANs commonly include microcomputers and shared resources such as laser printers and large hard disks. The devices on a LAN are known as nodes, and the nodes are connected by cables through which messages are transmitted.
- layer** n. The protocol or protocols operating at a particular level within a protocol suite, such as IP within the TCP/IP suite. Each layer is responsible for providing specific services or functions for computers exchanging information over a communications network, such as the layers outlined in the ISO/OSI model, and information is passed from one layer to the next. Although different suites have varying numbers of levels, generally the highest layer deals with software interactions at the application level, and the lowest governs hardware-level connections between different machines.
- layered interface** n. In programming, one or more levels of routines lying between an application and the computing hardware and separating activities according to the type of task the activities are designed to carry out. Ultimately, such an interface makes it easier to adapt a program to different types of equipment.
- legacy** adj. Of or pertaining to documents or data that existed prior to a certain time. The designation refers particularly to a change in process or technique that requires translating old data files to a new system.
- library** n. 1. In programming, a collection of routines stores in a file. Each set of instructions in a library has a name, and each performs a different task. 2. A collection of software or data files.
- license agreement** n. A legal contract between a software provider and a user specifying the rights of the user regarding the software. Usually the license agreement is in effect with retail software once the user opens the software package.

**line** n. 1. Any wire or wires, such as power lines and telephone lines, used to transmit electrical power or signals. 2. In communications, a connection, usually a physical wire or other cable, between sending and receiving (or calling and called) devices, including telephones, computers, and terminals. 3. In word processing, a string of characters displayed or printed in a single horizontal row. 4. In programming, a statement (instruction) that occupies one line of the program. In this context, the common reference is to a “program line” or a “line of code.”

**logic** n. In programming, the assertions, assumptions, and operations that define what a given program does. Defining the logic of a program is often the first step in developing the program’s source code.

**low-level language** n. A language that is machine-dependent or that offers few control instructions and data types. Each statement in a program written in a low-level language usually corresponds to one machine instruction. See also assembly language. Compare high-level language.

**machine code** n. The ultimate result of the compilation of assembly language or any high-level language such as C or Pascal: sequences of 1s and 0s that are loaded and executed by a microprocessor. Machine code is the only language computers understand; all other programming languages represent ways of structuring human language so that humans can get computers to perform specific tasks. Also called machine language.

**machine-dependent** adj. Of, pertaining to, or being a program or a piece of hardware that is linked to a particular type of computer because it makes use of specific or unique features of the equipment and that cannot easily be used with another computer, if at all. Compare machine-independent.

**machine-independent** adj. Of, pertaining to, or being a program or piece of hardware that can be used on more than one type of computer with little or no modification. Compare machine-dependent.

**macro** n. 1. In applications, a set of keystrokes and instructions recorded and saved under a short key code or macro name. When the key code is typed or the macro name is used, the program carries out the instructions of the macro. Users can create a macro to save time by replacing an often-used, sometimes lengthy, series of strokes with a shorter version. 2. In programming languages, such as C or assembly language, a name that defines a set of instructions that are substituted for the macro name wherever the name appears in a program (a process called macro expansion) when the program is compiled or assembled. Macros are similar to functions in that they can take arguments and in that they are calls to lengthier sets of instructions. Unlike functions, macros are replaced by the actual instructions they represent when the program is prepared for execution; function instructions are copied into a program only once.

**mainframe computer** n. A high-level computer designed for the most intensive computational tasks. Mainframe computers are often shared by multiple users connected to the computer by terminals.

**manager** n. Any program that is designed to perform a certain set of housekeeping tasks related to computer operation, such as the maintenance of files. On the Apple

Macintosh, Manager (with a capital M) is used in the names of various separate portions of the computer's operating system that handle input, output, and internal functions (e.g., File Manager and Memory Manager).

**man-machine interface** n. The set of commands, displays, controls, and hardware devices enabling the human user and the computer system to exchange information. See also user interface.

**markup language** n. A set of codes in a text file that instruct a computer how to format it on a printer or video display or how to index and link its contents. Examples of markup languages are Hypertext Markup Language (HTML), which is used in Web pages, and Standard Generalized Markup Language (SGML), which is used for typesetting and desktop publishing purposes and in electronic documents. Markup languages of this sort are designed to enable documents and other files to be platform-independent and highly portable between applications.

**massively parallel processing** n. A computer architecture in which each of a large number of processors has its own RAM, which contains a copy of the operating system, a copy of the application code, and its own part of the data, on which that processor works independently of the others. Compare SMP. Acronym: MPP.

**master/slave arrangement** n. A system in which one device, called the master, controls another device, called the slave. For example, a computer can control devices connected to it.

**MBPS** n. Acronym for megabits per second. One million bits per second.

**memory management program** n. 1. A program used to store data and programs in system memory, monitor their use, and reassign the freed space following their execution. 2. A program that uses hard disk space as an extension of the random access memory (RAM).

**message** n. 1. In communications, a unit of information transmitted electronically from one device to another. A message can contain one or more blocks of text as well as beginning and ending characters, control characters, a software-generated header (destination address, type of message, and other such information), and error-checking or synchronizing information. A message can be routed directly from sender to receiver through a physical link, or it can be passed, either whole or in parts, through a switching system that routes it from one intermediate station to another. 2. In software, a piece of information passed from the application or operating system to the user to suggest an action, indicate a condition, or inform that an event has occurred. 3. In message-based operating environments, such as Microsoft Windows, a unit of information passed among running programs, certain devices in the system, and the operating environment itself.

**microcode** n. Very low-level code that defines how a processor operates. Microcode is even lower in level than machine code; it specifies what the processor does when it executes a machine-code instruction.

**microprogramming** n. The writing of microcode for a processor. Some systems, chiefly minicomputers and mainframes, allow modification of microcode for an installed processor.

**middleware** n. 1. Software that sits between two or more types of software and translates information between them. Middleware can cover a broad spectrum of software and generally sits between an application and an operating system, a network operating system, or a database management system. Examples of middleware include CORBA and other object broker programs and network control programs. 2. Software that provides a common application programming interface (API). Applications written using that API will run in the same computer systems as the middleware. An example of this type of middleware is ODBC, which has a common API for many types of databases. 3. Software development tools that enable users to create simple programs by selecting existing services and linking them with a scripting language.

**minicomputer** n. A mid-level computer built to perform complex computations while dealing efficiently with a high level of input and output from users connected via terminals. Minicomputers also frequently connect to other minicomputers on a network and distribute processing among all the attached machines. Minicomputers are used heavily in transaction-processing applications and as interfaces between mainframe computer systems and wide area networks. See also mainframe computer, supercomputer.

**MIPS** n. Acronym for millions of instructions per second. A common measure of processor speed.

**model** n. A mathematical or graphical representation of a real-world situation or object—for example, a mathematical model of the distribution of matter in the universe, a spreadsheet (numeric) model of business operations, or a graphical model of a molecule. Models can generally be changed or manipulated so that their creators can see how the real version might be affected by modifications or varying conditions.

**modeling** n. 1. The use of computers to describe the behavior of a system. Spreadsheet programs, for example, can be used to manipulate financial data representing the health and activity of a company, to develop business plans and projections or to evaluate the impact of proposed changes on the company's operations and financial status. 2. The use of computers to describe physical objects and the spatial relationships among them mathematically. CAD programs, for example, are used to create on-screen representations of such physical objects as tools, office buildings, complex molecules, and automobiles. These models use equations to create lines, curves, and other shapes and to place those shapes accurately in relation to each other and to the two-dimensional or three-dimensional space in which they are drawn.

**modular design** n. An approach to designing hardware or software. In modular design, a project is broken into smaller units, or modules, each of which can be developed, tested, and finished independently before being combined with the others in the final product. Each unit is designed to perform a particular task or function and can thus become part of a library of modules that can often be reused in other products having similar requirements. In programming, for example, one module might consist of instructions for moving the cursor in a window on the

screen. Because it is deliberately designed as a stand-alone unit that can work with other sections of the program, the same module might be able to perform the same task in another program as well, thus saving time in development and testing.

**module** n. 1. In programming, a collection of routines and data structures that performs as particular task or implements a particular abstract data type. Modules usually consist of two parts: an interface, which lists the constants, data types, variables, and routines that can be accessed by other modules or routines, and an implementation, which is private (accessible only to the module) and which contains the source code that actually implements the routines in the module. 2. In hardware, a self-contained component that can provide a complete function to a system and can be interchanged with other modules that provide similar functions.

**multiprocessing** n. A mode of operation in which two or more connected and roughly equal processing units each carry out one or more processes (programs or sets of instructions) in tandem. In multiprocessing, each processing unit works on a different set of instructions) in tandem. In multiprocessing, each processing unit works on a different set of instructions or on different parts of the same process. The objective is increased speed or computing power, the same as in parallel processing and in the use of special units called coprocessors.

**multitasking** n. A mode of operation offered by an operating system in which a computer works on more than one task at a time.

**native** adj. Of, pertaining to, or characteristic of something that is in its original form. For example, many applications are able to work with files in a number of formats; the format the application uses internally is its native file format. Files in other formats must be converted to the application's native format before they can be processed by the application.

**natural language** n. A language spoken or written by humans, as opposed to a programming language or a machine language. Understanding natural language and approximating it in a computer environment is one goal of research in artificial intelligence.

**nest** vb. To embed one construct inside another. For example, a database may contain a nested table (a table within a table), a program may contain a nested procedure (a procedure declared within a procedure), and a data structure may include a nested record (a record containing a field that is itself a record).

**network** n. A group of computers and associated devices that are connected by communications facilities. A network can involve permanent connections, such as cables, or temporary connections made through telephone or other communication links. A network can be as small as a local area network consisting of a few computers, printers, and other devices, or it can consist of many small and large computers distributed over a vast geographic area.

**network architecture** n. The underlying structure of a computer network, including hardware, functional layers, interfaces, and protocols, used to establish communication and ensure the reliable transfer of information. Network architectures are designed to provide both philosophical and physical standards for the complexities of establishing communications links and transferring information without conflict.



Various network architectures exist, including the internationally accepted seven-layer ISO Open Systems Interconnection (OSI) model and IBM's Systems Network Architecture (SNA).

**network operating system** n. An operating system installed on a server in a local area network that coordinates the activities of providing services to the computers and other devices attached to the network. Unlike a single-user operating system, a network operating system must acknowledge and respond to requests from many workstations, managing such details as network access and communications, resource allocation and sharing, data protection, and error control.

**notation** n. In programming, the set of symbols and formats used to describe the elements of programming, mathematics, or a scientific field. A language's syntax is defined in part by notation.

**number crunching** vb. The calculation of large amounts of numeric data. Number crunching can be repetitive, mathematically complex, or both, and it generally involves far more internal processing than input or output functions. Numeric coprocessors greatly enhance the ability of computers to perform these tasks.

**object** n. 1. Short for object code (machine-readable code). 2. In object-oriented programming, a variable comprising both routines and data that is treated as a discrete entity. 3. In graphics, a distinct entity. For example, a bouncing ball might be an object in a graphics program.

**object code** n. The code, generated by a compiler or an assembler, that was translated from the source code of a program. The term most commonly refers to machine code that can be directly executed by the system's central processing unit (CPU), but it can also be assembly language source code or a variation of machine code.

**object-oriented design** n. A modular approach to creating a software product or computer system, in which the modules (objects) can be easily and affordably adapted to meet new needs. Object-oriented design generally comes after object-oriented analysis of the product or system and before any actual programming.

**object-oriented programming** n. A programming paradigm in which a program is viewed as a collection of discrete objects that are self-contained collections of data structures and routines that interact with other objects. Acronym: OOP.

**off-the-shelf** adj. Ready-to-use; packaged. The term can refer to hardware or software.

**open architecture** n. 1. Any computer or peripheral design that has published specifications. A published specification lets third parties develop add-on hardware for a computer or device. 2. A design that provides for expansion slots on the motherboard, thereby allowing the addition of boards to enhance or customize a system.

**operation system** n. The software that controls the allocation and usage of hardware resources such as memory, central processing unit (CPU) time, disk space, and peripheral devices. The operating system is the foundation on which applications are built. Popular operating systems include Windows 95, Windows NT, Mac OS, and UNIX. Also called executive. Acronym: OS.

**operation** n. 1. A specific action carried out by a computer in the process of executing a program. 2. In mathematics, an action performed on a set of entities that

produces a new entity. Examples of mathematical operations are addition and subtraction.

**original equipment manufacturer** n. The maker of a piece of equipment. In making computers and related equipment, manufacturers of original equipment typically purchase components from other manufacturers of original equipment, integrate them into their own products, and then sell the products to the public. Compare value-added reseller. Acronym: OEM.

**outsourcing** n. The assignment of tasks to independent contractors, such as individual consultants or service bureaus. Tasks such as data entry and programming are often performed via outsourcing.

**packaged software** n. A software program sold through a retail distributor, as opposed to custom software.

**paging** n. A technique for implementing virtual memory. The virtual address space is divided into a number of fixed-size blocks called pages, each of which can be mapped onto any of the physical addresses available on the system. Special memory management hardware (MMU or PMMU) performs the address translation from virtual addresses to physical addresses.

**paradigm** n. An archetypical example or pattern that provides a model for a process or system.

**parallel** n. A method of processing that can run only on a computer that contains two or more processors running simultaneously. Parallel processing differs from multiprocessing in the way a task is distributed over the available processors. In multiprocessing, a process might be divided up into sequential blocks, with one processor managing access to a database, another analyzing the data, and a third handling graphical output to the screen. Programmers working with systems that perform parallel processing must find ways to divide a task so that it is more or less evenly distributed among the processors available.

**parallel** adj. 1. Of or relating to electronic circuits in which the corresponding terminals of two or more components are connected. 2. In geometry and graphics, of, relating to, or being lines that run side by side in the same direction in the same plane without intersecting. 3. In data communications, of, relating to, or being information that is sent in groups of bits over multiple wires, one wire for each bit in a group. 4. In data handling, of or relating to handling more than one event at a time, with each event having its own portion of the system's resources. See also parallel computing.

**parallel computing** n. The use of multiple computers or processors to solve a problem or perform a function.

**parse** vb. To break input into smaller chunks so that a program can act upon the information.

**patch** n. A piece of object code that is inserted in an executable program as a temporary fix of a bug.

**patch** vb. In programming, to repair a deficiency in the functionality of an existing routine or program, generally in response to an unforeseen need or set of operating circumstances. Patching is a common means of adding a feature or a function to a program until the next version of the software is released.

**peer-to-peer architecture** n. A network of two or more computers that use the same program or type of program to communicate and share data. Each computer, or peer, is considered equal in terms of responsibilities and each acts as a server to the others in the network. Unlike a client/server architecture, a dedicated file server is not required. However, network performance is generally not as good as under client/server, especially under heavy loads. Also called peer-to-peer network.

**pipe** n. 1. A portion of memory that can be used by one process to pass information along to another. Essentially, a pipe works like its namesake: it connects two processes so that the output of one can be used as the input to the other. See also input stream, output stream. 2. The vertical line character (|) that appears on a PC keyboard as the shift character on the backslash (\) key. 3. In UNIX, a command function that transfers the output of one command to the input of a second command.

**pipeline processing** n. A method of processing on a computer that allows fast parallel processing of data. This is accomplished by overlapping operations using a pipe, or a portion of memory that passes information from one process to another.

**pipelining** n. 1. A method of fetching and decoding instructions (preprocessing) in which at any given time, several program instructions are in various stages of being fetched or decoded. Ideally, pipelining speeds execution time by ensuring that the microprocessor does not have to wait for instructions; when it completes execution of one instruction, the next is ready and waiting. 2. In parallel processing, a method in which instructions are passed from one processing unit to another, as on an assembly line, and each unit is specialized for performing a particular type of operation. 3. The use of pipes in passing the output of one task as input to another until a desired sequence of tasks has been carried out.

**piracy** n. 1. The theft of a computer design or program. 2. Unauthorized distribution and use of a computer program.

**pixel** n. Short for picture (pix) element. One spot in a rectilinear grid of thousands of such spots that are individually “painted” to form an image produced on the screen by a computer or on paper by a printer. A pixel is the smallest element that display or print hardware and software can manipulate in creating letters, numbers, or graphics. Also called pel.

**port** vb. 1. To change a program in order to be able to run it on a different computer. 2. To move documents, graphics, and other files from one computer to another.

**portable language** n. A language that runs in the same way on different systems and therefore can be used for developing software for all of them. C, FORTRAN, and Ada are portable languages because their implementations on different systems are highly uniform; assembly language is extremely nonportable.

**primitive** n. 1. In computer graphics, a shape, such as a line, circle, curve, or polygon, that can be drawn, stored, and manipulated as a discrete entity by a graphics program. A primitive is one of the elements from which a large graphic design is created. 2. In programming, a fundamental element in a language that can be used to create larger procedures that do the work a programmer wants to do.

**procedural language** n. A programming language in which the basic programming element is the procedure (a named sequence of statements, such as a routine, sub-routine, or function). The most widely used high-level languages (C, Pascal, Basic, FORTRAN, COBOL, Ada) are all procedural languages. See also procedure.

**procedure** n. In a program, a named sequence of statements, often with associated constants, data types, and variables, which usually performs a single task. A procedure can usually be called (executed) by other procedures, as well as by the main body of the program. Some languages distinguish between a procedure and a function, with the latter returning a value. See also procedural language.

**program** n. A sequence of instructions that can be executed by a computer. The term can refer to the original source code or to the executable (machine language) version. Also called software.

**program creation** n. The process of producing an executable file. Traditionally, program creation comprises three steps: (1) compiling the high-level source code into assembly language source code; (2) assembling the assembly language source code into machine-code object files; and (3) linking the machine-code object files with various data files, run-time files, and library files into an executable file. Some compilers go directly from high-level source to machine-code object, and some integrated development environments compress all three steps into a single command.

**program file** n. A disk file that contains the executable portion(s) of a computer program. Depending on its size and complexity, an application or other program, such as an operating system, can be stored in several different files, each containing the instructions necessary for some part of the program's overall functioning.

**programmer** n. 1. An individual who writes and debugs computer programs. Depending on the size of the project and the work environment, a programmer might work alone or as part of a team, be involved in part or all of the process from design through completion, or write all or a portion of the program. See also program. 2. In hardware, a device used to program read-only memory chips.

**programming** n. The art and science of creating computer programs. Programming begins with knowledge of one or more programming languages, such as Basic, C, Pascal, or assembly language. Knowledge of a language alone does not make a good program. Much more can be involved, such as expertise in the theory of algorithms, user interface design, and characteristics of hardware devices. Computers are rigorously logical machines, and programming requires a similarly logical approach to designing, writing (coding), testing, and debugging a program. Low-level languages, such as assembly language, also require familiarity with the capabilities of a microprocessor and the basic instructions built into it. In the modular approach advocated by many programmers, a project is broken into smaller, more manageable modules—stand-alone functional units that can be designed, written, tested, and debugged separately before being incorporated into the larger program.

**proprietary** adj. Of, pertaining to, or characteristic of something that is privately owned. Generally, the term refers to technology that has been developed by a

particular corporation or entity, with specifications that are considered by the owner to be trade secrets. Proprietary technology may be legally used only by a person or entity purchasing an explicit license. Also, other companies are unable to duplicate the technology, both legally and because its specifications have not been divulged by the owner.

**proprietary software** n. A program owned or copyrighted by an individual or a business and available for use only through purchase or by permission of the owner. Compare public-domain software.

**prototyping** n. The creation of a working model of a new computer system or program for testing and refinement. Prototyping is used in the development of both new hardware and software systems and new systems of information management. Tools used in the former include both hardware and support software; tools used in the latter can include databases, screen mockups, and simulations that, in some cases, can be developed into a final product.

**public domain** n. The set of all creative works, such as books, music, or software, that are not covered by copyright or other property protection. Works in the public domain can be freely copied, modified, and otherwise used in any manner for any purpose. Much of the information, texts, and software on the Internet is in the public domain, but putting a copyrighted work on the Internet does not put it in the public domain. Compare proprietary.

**public-domain software** n. A program donated for public use by its owner or developer and freely available for copying and distribution. Compare free software, freeware, proprietary software, shareware.

**quality assurance** n. A system of procedures carried out to ensure that a product or a system adheres or conforms to established standards. Also called quality control.

**query language** n. A subset of the data manipulation language; specifically, that portion relating to the retrieval and display of data from a database. It is sometimes used loosely to refer to the entire data manipulation language.

**RAID** n. Acronym for redundant array of independent disks (formerly redundant array of inexpensive disks). A data storage method in which data, along with information used for error correction, such as parity bits or Hamming codes, is distributed among two or more hard disk drives in order to improve performance and reliability. The hard disk array is governed by array management software and a disk controller, which handles the error correction. RAID is generally used on network servers. Several defined levels of RAID offer differing trade-offs among access speed, reliability, and cost.

**real-time** adj. Of or relating to a time frame imposed by external constraints. Real-time operations are those in which the machine's activities match the human perception of time or those in which computer operations proceed at the same rate as a physical or external process. Real-time operations are characteristic of transaction-processing systems, aircraft guidance systems, scientific applications, and other areas in which a computer must respond to situations as they occur (for example, animating a graphic in a flight simulator or making corrections based on measurements).

**reengineering** vb. 1. With regard to software, changing existing software to strengthen desirable characteristics and remove weaknesses. 2. With regard to corporate management, using information technology principles to address the challenges posed by a global economy and to consolidate management of a rapidly expanding work force.

**relational database** n. A database or database management system that stores information in tables—rows and columns of data—and conducts searches by using data in specified columns of one table to find additional data in another table. In a relational database, the rows of a table represent records (collections of information about separate items) and the columns represent fields (particular attributes of a record). In conducting searches, a relational database matches information from a field in one table with information in a corresponding field of another table to produce a third table that combines requested data from both tables. For example, if one table contains the fields EMPLOYEE-ID, LAST-NAME, FIRST-NAME, and HIRE-DATE, and another contains the fields DEPT, EMPLOYEE-ID, and SALARY, a relational database can match the EMPLOYEE-ID fields in the two tables to find such information as the names of all employees earning a certain salary or the departments of all employees hired after a certain date. In other words, a relational database uses matching values in two tables to relate information in one to information in the other. Microcomputer database products typically are relational databases.

**resource** n. 1. Any part of a computer system or a network, such as a disk drive, printer, or memory, that can be allotted to a program or a process while it is running. 2. An item of data or code that can be used by more than one program or in more than one place in a program, such as a dialog box, a sound effect, or a font in a windowing environment. Many features in a program can be altered by adding or replacing resources without the necessity of recompiling the program from source code. Resources can also be copied and pasted from one program into another, typically by a specialized utility program called a resource editor.

**reverse engineering** n. A method of analyzing a product in which the finished item is studied to determine its makeup or component parts, typically for the purpose of creating a copy or a competitive product—for example, studying a completed ROM chip to determine its programming or studying a new computer system to learn about its design.

**RISC** n. Acronym for reduced instruction set computing. A microprocessor design that focuses on rapid and efficient processing of a relatively small set of simple instructions that comprises most of the instructions a computer decodes and executes. RISC architecture optimizes each of these instructions so that it can be carried out very rapidly—usually within a single clock cycle. RISC chips thus execute simple instructions more quickly than general-purpose CISC (complex instruction set computing) microprocessors, which are designed to handle a much wider array of instructions. They are, however, slower than CISC chips at executing complex instructions, which must be broken down into many machine instructions that RISC microprocessors can perform. Families of RISC chips include Sun Microsystems'

SPARC, Motorola's 88000, Intel's i860, and the PowerPC developed by Apple, IBM, and Motorola.

**run-time version** n. 1. Program code that is ready to be executed. Generally, this code has been compiled and can operate without error under most user command sequences and over most ranges of data sets. 2. A special release that provides the computer user with some, but not all, of the capabilities available in the full-fledged software package.

**scalable** adj. Of or relating to the characteristic of a piece of hardware or software that makes it possible for it to expand to meet future needs. For example, a scalable network allows the network administrator to add many additional nodes without the need to redesign the basic system.

**search engine** n. 1. A program that searches for keywords in documents or in a database. 2. On the Internet, a program that searches for keywords in files and documents found on the World Wide Web, newsgroups, Gopher menus, and FTP archives. Some search engines are used for a single Internet site, such as a dedicated search engine for a Web site. Others search across many sites, using such agents as spiders to gather lists of available files and documents and store these lists in databases that users can search by keyword. Examples of the latter type of search engine are Lycos, AliWeb, and Excite. Most search engines reside on a server.

**secure wide area network** n. A set of computers that communicate over a public network, such as the Internet, but use security measures, such as encryption, authentication, and authorization, to prevent their communications from being intercepted and understood by unauthorized users. Acronym: S/WAN.

**sequential** n. 1. The processing of items of information in the order in which they are stored or input. 2. The execution of one instruction, routine, or task followed by the execution of the next in line.

**server** n. 1. On a local area network (LAN), a computer running administrative software that controls access to the network and its resources, such as printers and disk drives, and provides resources to computers functioning as workstations on the network. 2. On the Internet or other network, a computer or program that responds to commands from a client. For example, a file server may contain an archive of data or program files; when a client submits a request for a file, the server transfers a copy of the file to the client.

**shareware** n. Copyrighted software that is distributed on a try-before-you-buy basis. Users who want to continue using the program after the trial period are encouraged to send a payment to the program's author. Compare free software, freeware, public-domain software.

**shelfware** n. Software that has been unsold or unused for a long time, and so has remained on a retailer's or user's shelf.

**shell** n. A piece of software, usually a separate program, that provides direct communication between the user and the operating system. Examples of shells are Macintosh Finder and the MS-DOS command interface program COMMAND.COM.

**shovelware** n. A commercially sold CD-ROM containing a miscellaneous assortment of software, graphic images, text, or other data that could otherwise be obtained at little or no cost, such as freeware or shareware from the Internet and BBSs or public-domain clip art.

**simulation** n. The imitation of physical process or object by a program that causes a computer to respond mathematically to data and changing conditions as though it were the process or object itself.

**simultaneous processing** n. 1. True multiple-processor operation in which more than one task can be processed at a time. See also multiprocessing, parallel processing. 2. Loosely, concurrent operation in which more than one task is processed by dividing processor time among the tasks.

**soft patch** n. A fix or modification performed only while the code being patched is loaded into memory so that the executable or object file is not modified in any way.

**software** n. Computer programs; instructions that make hardware work. Two main types of software are system software (operating systems), which controls the workings of the computer, and applications, such as word processing programs, spreadsheets, and databases, which perform the tasks for which people use computers. Two additional categories, which are neither system nor application software but contain elements of both, are network software, which enables groups of computers to communicate, and language software, which provides programmers with the tools they need to write programs. In addition to these task-based categories, several types of software are described based on their method of distribution. These include packaged software (canned programs), sold primarily through retail outlets; freeware and public domain software, which are distributed free of charge; shareware, which is also distributed free of charge, although users are requested to pay a small registration fee for continued use of the program; and vaporware, software that is announced by a company or individuals but either never makes it to market or is very late.

**software engineering** n. The design and development of software. See also programming.

**software handshake** n. A handshake that consists of signals transmitted over the same wires used to transfer the data, as in modem-to-modem communications over telephone lines, rather than signals transmitted over special wires. See also handshake.

**software tools** n. Programs, utilities, libraries, and other aids, such as editors, compilers, and debuggers, that can be used to develop programs.

**source code** n. Human-readable program statements written in a high-level or assembly language that are not directly readable by a computer. Compare object code.

**source language** n. The programming language in which the source code for a program is written.

**specification** n. 1. A detailed description of something. 2. In relation to computer hardware, an item of information about the computer's components, capabilities, and features. 3. In relation to software, a description of the operating environment



and proposed features of a new program. 4. In information processing, a description of the data records, programs, and procedures involved in a particular task.

**statement** n. The smallest executable entity within a programming language.

**structured programming** n. Programming that produces programs with clean flow, clear design, and a degree of modularity or hierarchical structure. See also object-oriented programming.

**structured walk-through** n. 1. A meeting of programmers working on different aspects of a software development project, in which the programmers attempt to coordinate the various segments of the overall project. The goals, requirements, and components of the project are systematically reviewed in order to minimize the error rate of the software under development. 2. A method for examining a computer system, including its design and implementation, in a systematic fashion.

**subroutine** n. A common term for routine, likely to be used in reference to shorter, general, frequently called routines.

**supercomputer** n. A large, extremely fast, and expensive computer used for complex or sophisticated calculations.

**syntax** n. The grammar of a language; the rules governing the structure and content of statements.

**system** n. Any collection of component elements that work together to perform a task. Examples are a hardware system consisting of a microprocessor, its allied chips and circuitry, input and output devices, and peripheral devices; an operating system consisting of a set of programs and data files; or a database management system used to process specific kinds of information.

**T1 or T-1** n. A T-carrier that can handle 1.544 Mbps or 24 voice channels. Although originally designed by AT&T to carry voice calls, this high-bandwidth telephone line can also transmit text and images. T1 lines are commonly used by larger organizations for Internet connectivity.

**TCP/IP** n. Acronym for Transmission Control Protocol/Internet Protocol. A protocol developed by the Department of Defense for communications between computers. It is built into the UNIX system and has become the de facto standard for data transmission over networks, including the Internet.

**time-sharing** n. The use of a computer system by more than one individual at the same time. Time-sharing runs separate programs concurrently by interleaving portions of processing time allotted to each program (user).

**time slice** n. A brief period of time during which a particular task is given control of the microprocessor in a time-sharing multitasking environment.

**toolbox** n. A set of predefined (and usually precompiled) routines a programmer can use in writing a program for a particular machine, environment, or application. Also called toolkit.

**top-down design** n. A program design methodology that starts with defining program functionality at the highest level (a series of tasks) and then breaks down each task into lower-level tasks, and so on.

**top-down programming** n. An approach to programming that implements a program in top-down fashion. Typically, this is done by writing a main body with calls

to several major routines (implemented as stubs). Each routine is then coded, calling other, lower-level, routines (also done initially as stubs).

**turnkey system** n. A finished system, complete with all necessary hardware and documentation and with software installed and ready to be used.

**unbundled** adj. Not included as part of a complete hardware/software package; the term particularly applies to a product that was previously bundled, as opposed to one that has always been sold separately.

**upward-compatible** adj. Of, pertaining to, or characteristic of a computer product, especially software, designed to perform adequately with other products which are expected to become widely used in the foreseeable future. The use of standards and conventions makes upward compatibility easier to achieve.

**user interface** n. The portion of a program with which a user interacts. Types include command line interfaces, menu-driven interfaces, and graphical user interfaces. Acronym: UI.

**utility** n. A program designed to perform a particular function; the term usually refers to software that solves narrowly focused problems or those related to computer system management.

**value-added reseller** n. A company that buys hardware and software and resells it to the public with added services, such as user support. Acronym: VAR.

**vaporware** n. Software that has been announced but not released to customers. The term implies sarcastically that the product exists only in the minds of the marketing staff.

**version** n. A particular issue or release of a hardware product or software title.

**version control** n. The process of maintaining a database of all the source code and related files in a software development project to keep track of changes made during the project.

**version number** n. A number assigned by a software developer to identify a particular program at a particular stage, before and after public release. Successive public releases of a program are assigned increasingly higher numbers. Version numbers usually include decimal fractions. Major changes are usually marked by a change in the whole number, whereas for minor changes only the number after the decimal point increases.

**vertical application** n. A specialized application designed to meet the unique needs of a particular business or industry—for example, an application to keep track of billing, tips, and inventory in a restaurant.

**virtual** adj. Of or pertaining to a device, service, or sensory input that is perceived to be what it is not in actuality, usually as more “real” or concrete than it actually is.

**virtual memory** n. Memory that appears to an application to be larger and more uniform than it is. Virtual memory may be partially simulated by secondary storage such as a hard disk. Applications access memory through virtual addresses, which are translated (mapped) by special hardware and software onto physical addresses. Also called disk memory. Acronym: VM.

**virus** n. An intrusive program that infects computer files by inserting in those files copies of itself. The copies are usually executed when the file is loaded into mem-

ory, allowing them to infect still other files, and so on. Viruses often have damaging side effects—sometimes intentionally, sometimes not. For example, some viruses can destroy a computer's hard disk or take up memory space that could otherwise be used by programs.

**wetware** n. Living beings and their brains, as part of the environment that also includes hardware and software.

**workaround** n. A tactic for accomplishing a task despite a bug or other inadequacy in software or hardware, without actually fixing the underlying problem.

**World Wide Web or World-Wide Web** n. The total set of interlinked hypertext documents residing on HTTP servers all around the world. Documents on the World Wide Web, called pages or Web pages, are written in HTML (Hypertext Markup Language), identified by URLs (Uniform Resource Locators) that specify the particular machine and pathname by which a file can be accessed, and transmitted from node to node to the end user under HTTP (Hypertext Transfer Protocol). Codes, called tags, embedded in an HTML document associate particular words and images in the document with URLs so that a user can access another file, which may be halfway around the world, at the press of a key or the click of a mouse. These files may contain text (in a variety of fonts and styles), graphics images, movie files, and sounds as well as Java applets, ActiveX controls, or other small embedded software programs that execute when the user activates them by clicking on a link. A user visiting a Web page also may be able to download files from an FTP site and send messages to other users via E-mail by using links on the Web page. The World Wide Web was developed by Timothy Berners-Lee in 1989 for the European Laboratory for Particle Physics (CERN). Also called w3, W3, Web.

## CHAPTER TWO

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# The AICPA Task Force on Accounting for the Development and Sale of Computer Software

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## 2.1 INTRODUCTION

### (a) Historical Perspective

The events that led to the formation and work of the American Institute of Certified Public Accountants (AICPA) Task Force on Accounting for the Development and Sale of Computer Software can be traced back to about 1969 when International Business Machines Corporation (IBM) began unbundling, or charging separate prices for hardware and software. IBM also began charging separate prices for other computer hardware and software related services such as systems engineering and education. Until that time, computer hardware vendors generally provided their customers with software along with the hardware.

### (b) FASB Statement No. 2

The software industry was still quite young in 1974 when the Financial Accounting Standards Board (FASB) issued FASB Statement No. 2, *Accounting for Research and Development Costs*. Respondents to the exposure draft of Statement 2 raised the question of whether development of computer software was within the definition of

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The views expressed in this chapter reflect those of the individual author and do not necessarily represent those of the other contributing authors.

research and development costs contemplated in the FASB project. In paragraph 31 of the Basis for Conclusions section of Statement No. 2, the FASB held that whether certain activities should be defined as research and development had to be evaluated in terms of the guidelines of Statement No. 2, and went on to say

Efforts to develop a new or higher level of computer software capability for sale (but not under a contractual arrangement) would be a research and development activity encompassed by this Statement.

—*FASB Statement No. 2, paragraph 31*

The predominant practice of software companies after the issuance of Statement No. 2 was to expense costs of developing software products as incurred, either identifying them as research and development costs or simply expensing them because that was the common industry practice.

Questions about application of Statement No. 2 in the software industry persisted, and some objected to expensing of all software development costs. In February 1975, the FASB issued FASB Interpretation No. 6, *Applicability of FASB Statement No. 2 to Computer Software*, which was generally interpreted to exclude certain software product enhancements from the definition of research and development costs in Statement No. 2. In 1976, the Association of Data Processing Service Organizations (ADAPSO\*), a leading industry organization, requested the FASB to reassess Statement No. 2 as applied to software development costs, and met with the FASB in 1978. In 1979, the FASB decided not to undertake the requested project, but did state in FASB Technical Bulletin No. 79-2, *Computer Software Costs*, that not all costs incurred in developing software products or processes are necessarily research and development costs.

In the meantime, the software industry grew rapidly. Other than the pronouncements just discussed, it had no specific accounting literature to provide guidance on the two most significant items impacting measurement of financial performance of software companies—revenue recognition and software development costs. As often happens when unique industries develop without specific accounting guidance, a diversity of accounting practices developed.

### (c) ADAPSO Exposure Draft

In 1982, ADAPSO issued an exposure draft, *Accounting Guidelines for the Computer Industry*. It discussed revenue recognition and software development costs, with the objective of encouraging its membership and others to adopt consistent accounting practices to enable reasonable comparison between software companies. Although many supported ADAPSO's objective, respondents from the accounting profession

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\*ADAPSO changed its name to Information Technology Association of America (ITAA) in November 1991.

generally believed that some of ADAPSO's views on accounting practices that should be used in the industry were not in conformity with existing generally accepted accounting principles and they maintained that the setting of standards should be left to the FASB.

#### (d) Formation of the AICPA Task Force

Despite the somewhat negative response to the ADAPSO exposure draft, it contributed to the formation of a joint Task Force of the AICPA Accounting Standards Executive Committee (AcSEC), ADAPSO, and the National Association of Accountants (NAA, now the Institute of Management Accountants), to address issues of accounting for software. The Task Force initially consisted of three members from the accounting profession, three from ADAPSO, and one from the NAA. Accounting profession members were Joseph D. Lhortka, chairman, James I. Gillespie, and the contributing author. ADAPSO members were James R. Porter, who had been patiently pursuing the issues with the FASB for years, William M. Graves, and Lawrence J. Schoenberg. Messrs. Porter and Graves were later succeeded by Paul K. Wilde and I. Sigmund Mosely, Jr. Penelope A. Flugger was the original NAA member. After several changes, the NAA position was replaced with a fourth representative of the accounting profession, Naomi S. Erickson.

All members of the Task Force had insight into the accounting issues facing the software industry. Although they held differing ideas about the right accounting answers, all approached the issues with open minds. A common thread was that none of the members was predisposed against capitalization of software development costs. The Task Force held its first meeting in late 1982.

## 2.2 CAPITALIZATION OF SOFTWARE DEVELOPMENT COSTS

#### (a) Acceleration of Addressing the Capitalization Issue

Shortly after the formation of the Task Force, the staff of the Securities and Exchange Commission (SEC) began to consider placing a moratorium on capitalization of software development costs by public companies. The Task Force then decided to split its work in software accounting into two parts—capitalization of software development costs and revenue recognition—and to accelerate its work on capitalization of costs. It decided to defer work on software revenue recognition until the first part of the project was completed. The long-term objective of the Task Force was to prepare an issues paper for each part of the project and to provide them to the FASB in order to stimulate projects leading to the development and issuance of appropriate accounting standards. It was planned that the issues papers would trace the background and history of each relevant accounting issue, analyze relevant existing accounting literature,

study and describe the process of designing, developing, and marketing software, and present the recommendation of the Task Force and AcSEC.

**(b) SEC Moratorium on Capitalization of Software Development Costs**

In April 1983, the SEC proposed to prohibit capitalization of internal costs of developing computer software for marketing to others by public companies that had not previously disclosed that practice. The proposal was adopted in August 1983, as SEC Financial Reporting Release No. 12, and the SEC stated that it would be automatically rescinded upon the issuance of guidance on the subject by the FASB. The SEC was concerned about increasing diversity in accounting for software development costs, and about the capitalization of significant amounts by an increasing number of companies. Because it was anticipated that this issue would be addressed by the Task Force, AcSEC, and, ultimately, the FASB, the SEC concluded that it did not need to develop definitive accounting guidelines in view of the pending actions by the other groups.

**(c) Issues Paper on Capitalization of Software Development Costs**

The Task Force prepared an Issues Paper, *Accounting for the Costs of Software for Sale or Lease*, which addressed the following questions:

- Can some costs of producing computer software for sale or lease be capitalized as an asset?
- If so, which costs are they?
- How does one assess the recoverability of capitalized costs?

The Task Force quickly concluded that some capitalization of software development costs was appropriate; however, the Task Force perceived the need to be conceptually consistent with Statement No. 2, which requires that research and development costs be charged to expense as incurred.

The Task Force concluded that technological, market, and financial feasibility should be established before any software development costs are capitalized. This would include completing all product planning and design activities and solving any high-risk technological issues. Costs incurred after those criteria were met, including the cost of a detail program design, coding, testing, and packaging, would be capitalized if recovery of the costs was probable. Capitalized costs would be subject to a recoverability assessment under FASB Statement No. 5, *Accounting for Contingencies*, and no specific new literature for the assessment of recoverability was considered necessary by the Task Force.

In February 1984, the Issues Paper was unanimously approved by AcSEC and sent to the FASB, which added a project on capitalization of software development costs to its agenda the next month.

#### **(d) Exposure Draft of the FASB Statement**

The FASB undertook a complete examination of the issues and the conclusions reached by the Task Force and AcSEC, and generally agreed with those conclusions except in one significant respect. The FASB concluded that costs of producing a detailed program design should be accounted for as research and development costs. Several other differing conclusions of lesser importance were also reached by the FASB. The FASB expanded the scope of the project to include software purchased for marketing to others. It also decided to be more specific about the ongoing assessment of recoverability of capitalized software costs by requiring a net realizable value test as normally applied to inventories. The FASB met with the Task Force several times while developing its exposure draft to review the software development process, and issued the exposure draft in August 1984.

#### **(e) Response to the FASB Exposure Draft**

The FASB received 210 letters of comment on its exposure draft, many of which disagreed with the FASB's conclusions. As a result of these letters, the FASB convened two educational meetings with industry representatives in March and April 1985, and held public hearings in May 1985. The following three primary points of view emerged.

- Support for the exposure draft as written
- Support for the exposure draft as written, with modification to include the costs of detail program design in capitalizable costs
- Support for expensing all software development costs as incurred

The FASB was faced with a difficult task, partly because no one group appeared to express a uniform view. Software companies, industry organizations, the investment community, and accounting firms were all divided. Those preferring expensing all software development costs used some of the same arguments as those preferring capitalization, both citing improvement in comparability and better industry access to capital markets. At the FASB hearings there was discussion of cost-benefit considerations, and whether the exposure draft was so subjective that it would, in effect, create an optional standard that could be manipulated by maintaining or not maintaining required documentation. Whether the costs of detailed program design work should be capitalized or expensed was also a primary discussion point at the public hearings.

After the public hearings, the FASB board members appeared to be split. Three board members preferred the AcSEC recommendations; three preferred a hybrid method under which capitalization would begin when a detail program design was



completed or when a working model of the software product was completed, whichever was earlier; and one preferred expensing all costs of software development.

**(f) Issuance of FASB Statement No. 86**

After further work, in August 1985, the FASB issued FASB Statement No. 86, *Accounting for the Costs of Computer Software to be Sold, Leased, or Otherwise Marketed*. Its conclusions are understandable in light of the different views of the board members following the public hearings, as well as the FASB's conclusion that objective evidence of technological feasibility must be available before the research and development phase can be considered complete and the production phase to have begun. The FASB concluded that completion of a detail program design was the earliest point at which technological feasibility could be considered established for capitalization purposes. They allowed for use of an alternative criterion of technological feasibility—the completion of a working model, if a detail program design is not used in the software development process. Other provisions of Statement No. 86 relating to purchased software, amortization of capitalized costs, software inventory costs, and the continuing evaluation of capitalized costs differed in some respects from AcSEC's recommendations and the FASB exposure draft. The differences, however, were not considered significant or controversial.

**(g) Retrospective**

Little has happened on the subject of software capitalization since the issuance of Statement No. 86. The FASB's Emerging Issues Task Force (EITF) addressed a few transition and implementation issues in EITF Issue No. 85-35. The FASB staff, in a Status Report publication, provided some unofficial guidance in question-and-answer format. One could interpret the low level of official activity in regard to software capitalization to mean that there has not been much difficulty in applying Statement No. 86 in practice; however, that is not the case. The degree to which software development costs have been capitalized varies substantially among companies, and some believe the differences are attributable in part to how much of the costs a company wants to capitalize, rather than to different circumstances.

The software industry has continued to develop, and there have been changes in the software development process since the publication of Statement No. 86 in 1985. The principal change, in the software industry that impacts accounting results under Statement No. 86 is that use of a detail program design as an explicit step in the software development process is becoming less common. This trend stems from advances in software development tools and, to a lesser degree, from the evolution of methodology in the software development and production process. As a result, an increasing number of companies are unable to capitalize the major portion of their software production costs unless they unnecessarily add a detail program design to the development process.

To the extent that there have been changes in the software development process, some provisions of Statement No. 86 may be less relevant today than when it was

published. Although at some time there may be a need to revisit the conclusions and provisions of Statement No. 86, this author does not perceive any enthusiasm in the standard-setting community to do so at this time.

## 2.3 SOFTWARE REVENUE RECOGNITION

### (a) Issues Paper on Software Revenue Recognition

The AICPA Task Force expected that addressing software revenue recognition issues would be more difficult than addressing capitalization of software development costs. Most software companies had not capitalized software development costs before the publication of Statement No. 86, and the issue for them was only to what extent to capitalize in the future. In contrast, all software companies were recognizing revenue on a basis with which they were comfortable, and narrowing the alternatives would significantly affect many of them. For example, software companies were recognizing software license revenue upon contract signing, delivery, installation, acceptance, or payment, and some were recognizing portions of the revenue on a software license at several of those points. Although the AICPA Task Force had little difficulty in agreeing that capitalization of software development costs was appropriate, it was initially deeply divided on several basic revenue recognition issues. Because of the necessity to resolve these differing views and because of other delays, it took more than six years to deal with software revenue recognition, as compared with less than three years to deal with capitalization.

The AICPA Task Force organized the project by dividing issues into the following categories.

- The point at which revenue should be recognized in a transaction involving only a software license—contract signing, delivery, or some other point
- The effect of obligations other than delivery of the software, and whether it makes a difference if they are insignificant or significant
- Pricing terms of licenses with non-end users
- Contract accounting issues
- Postdelivery customer-support services (i.e., “maintenance”)
- Data services companies

Many in the industry believed that using a matching concept justified recognition of software license revenue at contract signing. They believed that delivery of software that is available is incidental to the earnings process and that essentially all the significant costs related to the transaction, ranging from software development to marketing, had been incurred and generally expensed prior to contract signing. They did not believe that the limited capitalization of software development costs under Statement No. 86 provided much relief in this regard. Others believed that delivery of software should be required prior to revenue recognition, as in the requirements under generally accepted accounting principles for product sales.

Moreover, many in the industry believed that most of the costs of maintenance were either incurred prior to a maintenance agreement or were sufficiently insignificant when measured incrementally, and that maintenance revenue should be recognized at the inception of the term of the maintenance agreement. Others believed that maintenance obligations were principally discharged over a period of time and that no accounting other than amortization of maintenance revenue over the maintenance period was justified.

The AICPA Task Force started work on the revenue recognition issues immediately after completion of its work on capitalization of software development costs. The Task Force met with AcSEC in October 1985, and again in February 1986. After considerable discussion among Task Force members, and with AcSEC, the following majority views of the Task Force emerged:

- Software license revenue should be recognized on delivery.
- Software license revenue should not be recognized on delivery if significant vendor obligations remain.
- Nonrefundable fixed fees should be recognized as revenue immediately for software licenses to reproduce and distribute copies, even if a license is for limited quantities or for limited periods of time.
- Contract segmentation criteria required by the AICPA Statement of Position 81-1, *Accounting for Performance of Construction-Type and Certain Production-Type Contracts*, should be modified for software companies because of unique factors in the industry.
- Maintenance revenue should be deferred and recognized over the maintenance period.

AcSEC accepted the views of the Task Force, although not unanimously, and voted at the September 1986 AcSEC meeting to forward the proposed Issues Paper, *Software Revenue Recognition*, to the FASB. At that point, however, the project ran into a delay. There was considerable debate at that time about whether “advisory conclusions” of AcSEC should be included in AICPA issues papers, and, as drafted, the software revenue recognition issues paper included advisory conclusions. The concern with advisory conclusions was that the FASB believed that issues papers published with AcSEC’s advisory conclusions might inappropriately influence practice. It took until April 1987 for this situation to be sufficiently resolved that the Issues Paper could be sent to the FASB, with advisory conclusions and a request that the FASB undertake a project on software revenue recognition.

### **(b) FASB Reaction to the Issues Paper**

In February 1988, the FASB concluded that it would not undertake a project on software revenue recognition. In part, the decision was based on the FASB’s general preference to address broad issues that affect many or all industries, rather than a

topic as narrow as revenue recognition in one industry. The possibility of a board project on revenue recognition in general is often discussed when new projects are considered at the FASB, with the observation that it could be an enormous project.

The FASB encouraged the AICPA to develop industry guidance for software revenue recognition, similar to the practice guidance the AICPA has provided for other industries in its statements of position and accounting and audit guides. FASB members offered informal comments about the Issues Paper. It appeared that the general direction of the advisory conclusions was endorsed; the only major objection was that the FASB board members disagreed with modification of contract segmentation criteria for software companies.

### (c) Preparation of Statement of Position No. 91-1

The Task Force initially believed that preparing a statement of position (SOP) based on the Issues Paper would be a straightforward effort, requiring only conversion from the “issues and conclusions” format of an issues paper to the plain text format used in statements of position. The preparation of SOP 91-1 was far more complex and tedious than anyone imagined it could be.

First, the conclusions in the Issues Paper were stated in broad terms. They needed to be completely rewritten to make them operational and precise enough to be usable by software companies in a consistent manner.

Second, the Task Force decided it needed to reexamine the definition of *significant vendor obligations other than delivery of software* and to give more guidance on how to account when significant vendor obligations are present. The Issues Paper contained numeric criteria as to significance, which the Task Force concluded had been useful in defining the issues, but could not be used to describe the way in which a broad spectrum of transactions should be accounted for. It was also decided that accounting for service transactions that are separable from software licenses should be addressed, and these were not discussed in the Issues Paper at all.

Third, considerable difficulty was encountered in providing coherent guidance for contract accounting by software companies. The principal advisory conclusions in the Issues Paper were that software companies should generally use the percentage-of-completion method, and that the contract segmentation criteria included in SOP 81-1 should be modified for software companies. Although both AcSEC and the Task Force believed that modification of the contract segmentation criteria was appropriate, based on the unofficial reactions of the FASB board members to the Issues Paper, there was concern that the FASB would ultimately object to this proposal. The concern was well founded, as the FASB ultimately did object. Because of this concern, the Task Force expended considerable effort in analyzing alternatives, available within the boundaries of SOP 81-1, to the use of both input and output measures of progress-to-completion. The Task Force concluded that use of output measures would give software companies some relief from the distortion caused by the inability of most of them to meet SOP 81-1’s criteria for segmentation. Software companies would need guidance in

the use of output measures to apply them in practice. Because there was very little existing literature on the use of output measure, the Task force was in some respects charting new ground, although it entirely based its effort on the fundamental ideas of SOP 81-1.

Fourth, the Task Force revisited its conclusions on accounting for maintenance, reviewing in particular the question of whether initial year maintenance bundled with a software license needed to be unbundled for accounting purposes. Some were concerned with the practicality of unbundling, and others believed that the cost of unbundling was not worth the benefit.

Finally, the issue concerning accounting for data service companies was dropped from the scope of the project. The topic had been included in the Issues Paper because it had been included in the 1982 ADAPSO exposure draft. The Task Force concluded, however, that its membership did not have sufficient expertise to deal with the issue, and dropped it rather than delay the project.

After much work, the Task Force resolved these issues to its satisfaction, and in September 1989, AcSEC voted to expose a proposed SOP for public comment after clearance by the FASB.

During the long process of preparing the SOP, certain FASB staff members periodically met with members of the Task Force as observers and to assist in informal discussions, particularly at meetings of the drafting committee of the Task Force held to review and discuss the developing sections of the draft SOP.

Throughout the entire process of developing the draft SOP, the Task Force also received input from the SEC staff, which had observed several practices it believed should be addressed in the SOP. In late 1988, the SEC staff provided a letter to the Task Force, and the Task Force believed it had appropriately addressed all the issues raised in the letter. However, in late 1989, the Task Force received another letter from the SEC staff, which raised several new issues, as well as additional comments about some of the issues raised in the previous letter. Generally, these areas of concern related to the need for several clarifications to avoid ambiguities and misinterpretation, distinguishing between significant and insignificant other-vendor obligations, and measurement of progress-to-completion under contract accounting. In addition, the SEC staff disagreed with the Task Force's recommendation to modify the contract segmentation criteria of SOP 81-1 for software companies.

The Task Force generally agreed with the SEC staff's comments and made changes in the draft SOP to accommodate them, except for those concerning the proposal for modified contract segmentation criteria.

#### **(d) FASB Review of the Draft Proposed SOP**

The draft of a proposed SOP, *Software Revenue Recognition*, was finally sent to the FASB in August 1990 for clearance before exposure for public comment. At an open meeting of the FASB on November 14, 1990, the FASB advised that it would not object to the public exposure of the draft SOP if the proposal for modified contract segmentation criteria was deleted. The FASB reiterated its unofficial comment, pre-

viously made in respect to the Issues Paper, that it believed contract segmentation criteria should be applied uniformly in all industries. The Task Force disagreed with the FASB, but concluded that trying to overcome the FASB's objection would result in substantial delay in the issuance of a final SOP. At its December 1990 meeting, AcSEC acquiesced to the objections of the FASB and the SEC staff and deleted the proposed provision for modified contract segmentation criteria from the proposed exposure draft. However, in view of the concern about whether accounting results could be obtained that corresponded with the value of the various contractual elements of contracts in the software industry, the Task Force decided to solicit views from the public on the segmentation of software contracts.

### (e) Exposure Draft of the Software Revenue SOP

The exposure draft of the SOP was issued on January 16, 1991, with a 4-month exposure period. In all, 49 comment letters were received, the majority of which supported the exposure draft or did not object to it. Many of the letters commented on specific provisions of the exposure draft. As a result of the comments and upon further study of the issues raised by the comments, several refinements to the exposure draft were made, principally in the following areas:

- Clarification that software under lease should be accounted for as described in the SOP, even if the lease includes other items, such as hardware
- Clarification of requirements concerning postcontract customer support and provision that in certain limited circumstances, revenue for initial-year postcontract customer support can be recognized as part of the software license fee
- Changes and clarifications to provisions for postcontract customer-support arrangements not offered separately from software licenses
- Addition of a requirement to disclose accounting policies
- Addition of a requirement to obtain signed contracts before recognition of revenue if signed contracts are normally obtained
- Clarification of accounting for returns and exchanges
- Addition of guidance for arrangements providing for rights to multiple copies of two or more software products under site licenses or reseller arrangements

Respondents showed little interest in the idea of modified contract segmentation criteria, so the Task Force decided to do nothing more with that issue.

The most significant issue discussed during the exposure period concerned postcontract customer support. ITAA, formerly ADAPSO, strongly believed that postcontract customer support, particularly if bundled with a software license, for the initial period should be recognized at the beginning of the license term, rather than over the period of the license. The draft SOP was modified to permit this practice in the limited circumstance where the postcontract customer support for the initial term, including enhancements, is not significant. Not many companies were expected to qualify for this exception.

The Task Force was pleased with the quality of the comment letters. Although only 49 were received, a small number in comparison with the number of comment letters received by the FASB on its controversial projects, the letters were well thought out and presented. For that reason the Task Force was able to accommodate many of the comments seeking clarification of the precise requirements of the SOP.

#### (f) Issuance of SOP 91-1 and Effective Date

At its September 1991 meeting, AcSEC approved the SOP for issuance, subject to final clearance by the FASB. At its open meeting on November 20, 1991, the FASB voted unanimously not to object to the issuance of the final SOP, which was then issued on December 12, 1991, almost exactly nine years after the first meeting of the Task Force.

The last change to the SOP was its effective date. The SOP is effective for financial statements issued after March 15, 1992, for fiscal years and interim periods in fiscal years beginning after December 15, 1991. Previously, it had been proposed that the SOP be effective for financial statements (including interim periods) for years beginning after December 15, 1991. The change in effective date was made so that the SOP would be included among the pronouncements that must be adhered to under a new hierarchy of generally accepted accounting principles, which was published as Statement on Auditing Standards (SAS) No. 69, *The Meaning of "Present Fairly in Conformity with Generally Accepted Accounting Principles" in the Independent Auditor's Report*. This new hierarchy had been undergoing revision throughout 1991 and is effective for periods ending after March 15, 1992. Under the new hierarchy, a statement of position must be adhered to unless there is superior literature issued by the FASB. Under hierarchy transition provisions, however, a company could be "grandfathered"—that is, allowed to continue its past practice, notwithstanding the provisions of an SOP, if the SOP had an effective date prior to the effective date of the new hierarchy. The Task Force would have preferred to make the SOP effective for financial statements for periods beginning after March 15, 1992, but the SEC staff was concerned about any further delay in the effective date of the SOP and urged the Task Force and AcSEC not to change the December 15, 1991, effective date. Thus the SOP ended up with a rather convoluted effective date in order to prevent grandfathering of any software companies.

The distinction was not significant for public companies, inasmuch as the SEC expected them to follow SOP 91-1 anyway. Nonpublic companies, however, did not have a choice—they had to comply with SOP 91-1 just as did public companies.

It was initially hoped that SOP 91-1 would provide a comprehensive framework for consistent practice and not need modification in the near future, but this hope was only partially realized. Implementation issues started arising almost as soon as SOP 91-1 was issued. Many of these issues reflected changes in the industry that had occurred even prior to the final publication of SOP 91-1, and subsequent continuation of those changes.

## 2.4 FURTHER GUIDANCE ON REVENUE RECOGNITION

### (a) Project to Develop Further Revenue Recognition Guidance

During the latter part of 1990, a group of software industry specialists from the Big 6 (now Big 5) accounting firms met to discuss implementation issues they were encountering, with a view toward reaching a consensus on how SOP 91-1 would be interpreted and applied in their practices. This worked well to a point, but a number of inconsistencies and differing views between practitioners and the SEC staff made it apparent that a more authoritative approach was needed. The group of specialists initiated formal communication with the Task Force that had recently prepared SOP 91-1. Because the author was participating in the Big 6 group meetings and is also a member of the Task Force, a line of communication was easily established.

In February 1993, the Task Force proposed to AcSEC that it prepare a Practice Bulletin (PB) to interpret how SOP 91-1 should apply to an array of specific situations. The project was approved with the condition that there be no fundamental changes to the principles in SOP 91-1, which was consistent with the Task Force's proposal for the project.

In a June 1993 AcSEC meeting, concern was expressed about whether the scope of interpretation planned by the Task Force could be accomplished without amending SOP 91-1. Concern was also expressed about whether sufficient input from the software industry could be achieved in the process used to prepare a Practice Bulletin. These concerns led to a decision to develop another SOP. PBs are published by AcSEC without exposure for comment, whereas SOPs are exposed for comment by all interested parties.

### (b) Industry Changes

There were quite a few changes in the software industry, which gave rise to the need for further work on SOP 91-1. One change was the application of SOP 91-1 to the "shrink-wrap" portion of the software industry, which has grown significantly in recent years. When SOP 91-1 was developed, little consideration had been given to issues unique to this portion of the industry, such as how free telephone support and free upgrades should be accounted for within the framework of SOP 91-1.

Many software companies have moved toward including in a single contract a number of different products, or products and services, that previously had been contracted for separately. These are often delivered at different times and some products may not even be available at the time an agreement with a customer is reached. How to apply SOP 91-1 to partial deliveries on larger contracts and the impact of services on revenue recognition, was unclear.

Site-licensing arrangements are becoming more complex for both the scope of products included and the availability of services and updates.



A final example is that marketing and technology changes have caused customers to want to license software products on more than one software or hardware platform and to have the right to move from one platform to another—sometimes called “portability.”

### (c) Broad Implementation Issues

The industry developments described in the preceding section led to the identification of revenue recognition issues that have been organized into the following five categories:

1. Software license arrangements with multiple deliverables, which can include products that are currently available and products that are to become available in the future.
2. Pricing issues for transactions in which multiple elements of a contract are stated but not separately priced. The elements may be different products, a product and postcontract customer support not separately priced in a contract, or a software and separate service transaction in which the elements are not separately priced.
3. The basis for distinguishing service transactions from transactions requiring contract accounting—an area in which preparers of financial statements and auditors have had difficulty interpreting and applying SOP 91-1.
4. Questions about measuring progress-to-completion in contract accounting.
5. Postcontract customer support issues such as accounting for free telephone support, free upgrades, additional products, platform transfer rights, and similar items that may be provided outside, or included within, a formal postcontract customer support contract.

## 2.5 ISSUES ADDRESSED

The Task Force organized the issues into a format similar to the one used in SOP 91-1. Thus, they are dealt with under the major categories of delivery issues, contract accounting issues, service transaction issues, and postcontract customer support issues.

The Task Force met with AcSEC several times through January 1995, but was unable to obtain AcSEC’s approval for its conclusions. Because it appeared that further progress would take unduly long, AcSEC appointed a “Working Group” to complete the proposed SOP. The Working Group was comprised of two Task Force members and two AcSEC members.

The Exposure Draft for the proposed SOP was completed by the Working Group and released by AcSEC for comment on June 14, 1996, with a comment deadline of October 14, 1996. AcSEC issued its conclusions as SOP 97-2 a year later, on October 27, 1997. It subsequently has modified those conclusions as to certain multiple-element arrangements with SOP 98-9, issued in October, 1998.

Rather than continue to deal only with the dozen issues the Task Force had been addressing, the Working Group, with AcSEC's concurrence, undertook to integrate those issues into a rewrite of SOP 91-1, as well as to make certain further changes to the conclusions in SOP 91-1. In the following sections, the issues originally addressed by the Task Force are discussed in the same sequence that the Task Force addressed them. Differences between the conclusions of the Task Force and those in the Exposure Draft are indicated. Additional issues addressed in the Exposure Draft are discussed separately.

The Working Group reorganized the basic logic flow of SOP 91-1 to facilitate addressing questions about arrangements with multiple deliverables of products or services. The basic logic flow in the Exposure Draft, which is in SOP 97-2, developed by the Working Group is the following:

1. If, in addition to delivery of software, there is to be significant production, modification, or customization of software, contract accounting should be used.
2. If 1. does not apply, recognize revenue only when there is persuasive evidence of an agreement, delivery, fixed and determinable price, and probable collectibility.
3. If there are multiple deliverables, the fee should be allocated based only on "vendor specific objective evidence of fair value." If such is not available, revenue recognition should be deferred until such evidence exists or until elements have been delivered, except postcontract customer support, as to which different accounting applies. Delivery is considered to have occurred only if undelivered elements are not essential to the functionality of delivered elements and no portion of the fee for delivered elements is subject to forfeiture, refund, or other concessions.

Items 1. and 2. do not differ significantly from the conclusions in SOP 91-1. Item 3., however, sets a substantially higher hurdle for revenue recognition for arrangements with multiple deliverables, for service transactions, and for postcontract customer support in certain circumstances. It was the limitations on what could be considered vendor-specific objective evidence of fair value that led to significant implementation issues under SOP 97-2, and its eventual amendment by SOP 98-9.

### (a) Delivery Issues

(i) **Subcategories of Issues.** The many implementation issues related to delivery were divided into the following groups:

1. Delivery of Additional Software
  - Upgrade rights for users
  - Multiple software products
  - Platform transfer right
  - Additional versions of the same product furnished to resellers
2. Use of delivery agents
3. Use of authorization codes ("keys")
4. Fiscal funding clauses

The last item, fiscal funding clauses, is not essentially a delivery issue but it is classified with the delivery issues to be consistent with the presentation in SOP 91-1. The delivery issues are discussed in the following subsections.

**(ii) Delivery of Additional Software.** The Task Force distilled an overarching principle that if additional software is deliverable under an agreement, revenue applicable to the delivered software should not be recognized until the additional software is delivered if:

- The undelivered software is essential to the functionality of the delivered software, or
- Revenue applicable to delivered software is subject to forfeiture, refund, or other concession if the undelivered software is not delivered.

The Task Force concluded that undelivered software is considered essential to the functionality of the delivered software if it is necessary to achieve full use of significant functions or features of the delivered software. Although the term “essential to the functionality” was retained in the Exposure Draft and SOP 97-2, the definitional information was deleted. Because that phrase is ambiguous, the lack of definition may cause different companies to apply it differently. Nevertheless, the refundability criterion is more objective and will tend to be the operative criterion in most circumstances.

There has been much discussion about what level of evidence should be required to establish that revenue applicable to delivered software is not subject to forfeiture or refund if the undelivered software is not delivered. Contracts are often silent on that point. The Exposure Draft and SOP 97-2 would prescribe the following criteria as persuasive evidence, more clearly articulating criteria that the Task Force had considered:

- Acknowledgment of products not available or not deliverable currently
- Separate pricing for each deliverable
- Specific default or damage provisions
- Enforceable payment obligations and due dates for delivered elements not dependent on delivery of other elements and vendor intent to enforce payment
- Installation and use of delivered software by the customer
- Current delivery of support services by the vendor related to delivered software

Favorable evidence that revenue is not subject to forfeiture or refund would be overcome by a vendor’s history of providing concessions, even though they are not contractually required, or other qualitative factors such as likelihood of a concession to a major customer if delivery is not accomplished.

If additional software is deliverable under an agreement, and the previously mentioned requirements are met, it is necessary to determine the amount of revenue applicable to the delivered software so that the correct amount of revenue is recognized. As

mentioned, the allocation can be based only on vendor-specific objective evidence of fair value. This is so regardless of the statement in an agreement of separate prices for each element. That evidence is limited to:

- The price charged when the same element is sold separately, or
- If not yet being sold separately, the price for each element established by management having the relevant authority. It must be probable that the price, once established, will not change prior to introduction of the element into the marketplace.

The criteria in the Exposure Draft and SOP 97-2 are very different from the criteria that were considered by the Task Force. The Task Force had great difficulty with this issue and never reached any clear conclusion.

**(iii) Upgrade Rights for Users.** Upgrade rights are common in the shrink-wrap business if there is no postcontract customer support arrangement. An upgrade right is a right to receive one or more specific product upgrades or enhancements. The upgrade right may be evidenced by a specific agreement, commitment, or the vendor's established practice. If the right relates to unspecified upgrades or enhancements on a when-and-if-available basis, it is accounted for as postcontract customer support.

The accounting issue was whether upgrade rights that are not priced separately by a vendor should be accounted for by deferring a portion of the revenue on the initial software license to cover the value of the upgrade right. A subissue is: if revenue should be deferred, when should it be recognized? Over time, similar to postcontract customer support, or on delivery of the upgrade? There does not seem to be much of an issue if the upgrade right is sold separately because, absent unusual complications, revenue would be recognized when the vendor delivers the upgrade.

Views were divided on whether (1) only the cost of an upgrade should be accrued at the time an initial license is sold, (2) a portion of the revenue should be deferred to cover the potential delivery of the upgrade in the future, or (3) revenue on the initial license should not be recognized until an upgrade is delivered to the customer.

Practice had headed toward deferral of revenue equal to an amount for an upgrade that is being sold separately, with a reduction based on the percentage of customers expected not to avail themselves of the upgrade, and with recognition of deferred amounts on delivery of the upgrade. The Task Force supported that accounting, as did the Exposure Draft, and SOP 97-2 adopted this position. However, as in other areas, the separate price for the upgrade right can be based only on vendor-specific objective evidence. That evidence would be the price charged to existing users of the specific software product being updated. If such evidence is not present, all revenue would be deferred until the evidence does exist or everything has been delivered.

**(iv) Multiple Software Products.** SOP 91-1 addresses multiple product arrangements to a limited extent. It deals with fixed-fee site license or reseller arrangements that provide customers with rights to multiple copies of a software product at a specified price per copy, up to a total amount of the fixed fee. Revenue must be recognized

on a per-copy basis until an initial copy of all products covered by the agreement has been delivered or the scheduled termination of the agreement is reached, at which time any unrecognized revenue would be recognized. That accounting is appropriate if all products are deliverable (that is, available) at the inception of the arrangement or if any products that are not deliverable at the inception of the arrangement must be provided only on a when-and-if-available basis. This was the position in the Exposure Draft and SOP 97-2.

SOP 91-1 states that if one or more products are not deliverable at the inception of an arrangement and the vendor is *obligated* to furnish the product or products, the obligation should be considered significant and accounted for as a significant vendor obligation. This has been unclear and difficult to apply because SOP 91-1 does not distinguish between undelivered products and products that have been delivered, and does not clarify whether the significant vendor obligation should lead to complete revenue deferral until all products have been delivered or whether partial revenue recognition for what actually has been delivered is appropriate. The accounting proposed in the Exposure Draft and adopted in SOP 97-2 does fill this void, as described later in this section.

SOP 91-1 also does not deal with situations in which a license agreement states a price per product (but not a price per copy) or in which there is sufficient information to allocate the total amount of the license fee to each product. Again, the accounting proposed in the Exposure Draft and adopted in SOP 97-2 fills this gap, as described later in this section.

Various approaches are found in practice.

If a vendor is obligated to deliver an additional product or products in this situation, there is substantial support for recognizing revenue as each product is delivered, assuming that the price for each product is specified or can be determined, and provided that (1) the undelivered products are not essential to the functionality of products already delivered and (2) revenue recognized for products delivered is not subject to forfeiture or refund under the terms of the license agreement or other concession by the vendor if the vendor defaults on performance of unfilled delivery requirements. Unless these criteria are met, revenue would not be recognized until all products are delivered. This approach is essentially similar to that adopted in the Exposure Draft and SOP 97-2, although it is not exactly the same because it is expressed differently.

If the arrangement does not state a price per product and there is insufficient information to determine a price per product, the Exposure Draft and SOP 97-2 provide that revenue not be recognized until sufficient vendor-specific objective evidence was available to allocate the pricing or all deliverables under the arrangement had been made, unless the agreement is a “subscription,” as discussed later in this section. The Task Force never came to a satisfactory conclusion on accounting if there is insufficient information to determine a price per product.

Some companies had sought relief from some of the difficulty in interpreting SOP 91-1 by including rights to other software products in postcontract customer support arrangements, rather than under the term of the license agreement. The Exposure Draft

and SOP 97-2 require a reallocation of revenue between the license and postcontract customer support arrangements, and the products have to be accounted for as part of the software license.

The conclusion proposed in the Exposure Draft and adopted by SOP 97-2 is relatively straightforward. It addresses subscriptions separately. If a transaction is not a subscription:

- Allocate the total price among elements based on vendor-specific objective information of fair value, which would be relative sales prices actually charged or to be charged if the element is not yet being sold separately.
- Recognize revenue on delivered elements only if that revenue is not subject to forfeiture, refund, or other concession if the vendor defaults on performance of its unfulfilled delivery obligation.
- Within these parameters, fixed-fee licenses or reseller arrangements that provide customers with rights to multiple copies of a software product at a specified price per copy, up to a total amount of the fixed fee, would be accounted for in the same manner as they are currently under SOP 91-1.

**(v) Platform Transfer Rights for Users.** It is becoming increasingly common to grant end-users rights to transfer software from one hardware platform or one software platform to another platform or to one or more additional platforms. These rights frequently give end-users substantial discretion about how and when these transfers are to be made. Additional platforms may be included within the transfer rights either on a when-and-if-available basis or on an obligatory basis.

Concern has been raised about how broad a range of platforms can be included within transfer rights without the right to transfer to another platform being, in effect, the right to another product. Under the Exposure Draft and SOP 97-2, an allowable transfer would be limited to other platforms that have the same price, features, and functions, considering the differences that arise because of environmental variables, such as operating systems, databases, user interfaces, and platform scale. They must be marketed as the same product—that is, must use the same product name, even if a different version number, and focus on the same functions and features. Finally, the right should not increase the number of copies or concurrent users of the software product available under the license arrangement.

The conclusion in the Exposure Draft and SOP 97-2 is essentially consistent with the conclusion of the Task Force, that platform transfer rights for users should be treated as like-kind exchanges under FASB Statement No. 48 if the platform transfer right is for the same product, as described above, and the platform transfer right does not increase the number of copies or concurrent users of the software available under the license arrangement.

Platform transfer rights or rights to additional platforms are often included in postcontract customer support arrangements. They may be explicitly included in the arrangement, or the platform transfer right may be included in a license agreement but only be available if there is a postcontract customer support arrangement currently in effect.

The Exposure Draft and SOP 97-2 do not deal explicitly with platform transfer rights included in postcontract support arrangements. It seems to the author that if the rights meet the limitations in SOP 97-2, there are no accounting complications. However, if the rights are broader than the limitations in the definition of platform transfer rights in SOP 97-2, the accounting is uncertain. One could take the view that because the right is paid for separately from the license, it should be accounted for separately, similar to a subscription. Or one could say that the right entitles the licensee to another product, and that the entire arrangement should be accounted for as a multiple product arrangement, although the mechanics of that accounting would be cumbersome and could get bizarre.

**(vi) Additional Versions of the Same Product Provided to Resellers.** The Task Force struggled with accounting for rights granted to resellers to receive additional versions of the same product and additional platforms on a when-and-if-available basis during the term of a reseller agreement.

Until the issuance of SOP 97-2, most companies accounted for the practice of making the most up-to-date version of the product available to a reseller, as well as making the product available on additional platforms, as marketing support, as long as such products were provided only on a when-and-if-available basis. In discussing this matter with AcSEC, the Task Force was instructed to provide that those additional versions of the same product provided to resellers should be accounted for in the same manner as postcontract customer support for end users. This was a major departure from then current practice, since vendors generally do not charge resellers separately for postcontract customer support. Vendors will have to establish a price to “unbundle” from the license for the postcontract customer support element if they hope to account for the basic license fee on initial delivery of the software; see 2.5 (d)(iii) “Unbundling Postcontract Customer Support from Other Software License Revenue.” Under this approach, resellers might have been able to rewrite their contracts to charge a separate fee for the right to get additional versions of the same product. This would probably have been merely a reallocation of the revenue currently derived from resellers, since neither vendors nor resellers want to market products without the ability to include the most up-to-date versions. Most also want the additional platforms on which the products are available as well.

The approach of the Exposure Draft and SOP 97-2 is that all rights to additional versions of the same product are either platform transfer rights that must be accounted for as returns or are postcontract customer support that must be unbundled from the license fee. This leaves vendors with two significant problems in accounting for these transactions. First, under FASB Statement No. 48, basically, if there is not sufficient experience to estimate returns, revenue is deferred until the experience is achieved or the return right expires. Software vendors will find estimating “returns” under platform transfer rights difficult, at best, to estimate, but may be able to gather the necessary experience over time. A second problem is trying to unbundle postcontract customer support. This affects vendors who sell to resellers under fixed-fee, multiple-copy, or multiple-product licenses. Vendors rarely sell postcontract customer support

separately to a reseller, as both the reseller and the vendor want to deliver the most recent version of the product to the user or other customer. So, there will rarely, if ever, be vendor-specific objective evidence to support a separate price for postcontract customer support, whether or not it is separately priced in the contract. Thus, the vendor is forced out of recognizing revenue at the time of product delivery under the license and must defer all revenue over the postcontract customer support period, which is likely to be the same as the licensed period. It appears to the author that the nature of the transactions is mischaracterized and the result is a very inappropriate accounting answer.

**(vii) Use of Delivery Agents.** Vendors are increasingly using agents, often referred to as fulfillment houses, to duplicate and deliver, or only to deliver, software to customers. Under SOP 91-1, delivery is required for revenue recognition on software licenses.

The use of a fulfillment house would not cause any complications to meeting the delivery requirement if the fulfillment house ships the software to the customer immediately upon receiving from the vendor a notification to ship. Delivery can be accomplished almost as quickly by the vendor. However, it would seem that a delay by a fulfillment house in fulfilling a vendor's order to ship would result in a delay by the vendor in recording the revenue.

If a vendor signs a license agreement with a customer and gives the customer a voucher or some other form of documentation enabling the customer to request delivery directly from the fulfillment house at the customer's convenience, it will still be necessary for the delivery to the customer to occur before the vendor records revenue, because the fulfillment house is merely an agent of the vendor. Some have questioned whether it is appropriate to require delivery in this case because the vendor has no control over when delivery occurs. The Exposure Draft and SOP 97-2 conclude that revenue should be recognized when the software is delivered to the customer. Transferring the fulfillment obligation to an agent of the vendor does not relieve the vendor of responsibility for delivery, even if the vendor has no direct involvement in the actual delivery of the software to the customer. That conclusion is the same as was reached by the Task Force.

**(viii) Use of Authorization Codes.** Authorization codes, often referred to as "keys" or "strings," are used to restrict access to software for a variety of purposes. They are used for security reasons, to limit software use pursuant to requirements of a contract (e.g., a specific mainframe), or for marketing purposes (e.g., a temporary key that "clocks out" at the end of a demonstration period).

Concern has been expressed as to whether delivery could ever be complete if the customer cannot use the software in the form in which it is delivered, such as when the software arrives without the key that allows the customer to use it.

It seems clear that if a customer receives demonstration software, whether such software is protected by a key or not, a signed contract to license the software and full access to all functions and features of the software are necessary before the vendor may recognize any revenue.



Delivery of a key by a vendor is usually done very quickly, often electronically or by telephone or fax. It would seem that if the customer has the right to demand the key and has a fully functional version of the software, as long as the key will be made available to the customer immediately and the customer's ultimate obligation to pay for the software is not contingent on delivery of the key, then revenue should be recognized on delivery of the software and delivery of the key should be considered an insignificant vendor obligation.

Some have expressed concern about the use of a temporary key to enhance the vendor's ability to collect payment for the software. To answer this concern, there is agreement that the vendor must intend to enforce and have a history of enforcing its right to collect payment under the original terms of the agreement, particularly if additional temporary keys are issued to customers whose payments are delinquent, and that payment by the customer must not be contingent upon delivery of the key. It seems the real concern and the need to overcome the negative implications of using a temporary key to enforce collectibility.

The Exposure Draft and SOP 97-2 have made some other helpful clarifications. First, a signed contract may not always be obtained, so the requirement is simply stated to require that "the customer has licensed the software," but still requires full functionality to be available. Second, if a temporary key is used to enhance collectibility, use of a temporary key for such purposes must be a customary practice of the vendor; selective use of a temporary key would indicate that there are collectibility issues or that the software is being used for demonstration purposes.

**(ix) Fiscal Funding Clauses.** SOP 91-1 states that revenue from cancelable licenses should not be recognized until the cancellation privilege has lapsed. Fiscal funding clauses are often included in software license agreements in which the licensees are governmental units. They usually provide that the license is cancelable if the funding authority does not appropriate funds for the governmental unit to fulfill its obligations under the license agreement.

There is analogous literature dealing with this situation, specifically FASB Technical Bulletin No. 79-10, *Fiscal Funding Clauses in Lease Agreements*, which recommends that the fiscal funding clause be evaluated to determine whether the possibility of cancellation is a remote contingency. If it is a remote contingency, the software license would be considered noncancelable and revenue recognition would not be delayed by the fiscal funding clause. Otherwise, the license would be considered cancelable and revenue recognition would be delayed until the uncertainty is removed.

The Exposure Draft and SOP 97-2 draw the same analogy to Technical Bulletin 79-10 and the conclusion it reaches is the accounting described earlier in this section.

This is generally consistent with practice prior to the issuance of SOP 97-2.

## **(b) Contract Accounting Issues**

**(i) Subcategories of Issues.** There are three issues concerning contract accounting:

1. Whether output measures of progress-to-completion may be used if the results differ significantly from those that would be obtained using input measures.
2. Whether changes to off-the-shelf software should cause it to be accounted for as core software.
3. Various questions about accounting for software development contracts.

(ii) **Input versus Output Measures.** SOP 91-1 includes much discussion about input measures and output measures of progress-to-completion. One passage states:

The method chosen to measure progress-to-completion on an individual element of the software contract should be the method that best estimates approximate progress-to-completion on that element. [SOP 91-1, paragraph 90]

However, another sentence in SOP 91-1, concerning the use of output measures based on milestones, says:

The milestones should be validated by comparing them to estimates of the results that would be obtained by applying other measures of progress-to-completion. [SOP 91-1, paragraph 106]

This sentence has caused some to believe that if the results of using output measures differ significantly from the results that would occur using input measures, the use of output measures may not be valid. This was not the application intended by the Task Force. What was meant is better expressed in the following portion of SOP 81-1:

The acceptability of the result of input or output measures deemed to be appropriate to the circumstances should be periodically reviewed and confirmed by alternative measures that involve observations and inspection. For example, the results provided by the measure used to determine the extent of progress may be compared to the results of calculations based on physical observation by engineers, architects or similarly qualified personnel. That type of review provides assurance somewhat similar to that provided for perpetual inventory records by periodic physical inventory counts, [SOP 81-1, paragraph 51]

The Exposure Draft and SOP 97-2 delete the sentence concerning validation of milestones that was the source of the apparent confusion (SOP 91-1, paragraph 106) and replaces it with the words from SOP 81-1 quoted here.

(iii) **Core versus Off-the-Shelf Software.** There has been a great deal of confusion about whether a contractual requirement to make changes or additions to functionality or features of off-the-shelf software should cause it to be considered core software for the purposes of measuring progress-to-completion under a contract. This issue is discussed at length in Chapter 5.

Some industry practitioners believe that off-the-shelf software never loses its character as off-the-shelf software, that the extent of any changes, modifications, additions, or deletions to off-the-shelf software is irrelevant, and that off-the-shelf software can be used as a separate element in measuring progress-to-completion in any event. At the other end of the spectrum are those who believe that any change to off-the-shelf software should cause it to be core software for accounting purposes. This distinction is important if output measures are used, because application of off-the-shelf software to a contract may be considered an output measure of progress enabling revenue recognition, whereas delivery of core software generally would not be.

Although not specifically stated, the intention of the Task Force that authored SOP 91-1 lies between these two extremes. If there is no change or only minor changes to the off-the-shelf software and the software is usable by the customer for the customer's purpose upon installation, its characterization as off-the-shelf software would not be changed. On the other hand, if the changes are more than minor or the software is not usable by the customer in its off-the-shelf form for the customer's purpose in the customer's environment, it would be viewed as core software. The Exposure Draft and SOP 97-2 reflect this view.

Although not stated in the Exposure Draft or SOP 97-2, it should be noted that it is not necessary for the customer to actually use the software in order to demonstrate its usability; the customer may simply choose not to use it, or contract activities may take place at the vendor's site rather than at the user's site.

**(iv) Use of Contract Accounting for Software Development Contracts.** Questions have arisen about whether software development projects that are partially or fully funded by other parties should be accounted for using contract accounting if:

- Royalties are payable to the funding party based solely on the results of future sales of the product by the software vendor (i.e., "reverse royalties").
- The funding party receives discounts on future purchase of products produced under the arrangement.
- The funding party receives a prepaid, nonexclusive sublicense for use of the product developed.

There are various reasons why a party might fund all or a portion of the development of software by a software vendor: to ensure the availability of a product on the funding party's platform, to accelerate the software vendor's development of a product, and so on. Some have expressed concern, particularly regarding situations in which a funding party is purchasing or sublicensing the developed software, that delivery may be required before the software vendor can recognize any revenue. Others believe that funding should be recognized as revenue over the development effort or the marketing effort, or both, as relevant.

The proposed solution focuses on whether the vendor has an obligation under the agreement that would preclude revenue recognition.

If the software development project is within the scope of FASB Statement No. 68, *Research and Development Arrangements*, FAS 68 should govern the accounting. Thus, for situations in which a funding party is at risk for the development of software, contract accounting for the proceeds by the software vendor would be appropriate as long as there is no obligation of the vendor to repay the funding party. To conclude that there is no obligation to repay, there must be a substantive and genuine transfer of development risk from a vendor to the funding party. To the extent there is a commitment to repay any of the funds provided by a funding party regardless of the outcome of the software development, all or part of the risk has not been transferred. And, to answer a question that occurs in practice, guidance will be included to say that of technological feasibility of the software pursuant to the provisions of FASB Statement No. 68, *Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed*, FAS 68 would not apply because the arrangement is not a research and development arrangement. No guidance is proposed if FAS 68 does not apply.

The Exposure Draft and SOP 97-2 state that accounting for costs related to funded software development arrangements is beyond their scope. However, they do provide that if any costs incurred under the arrangement are capitalizable under FAS 68, income under the arrangement should be credited first to the amount of development costs capitalized. They further provide that income in excess of costs capitalized should be deferred and offset against future amounts capitalizable, with any deferred amount remaining at completion of the project credited to income.

The Task Force had considered this “offset” accounting as well as an alternative approach of accounting for the funding separately as revenue and accounting for the costs separately as an asset or an expense in accordance with applicable literature. The Task Force concluded that the issue was one of contract accounting and, because the accounting literature for contracts as is related to this issue was unclear and there is diversity in practice in industries other than software, that it was beyond the scope of the proposed SOP. Apparently, the Working Group and AcSEC did not share that view.

One other issue related to software development arrangements was considered by the Task Force, but excluded from the proposed SOP: the inclusion of marketing activities within the scope of a software project. There is authoritative literature on accounting for research and development arrangements that, as described above, would apply to a research and development arrangement. On the other hand, there is very little authoritative literature on accounting for funding or marketing projects. For software companies, frequently the successful marketing of the product has more risk than its successful development, and so it seems reasonable to apply the same transfer of risk criteria of Statement 68 for development to the marketing activities as well. However, because some have expressed reluctance to extend the accounting to marketing projects in an SOP dealing with the software industry, the SOP will not deal with the marketing aspects of a software project.

### (c) Service Transactions Issues

(i) **Subcategories of Issues.** There are two issues on accounting for service transactions:

1. Identification of service transactions
2. Whether the price of a service transaction must be separately stated in an agreement

(ii) **Identification of Service Transactions.** It is important that there be a clear distinction between vendor obligations that require service transaction accounting and other vendor obligations that require contract accounting. The reasons for this is that if a vendor obligation is a service transaction, the contract is, in effect, bifurcated and the license fees are accounted for separately from the service revenue. The license fee is recognized on delivery, and the service revenue is recognized as the service is performed.

To qualify as a service transaction, the service element must be discrete. It is considered discrete under SOP 91-1 if both of these conditions apply:

- Performance of the service element is not essential to the functionality of any other element of the transaction.
- The service is separately stated and priced so that the total price of the transaction would be expected to vary as a result of the inclusion or exclusion of the service.

The definition in SOP 91-1 is appropriate, but judgment is required in determining whether service obligations in an agreement also requiring delivery of software should be accounted for separately as a service transaction. Rather than modify that definition, the Exposure Draft and SOP 97-2 spell out some “good facts” and “bad facts.” These may not provide conclusive determinants for all situations of whether a service obligation can be accounted for separately as a service transaction, but they should help in making judgments and should enable preparers of financial statements to achieve some level of consistency.

Service transactions that qualify for accounting as such would always be stated separately and would generally have at least several of the following characteristics:

1. The services are available from other vendors.
2. The services do not carry a significant degree of risk or unique acceptance criteria.
3. The software vendor is an experienced provider of the services.
4. Customer personnel are dedicated to participation in the services being performed.
5. The vendor is primarily providing implementation services, such as implementation planning, loading of software, training of customer personnel, data conversion, building simple interfaces, running test data, and assisting in the development and documentation of procedures.

On the other hand, the following factors would indicate that the services should not be accounted for separately as a service transaction:

1. The software is not off-the-shelf software.
2. The services include more than minor alterations to the features and functionality of the off-the-shelf software.
3. Building complex interfaces is necessary for the vendor's software to be functional in the customer's environment. (Not in Exposure Draft; added in SOP 97-2.)
4. Payment terms for the software are linked to performance of the services.
5. Milestones or unique acceptance criteria affect the realizability of the software license fee.

There has been some confusion about accounting if a service element cannot be accounted for separately as a service transaction. Some believe that contract accounting is not appropriate unless there is significant production, modification, or customization of software; others believe that a transaction involving delivery of software and services may be accounted for using contract accounting if the criteria for separate accounting for the services as a service transaction are not met, regardless of the degree of modification of the software itself.

The Exposure Draft and SOP 97-2 state that if the service element does not qualify for accounting as a separate service transaction, contract accounting must be applied to both the software and service elements included in the arrangement.

**(iii) Separate Pricing of the Service Element.** One of the criteria for accounting for an obligation as a service transaction is:

[The] services . . . are separately stated *and priced* such that the total price of the transaction would be expected to vary as a result of the inclusion or exclusions of a service . . . . [emphasis added; SOP 91-1, paragraph 39]

The FASB's Invitation to Comment, *Accounting for Certain Service Transactions*, paragraph 8(b), contains the following wording:

If the seller of a product offers a related service to purchasers of the product but separately states the service and product elements in such a manner that the total transaction price would vary as a result of the inclusion or exclusion of the service, the transaction consists of two components: a product transaction that should be accounted for separately as such and a service transaction . . . .

It was the intention of the Task Force, when SOP 91-1 was prepared, that the criteria concerning whether a service is separately stated and priced be consistent with criteria in the Invitation to Comment. The Invitation to Comment did not require separate pricing of the service transaction in the agreement. In effect, as long as the service is "priceable," it may be accounted for separately.

The actual wording of SOP 91-1 was ambiguous and some interpretations had taken the position that a service must be separately priced in an agreement if it is to be accounted for as a separate service transaction. The Exposure Draft and SOP 97-2

replaced the ambiguous wording in SOP 91-1 with wording virtually identical to that in the Invitation to Comment. It goes on to say that regardless of whether separate prices are assigned to the service element of the transaction, the allocation of revenue between the software and service elements of the contract should be based on vendor-specific objective evidence of fair values.

#### (d) Postcontract Customer Support Issues

(i) **Subcategories of Issues.** The following issues were addressed in the area of postcontract customer support:

- Free postdelivery telephone support.
- Unbundling postcontract customer support from other software license revenue.
- Payments received by vendors from resellers that relates to postcontract customer support revenues of resellers.

(ii) **Free Postdelivery Telephone Support.** Many software vendors who do not provide postcontract customer support do provide their users with free telephone support that is often unlimited and available in perpetuity. Sometimes it is provided for explicitly, by the vendor, when the software product is sold or licensed; in other cases, it may be available only as a matter of practice. Free telephone support is common for “shrink-wrap” products.

Until recently, most vendors accounted for free telephone support as an ongoing business expense and did not accrue its cost or defer revenue for it at the time of a software license. The SEC staff, in early 1993, objected to this practice and stated the view that the costs of providing free telephone support should be accrued at the time the software is sold, regardless of materiality.

Concern was raised about whether the free telephone support should be viewed as an element of postcontract customer support requiring unbundling of revenue with ratable recognition over the period of service. If it is considered to be postcontract customer support, since the license into which the telephone support is bundled is typically perpetual, and the support is perpetual, it would not be possible under the criteria in SOP 91-1 to merely accrue a cost of the free telephone support.

Ultimately, the SEC staff accepted accrual of costs (rather than unbundling of revenue) if substantially all of the vendor’s telephone support is provided within one year of recording the revenue related to the users to whom this support is provided (e.g., the sale to resellers if the vendor does not sell directly to users) and the costs are not significant. In effect, free telephone support is considered to be postcontract customer support but is considered to have a term of one year or less in applying the criteria in SOP 91-1. The Exposure Draft and SOP 97-2 specifically state this conclusion.

However, in those unusual situations in which substantially all telephone support is not provided within one year of recording revenue, it will be necessary to unbundle revenue for the support and recognize it ratably over the service period or as the ser-

vices are performed, if there is sufficient evidence to indicate the costs are incurred on other than a straight-line basis.

**(iii) Unbundling Postcontract Customer Support from Other Software License Revenue.** SOP 91-1 requires that postcontract customer support bundled with a license fee generally should be unbundled and recognized ratably over the period of the postcontract customer support arrangement. However, it does provide that if there is insufficient information to derive a separate price for the postcontract customer support, revenue from both the license fee and postcontract customer support should be recognized ratably over the period in which the postcontract customer support is provided. At the time SOP 91-1 was written, the Task Force expected that a situation in which there would not be sufficient information to unbundle the postcontract customer support would be relatively unusual, even though judgment might be required in some cases.

The SEC staff has taken the position that bundled postcontract customer support cannot be unbundled unless there is objective, verifiable evidence to support the unbundled price and that such evidence should be provided based only on the prices charged by the vendor to other customers. The Task Force believed that this interpretation is inconsistent with the intention of the Task Force when SOP 91-1 was written.

The Task Force intended to clarify the basis for unbundling by requiring that vendors, to the extent possible, use information based on their own postcontract customer support pricing practices as described in paragraphs 118 and 119 of SOP 91-1. If there is not sufficient information or the vendor does not offer postcontract customer support separately, competitors' prices would be referred to.

The Task Force also considered using the average prices for the specific industry segment of the vendor's product as a basis for separately pricing the vendor's postcontract customer support obligation, but rejected it because of questions as to how objective the factor was and whether it would be applied consistently in practice.

The Exposure Draft and SOP 97-2 take a different approach by requiring that the portion of the total fees from the license be allocated between the various elements based only on vendor-specific objective evidence of fair value. If there is not sufficient evidence of that type, the entire fee from the arrangement would be recognized ratably over the period of the arrangement. This is a very significant change from SOP 91-1, and one that will cause software vendors to be unable to unbundle postcontract customer support unless they sell postcontract customer support separately in other transactions.

In the author's view, the stringent approach in the Exposure Draft and SOP 97-2 is not warranted. There had not been significant problems in practice in allocating revenue to postcontract customer support. Typically, the price ranges of postcontract customer support are fairly narrow, and the potential margin for error in unbundling postcontract customer support would generally not be material. Further, to defer revenue after delivery of the software when all other revenue recognition criteria have been met, solely because of the inability to achieve an objective degree of precision



far beyond normal materiality considerations in measuring a minor part of the entire transaction, clearly misstates the financial statements. But under the approach in the Exposure Draft and SOP 97-2, we now see “the tail wag the dog”!

**(iv) Payments Received by Vendors from Resellers That Relate to Postcontract Customer Support Revenues of Resellers.** Vendors frequently market software products through resellers. Often the software vendors provide postcontract customer support directly to the end-users; however, in a number of situations, the reseller will provide the postcontract customer support directly to the end-users, and the vendor may provide “back line” support to the reseller. These situations are common in arrangements with distributors in foreign locations and with value-added resellers of software or hardware and software.

Pricing arrangements between vendors and resellers related to the reseller’s right to provide postcontract customer support to the end-users vary significantly. In some cases, the reseller is required to make a specific payment to the vendor; in other cases, the reseller pays a royalty to the vendor based on the reseller’s sales volume, including postcontract customer support, and in still other cases, there is no specific requirement for the reseller to pay the vendor anything directly or indirectly related to postcontract customer support.

Questions have arisen as to whether these payments should be accounted for in the same manner as a postcontract customer support fee. Further questions revolve around whether the payments that are characterized as royalties should be accounted for as royalties by the vendor; the implication of this is that the royalties would be accounted for as income when received, rather than deferred in some fashion, although it is unclear as a matter of accounting theory whether such accounting is necessarily appropriate. In transactions where there is no explicit payment for the right to provide postcontract customer support and none can be calculated based on royalty arrangements, there is a further question of whether and how to impute an amount for postcontract customer support and account for it separately from the licensing fee.

The Task Force concluded that if the reseller is permitted to furnish postcontract customer support to users, the payments from the resellers that relate to the postcontract customer support should be accounted for by the vendor as postcontract customer support. If there are no payments that can be related directly to the postcontract customer support, a portion of the licensing fee attributable to postcontract customer support should be unbundled and accounted for by the vendor as postcontract customer support revenue.

The position taken in the Exposure Draft and SOP 97-2 is consistent with that of the Task Force. However, as with postcontract customer support, as discussed earlier, if it is necessary to allocate the revenue under the arrangement between software license fee and postcontract customer support, the allocation can only be based on vendor-specific objective evidence of fair value. If that is lacking, revenue is deferred and recognized over the period for which the postcontract customer support is provided.

The Exposure Draft and SOP 97-2 do not provide any specific guidance on how to allocate postcontract customer support revenue among accounting periods. Because

the periods covered by the resellers' postcontract customer support arrangements with end users may differ from the period covered by the license between the vendor and the reseller, and because receipts can be before, during, or after the postcontract customer support period, the accounting period in which revenue should be recognized may not be clear, and calculations can be intricate and complex. The Task Force did not believe that detailed implementation guidance was appropriate, and the Exposure Draft and SOP 97-2 reflect that view.

### (e) Transition

The Exposure Draft provided that the cumulative effect of changes caused by adopting the provisions of the proposed SOP should be included in net income in the period of the change in conformity with Accounting Principles Board (APB) Opinion No. 20, *Accounting Changes*. It would not have required disclosure of pro forma effects of retroactive application, and would specifically prohibit restatement of previously issued financial statements.

There is not much consistency in transition provisions among accounting pronouncements. Although the Task Force never concluded on transition, there was substantial support for applying the new SOP on a prospective basis for transactions entered into after a specific date soon after issuance of the SOP, with retroactive restatement permitted. SOP 91-1 was implemented on a retroactive basis, and initially the thought was to require the new SOP to have a similar implementation method. However, concern was expressed that companies should not be required to restate if they in good faith believed they were complying with existing specific accounting rules. Further, companies would likely modify the structure of certain transactions in the future to avoid some of the revenue pitfalls in the new SOP, so restatement may not achieve the desired comparability.

In the only significant change to the Exposure Draft, AcSEC determined not to require a cumulative-effect adjustment on adoption of the SOP, and instead provided for prospective application for transactions entered into after the adoption of SOP 97-2. Consistent with the Exposure Draft, retroactive application of SOP 97-2 is prohibited.

## 2.6 CONCLUSION

SOP 97-2 was issued on October 27, 1997 with an effective date of December 15, 1997.

It did not take long for the wheels to fall off! A number of respondents to the Exposure Draft complained that the limitations on what constitutes vendor-specific objective evidence ("VSOE") of the fair value were too onerous, and substantial issues in implementing them were being encountered. In an Exposure Draft entitled *Deferral of the Effective Date of Certain Provisions of SOP 97-2, Software Revenue Recognition, for Certain Transactions*, dated February 11, 1998, not even four months after SOP 97-2 was issued, AcSEC proposed deferral of the effective date of the limitations on what

constitutes VSOE of fair value for certain multiple-element arrangements. That Exposure Draft was followed shortly by SOP 98-4, which deferred the effective date of the limitations on what constitutes VSOE of fair value for all multiple-element arrangements for one year until December 15, 1998 to allow AcSEC time to reconsider its conclusions. In July 1998, AcSEC issued an Exposure Draft proposing complete revision of the limitations on what constitutes VSOE of fair value for certain multiple-element arrangements, followed by SOP 98-9, *Modification of SOP 97-2, Software Revenue Recognition, with Respect to Certain Transactions*, which adopted the proposal in the Exposure Draft with some changes and deferred the effective date until March 15, 1999.

The author believes, with some significant reservations, that SOP 97-2, as amended, is an improvement over SOP 91-1. It does provide guidance in a number of areas where additional guidance was needed. However, SOP 97-2 is a very complex document. It is cumbersome to read and parts are difficult to understand, a fault also suffered by SOP 91-1. This will lead inevitably to inconsistent interpretation of its provisions. Some of the complexity is caused by the constraints of existing literature (e.g., FASB No. 48). Some is caused by inconsistencies in how provisions are stated and how they are explained, and some is caused by the adoption of theoretically cumbersome provisions that are in some cases counterintuitive, unnecessarily complex, or impractical.

Some time ago, I would have said that once SOP 97-2 was issued, it would be unlikely that AcSEC would reconsider its conclusions for quite some time. Accounting by software vendors had been on AcSEC's agenda almost continuously since 1982, an extraordinarily long time. Now, it seems there may be no way to bring closure to the project! In 1998, AcSEC formed a task force, the Software Revenue Task Force, to consider additional implementation guidance on specific issues relating to software revenue recognition and SOP 97-2, as amended.

The AICPA Task Force on Accounting for the Development and Sale of Computer Software has not met since 1995. The project has outlived the Task Force, and almost all the original members have changed employers or careers. The contributing author has retired from the public accounting profession and moved into the corporate world. I wish my successors on the new Software Revenue Task Force *Bon Voyage!*

## CHAPTER THREE

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# The Securities and Exchange Commission

### 3.1 ORGANIZATION OF THE SECURITIES AND EXCHANGE COMMISSION

It is important for software companies to have an understanding of the Securities and Exchange Commission (SEC) organization and how it functions as related to accounting matters and ongoing registration statements.

The SEC consists of five commission members and the commission's staff. The commissioners are all presidential appointees who serve five-year terms. The president designates one of the commissioners as chairman, who determines the key matters to be focused on by the commission, and to whom the staff reports.

The staff consists of divisions, such as the Divisions of Enforcement and Corporation Finance, which are operations-oriented, and offices, such as the Office of General Counsel and the Office of the Chief Accountant of the Commission, which provide policy advice to the commission. See Exhibit 3.1, which provides a chart of the organizational structure of the SEC. As an illustration of the roles, the Division of Corporate Finance (see Exhibit 3.2) reviews ongoing filings, and in an extreme case might recommend enforcement action for any number of reasons, which would be investigated by the Division of Enforcement, and, if necessary, prosecuted by the Office of General Counsel. The Office of the Chief Accountant of the SEC also recommends enforcement actions for accounting-related cases.

Public filings with the SEC by software companies, such as those using Forms S-1, S-3, 10-K, and 8-K are routed by the filing desk to the Division of Corporate Finance, which is divided into 13 industry-specialized branches. For example, branches 9 and 10 review the filings of software and insurance companies, and branches 1 and 2 review the filings of financial institutions.

Each branch has four to six branch accountants and a number of attorneys who report to a branch chief, and usually two assistant chief accountants who report to

**EXHIBIT 3.1** Organization of the Securities and Exchange Commission Staff

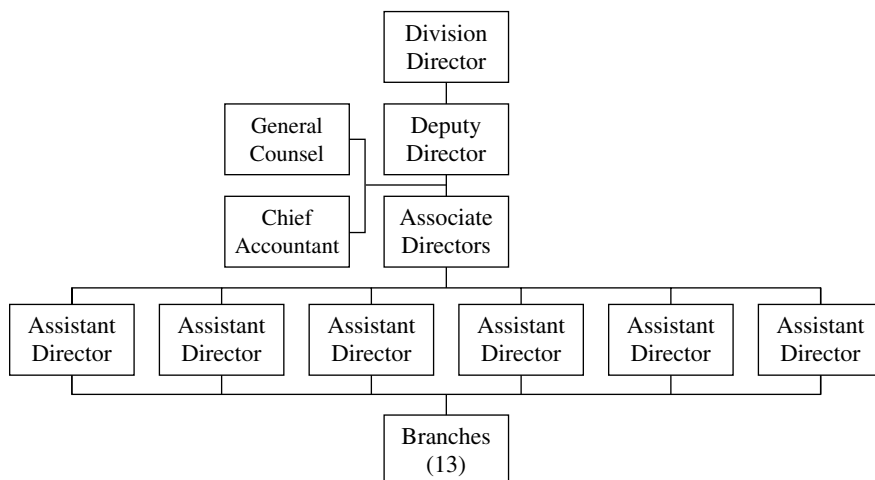
## Offices of the Commission



both the branch chief and to the chief accountant of the Division of Corporation Finance. The branch accountants and attorneys review filings by registrants and, if necessary in their opinion, prepare draft comments. The accounting comments are reviewed by an assistant chief accountant and included with the legal comments prepared by the attorneys in a final comment letter to the registrant, which is signed and issued by the branch chief.

The chief accountant of the Division of Corporation Finance is responsible for supervising the accounting staff of the division, resolving accounting issues arising from reviews of filings by the staff, and assisting the SEC in rule making for accounting and filing matters. The chief accountant is assisted by a deputy chief accountant and approximately five associate chief accountants. The associate chief accountants are generally responsible for overseeing a specific branch.

The chief accountant of the SEC is the primary counsel to the SEC on accounting matters. If a registrant disagrees with a position taken on an accounting matter by the chief accountant of the Division of Corporation Finance, the registrant may appeal the issue to the Office of the Chief Accountant of the SEC. The chief accountant has responsibility for setting SEC staff policy on such appeals, and registrants may con-

**EXHIBIT 3.2** Securities and Exchange Commission Division of Corporate Finance

test the chief accountant's decision only by appealing to the commissioners of the SEC. Such appeals are extremely rare and seldom successful in overturning the SEC staff's position.

Oversight of the accounting standards set by the Financial Accounting Standards Board (FASB) and American Institute of Certified Public Accountants (AICPA) is also the responsibility of the chief accountant. Representatives of the Office of the Chief Accountant often work closely with the standard-setting organizations as important new pronouncements are being developed. The SEC staff followed with keen interest the development of FASB Statement No. 86, *Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed*, and AICPA Statements of Position (SOP) 91-1, *Software Revenue Recognition*, and 97-2, *Software Revenue Recognition*.

## 3.2 CAPITALIZATION OF SOFTWARE DEVELOPMENT COSTS

### (a) Historical Perspective

Shortly after formation of the AICPA Task Force, the SEC became concerned about software companies' accounting for the costs incurred in development of software products. There was inconsistency in the extent of capitalization of software development costs by software companies as a result of diverse application of various pronouncements issued by the FASB, including FASB Statement No. 2, *Accounting for Research and Development Costs*; FASB Interpretation No. 6, *Applicability of FASB Statement No. 2 to Computer Software*; and FASB Technical Bulletin No. 79-2, *Computer Software Costs*. Effective April 1983, the SEC placed a moratorium on the

capitalization of software development costs until 1985, when the FASB issued Statement No. 86, *Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed*.

### **(b) SEC Views on Implementation of FASB Statement No. 86**

There has been significant diversity in the implementation and application of Statement No. 86 by software companies. The amounts of software development costs capitalized by software companies have ranged from zero to very high percentages of total research and development expenditures. Although the SEC had wanted an accounting standard that would eliminate a broad range of accounting results, it has not challenged the diversity. The reason is, in part, that the SEC believes that Statement No. 86 has placed limits for determining how much software development can be capitalized and therefore proper application of Statement No. 86 should be preventing abuses. The broad range of percentages of software costs that are capitalized is also due in part to the variety of software development processes.

The SEC, however, has been focusing on the net realizable value test for capitalized costs. It would not be unusual for a publicly traded software company with amounts of capitalized software development costs that significantly exceed industry norms, or that uses a long amortization life, to be asked to justify to the SEC staff the recoverability of the capitalized costs. In some cases registrants have been requested to provide their net realizable value analyses for review by the SEC staff.

Another way that the SEC staff monitors capitalized software development costs is through reviews of Management's Discussion and Analysis. The SEC staff looks for trends that could affect the recoverability of capitalized costs. Registrants should anticipate that if a significant write-off of capitalized costs or a significant change in amortization rates is necessary, the SEC staff may challenge the adequacy of current and prior disclosures in MD&As if known trends that resulted in the write-down or change in amortization were not previously discussed.

### **(c) Amortization of Capitalized Software Costs**

In Financial Reporting Release (FRR) No. 12, the SEC stated the following:

Computer software (whether internally developed or purchased) is an area characterized by both rapid technological development and increased industry competition and growth. Therefore, the use of very short amortization periods is indicated. Further, the Commission reminds registrants that have capitalized such cost that careful periodic evaluation of the recoverability thereof is necessary.

The SEC staff has indicated it will typically challenge amortization of capitalized software costs over periods longer than three to five years for personal computer-

based (PC) software products, and five to seven years for other software products. The SEC staff has advised that registrants preferring to use amortization periods longer than these should consider discussing the basis for longer amortization periods with the SEC staff on a prefiling basis.

### 3.3 REVENUE RECOGNITION

#### (a) SEC Staff Accounting Bulletin No. 101 (“SAB 101”): Revenue Recognition in Financial Statements

This SEC staff accounting bulletin, which was issued in December 1999, summarizes certain of the staff’s views in applying generally accepted accounting principles to revenue recognition in financial statements. The staff provided this guidance due, in part, to the large number of revenue recognition issues that registrants encounter. For example, a March 1999 report entitled *Fraudulent Financial Reporting: 1987–1997 An Analysis of U. S. Public Companies*, sponsored by the Committee of Sponsoring Organizations (COSO) of the Treadway Commission, indicated that over half of financial reporting frauds in the study involved overstating revenue.

SAB 101 establishes four criteria for revenue recognition that are similar to the criteria in the American Institute of Certified Public Accountants’ (AICPA’s) Statement of Position No. 97-2 (SOP 97-2), *Software Revenue Recognition*.

The staff believes that if a transaction is within the scope of specific authoritative literature that provides revenue-recognition guidance, such literature should be applied. However, in the absence of specific literature that addresses a particular arrangement of industry, the staff will analogize to the existing authoritative accounting standards, and regard as basic GAAP guidance on revenue recognition, the broad revenue-recognition criteria that are specified in the conceptual framework of the Financial Accounting Standard Board’s (FASB’s) Statement of Financial Accounting Concepts No. 5 (CON 5), *Recognition and Measurement in Financial Statements of Business Enterprises* and the provisions of SAB 101.

The staff believes that revenue generally is (1) realized or realizable and (2) earned when all four criteria noted below have been satisfied. The four criteria that SAB 101 establishes for revenue recognition are very similar to those that were established by SOP 97-2. Following the publication of SOP 97-2, the staff indicated that it intended to extend, by analogy, the framework of the software SOP to other non-software industries. The staff has done that through the registration-statement comment process.

Criterion 1: Persuasive evidence of an arrangement exists.

The staff has stated that revenue cannot be recognized until authorized personnel have executed the final agreement. The execution date of the agreement is the date on which the parties sign the agreement. This raises questions about



how a registrant should account for contracts that do not have a signature date (e.g., the only date the contract references is the effective date). The staff also states that internal controls have to be in place to ensure that the effects of all “side letters” (agreements outside of the basic agreement and often outside the system of internal controls) are considered.

Criterion 2: Delivery has occurred or services have been rendered.

The staff has stated that, generally, it will not regard a product as having been delivered unless the customer has taken title to the product(s) and assumed the risks and rewards of ownership. The staff has further stated that the customer typically takes title to and assumes ownership of the product(s) upon the shipment of the product(s) (if shipping terms are “FOB shipping point”) or upon their delivery (if the shipping terms are “FOB destination”). The staff view is that the FOB terms and the title transfer are essential to determining when the risks and rewards of ownership are transferred to the customer. Situations where material amounts of revenue are recognized by registrants upon shipment when delivery terms are “FOB destination” or there are inconsistencies in the related underlying documentation need to be carefully reviewed for when to record revenue.

Criterion 3: The seller’s price to the buyer is fixed and determinable.

Footnote 5 of SAB 101 indicates that the “fixed and determinable” criterion is the same as the criterion that had been set forth in SOP 97-2. The staff also believes that paragraphs 27 through 29 of SOP 97-2 should be considered in sales transactions in which the risk of technological obsolescence is high. The provisions of paragraphs 27 through 29 reflect the staff’s presumption that extended payments (payments due more than one year after the delivery) are not fixed and determinable. This has been one of the more problematic aspects of the application of SOP 97-2, especially when an entity is trying to identify a history of not having given concessions under previous long-term payment deals. Such a history must exist if an entity is to rebut the aforementioned presumption, and, as a result, make itself exempt from the requirement that it defer revenue. It is unclear which entities and/or products fall under the classification “high technical obsolescence,” it is reasonable to expect that the staff will presumptively consider all technology-related companies to be in that category.

Criterion 4: Collectibility is reasonably assured.

The revenue-recognition criteria in SOP 97-2 include the criterion that “collectibility is probable.” In place of the term “probable,” SAB 101 uses the phrase “reasonably assured.”

**(b) SEC Views on Certain Revenue Matters**

**(i) Multiple Element Arrangements and Unbundling.** The SEC staff believes that unbundling different elements of a multiple element arrangement is appropriate in certain circumstances, at their relative fair value. There would have to be sufficient, verifiable, objective evidence of the fair value. Each of the elements that are available for unbundling has to constitute a separate earnings process such as where the conditions for segmentation of a contract under SOP 81-1 are met. The SEC staff recognizes that vendor specific objective evidence (VSOE) may not be available in many cases. If the necessary level of evidence cannot be demonstrated, it would lead to an inability to unbundle, and complete deferral of revenue would be required.

**(ii) Functionality.** SAB 101 is clear that revenue should not be recognized if there are undelivered elements that are essential to the functionality of the delivered element such that they deny the customer the full use of the delivered element. Determining what constitutes full use must be made from the customer's perspective, i.e., would the customer agree that he/she had received everything ordered. For example, in the case of sale of a significant computer hardware system where a few disk drives remained to be delivered the SEC staff could be expected to require deferral of revenue for the entire sale. A question that the SEC staff could be expected to ask is whether the customer immediately place the delivered elements in use. If the delivered elements are not immediately put in use, or if the customer does not have complete use of all aspects of a system, then that would generally lead to the SEC staff taking the position that the customer does not have full use of the delivered element from the customer's perspective.

**(iii) Customer Acceptance.** The SEC staff presumes that the existence of a contractual customer acceptance provision is meaningful *and* generally requires that revenue not be recognized until customer acceptances are obtained. Customer-acceptance provisions may be included in a contract to (1) enforce a customer's rights to test the delivered product, (2) require the seller to perform additional services subsequent to the delivery of an initial product, or (3) identify other work that needs to be done before the customer accepts the product. SAB 101 states that customer-acceptance provisions in a contract are presumed to be substantive, bargained-for terms of an arrangement. Accordingly, the staff generally believes that revenue should not be recognized until acceptance occurs or the acceptance provisions lapse.

That presumption could be overcome by persuasive evidence that acceptance provisions are non-substantive and more like customary or short-term rights of return similar to those that are covered by FAS 48. The SEC staff believes that a judgment will have to be made based on the facts and circumstances of each situation. For acceptance provisions to be deemed non-substantive, the vendor should be able to unilaterally compel the customer to pay without any further performance by the vendor. The staff might accept an acceptance provision that mirrors the standard performance specification of a long-standing product as long as no additional representations as to performance were made by the vendor.

This view of acceptance provisions, when combined with the SAB 101 views on the effect on the timing of revenue recognition caused by FOB Destination shipping terms and the passage of title create significant hurdles for revenue recognition. Generally, if seller is obligated to perform tasks subsequent to product delivery, revenue should not be recognized until such tasks have been completed and, if necessary, accepted by the customer. Revenue would be recognized at the time of shipment or delivery only if: (1) the additional performance is essentially *perfunctory*, (2) the vendor has a history of being able to complete such tasks in a timely manner within the estimate of the costs of performance accrued at the time of revenue recognition, and (3) the costs can be reasonably estimated. The SEC staff has a narrow view of subsequent efforts that can be considered perfunctory.

Factors that might help a seller overcome the presumption are customer-acceptance provisions are embedded in standardized contract terms (rather than in a uniquely negotiated contract); the product has not been significantly customized; the seller has demonstrated and can document a history of having satisfactorily completed the remaining tasks, and the seller can reliably estimate the remaining costs of performance and that the amount of estimated remaining costs is de minimis.

The existence of any of the following circumstances would likely result in the staff taking the position that remaining performance is not perfunctory: (1) the performance period is lengthy, (2) the cost of performance is other than insignificant, (3) the installation requires specialized skills that are not widely available, (4) the payment date for a meaningful portion of the sales price is based on the customer acceptance date, and (5) a meaningful portion of the prior payments made by the customer is refundable by the vendor if the installation is not satisfactorily completed. If acceptance provisions can only be satisfied after vendor installation and are meant to demonstrate the success of the installation activity, it is generally revenue may not be recognized prior to installation and customer acceptance.

**(iv) Delivery and Software Keys.** Software may be delivered that is not the final version the customer is paying for and accepting. For example, demonstration versions of software are often reviewed by customers prior to ordering or accepting the final products. Sometimes a customer is initially provided a copy of the software that has much the same functionality as the final version to be delivered or that requires a software key or code to operate fully in an authorized mode. Providing a customer with a demonstration or other version of the software—one that does not have the same functionality as the final product to be licensed—would not constitute delivery. The SEC staff has indicated that delivery will not be considered to have occurred until delivery of the final version of the software that the customer is licensing, including any required software keys.

The SEC staff has been concerned about software deliveries being made to third-party warehouses, pending the customer's taking final delivery of the software or the delivery of the required hardware. These transactions were considered similar to "bill and hold" arrangements for which the revenue should not be recognized unless the

criteria of Accounting and Auditing Enforcement Release (AAER) No. 108 are met. The SEC staff has emphasized that for revenue to be recognized, delivery must be to the customer's site or to another site specified by the customer, and that if payment is not due until delivery to a specified site, revenue should not be recognized until delivery of the product to that site.

The staff believes that if payment of the license fee is contingent on the delivery of the keys, a question or uncertainty is raised about whether the transaction has been consummated. Has the earnings process been completed and is the collectibility of the sale assured? Accordingly, it would appear that if the fully functional version of the software (i.e., not a demonstration version) has been delivered and accepted by the client, and the payment of the license is not contingent or dependent on the customer's receiving the keys, the staff would not object to recognition of the license revenue.

**(v) Application of FASB Statement No. 48, *Revenue Recognition When Right of Return Exists.*** The SEC staff has indicated that unless a vendor has a clear and documented ability to make reasonable and reliable estimates of "returns," it will be precluded from recognizing revenue until the customer's return right lapses. The registrant must be able to provide persuasive and verifiable evidence that will support a conclusion that reasonable and reliable estimates can be made. The staff has indicated that the following conditions are among those that may affect a registrant's ability to make reasonable and reliable estimates of product returns:

- Significant increases in or excess levels of inventory in a distribution channel (i.e., "channel stuffing")
- A lack of available information about a distribution channel's inventory levels and sales history
- Expected introductions of new products that may result in the technological obsolescence of current products, as well as result in larger-than-expected returns of those products
- The significance of a particular distributor to the registrant's business
- The newness of a product
- The introduction of a competitor's product that has superior technology

SAB 101 explains in considerable detail factors that a registrant must consider in reaching such a conclusion. One is that generally there must be a relevant history of at least two years before a reliable estimate will be possible. The SEC staff expects the guidance in FAS 48 to be strictly applied particularly as to paragraph 7 of statement 48, which is specific in requiring that no revenue or cost of sales be recognized for products that have been sold, but for which it is the company's best estimate is that they will be returned. Should a company have done this in the past, even though there was no net income effect, the staff's view is that restatement of a correction of an error is required.

The SEC staff's expanded guidance in SAB 101 is directed heavily to "channel stuffing" transactions where prior history may not provide a sufficient basis to make a reasonable estimate of returns that can be expected to result from such transactions. In those circumstances, the SEC staff will require deferral of all revenue related to the "channel stuffing" transaction. The SEC staff believes that the ability to reasonably estimate returns is a Statement 48 requirement and that a registrant may not default to providing for a maximum return rate and still record the remaining revenue. In the absence of an ability to reasonably estimate the amount of returns, the SEC staff will require that all revenue be deferred.

Footnote 3 of Statement No. 48 says that exchanges of products for similar products by end users are not considered exchanges for which an allowance for returns must be provided. Consistent with that directive, SOP 97-2 states that an allowance for exchanges of software by end users for a product with a similar price and functionality need not be accrued when the revenue is recorded. For example, the exchange of a spreadsheet product that runs on Unix for the same program for a DOS environment would not require the anticipation of an allowance for returns.

Sales returns or exchanges by resellers must be susceptible to reasonable estimation and recorded when the product's revenue is recognized. These include exchanges under "stock balancing" arrangements that do not involve products with similar prices or functionality, such as a word-processing program exchanged for spreadsheet program. Such exchanges by resellers require estimation of an allowance for returns. In recent comment letters issued to registrants, the SEC staff has required them to provide historical data on product returns so that the SEC staff can assess the reasonableness of amounts recorded for product return allowances.

**(vi) Up-front Payments and Service Accounting.** SAB 101 provides guidance on the treatment of non-refundable fees, as well as guidance on accounting for services. The SEC staff generally believes that although the specific facts and circumstances of any given case should be considered, customers are purchasing on-going rights, products, or services that are being provided through the registrant's continued involvement in an arrangement and that this continued activity alone completes the earnings process. The staff believes that most up-front fees (even if non-refundable) are earned and become recognizable ratably as the products and/or services are delivered and/or performed over the term of the arrangement or the expected period of performance.

The SEC staff believes that service revenue should be recognized ratably over the contractual terms of an arrangement or the expected period during which specified services will be performed, whichever is longer, on a straight-line basis, unless evidence suggests that it is earned (or related obligations are being fulfilled) in a different pattern. The staff can be expected to object to recognizing revenue in proportion to costs incurred when those costs do not bear a direct relationship to the performance of the services that are specified. The SEC staff believes that it is not appropriate to recognize a prepayment as revenue at the outset of an arrangement by accruing the remaining costs (even if the costs can be estimated), because the services have not been performed.

These views highlight the SEC staff's position that when revenue is recognized should not always depend on when costs are incurred (unless the percentage-of-completion method under contract accounting applies); rather, revenue recognition should occur as services are performed. Costs that may be deferred over the revenue-recognition period are generally limited to incremental direct costs of acquiring or originating the arrangement, and so not include the costs of providing the service (which are generally expensed as incurred).

**(vii) Bill and Hold Arrangements.** SAB 101 codifies the existing bill-and-hold requirements that were established in AAER 108. Footnote 17 to SAB 101 states that the request for bill-and hold arrangements should typically be made "in writing" by the buyer. SAB 101 appears to not have changed the basic guidance set forth in AAER 108, but rather, has placed greater focus on the importance of documentation. However, the criteria presented in the SAB and the AAER are not meant to be regarded as checklists. In some cases, a transaction may meet all of the requirements in AAER 108 and yet still fail to meet the requirements for revenue recognition.

**(viii) Starting Dates of License Terms.** The SEC staff generally believes that revenue should not be recognized before the license term begins, even in situations of a payment to extend an existing license term. Similarly, if restrictions are placed on a reseller that preclude the current sale of the just purchased product, the vendor of that product generally should not recognize revenue until the reseller is able to sell the product.

**(ix) Extended Payment Terms.** The SEC staff is generally skeptical about revenue recognition for contracts with extended payment terms. SOP 97-2 notes, in paragraph 28, that a license fee may not be presumed to be a fixed fee when the payment is not due until more than 12 months after delivery. The SEC staff has informed registrants that if they are renegotiating payment terms at the end of such extended license arrangements, such negotiations are evidence that the original license was not fixed, that the change in the license term is not a change in estimate, and that the license fees have to be restated if they had all been recognized upon initial delivery of the product or master tape.

Paragraph 28 also provides that the presumption of a license not considered to be fixed could be overcome, notwithstanding payment terms of longer than 12 months. Evidence the SEC staff has considered in reviewing such transactions includes assessing customer creditworthiness and whether the receivable is reasonably assured of collection; a history of no previous renegotiations of licensing arrangements; and whether the customer is so significant to the company that the customer could cause the licensing arrangement to be renegotiated.

**(x) Contract Execution.** The SEC staff challenges registrants when they recognize revenue prior to the date the sales contract was signed. Revenue should not be recognized until the date a binding agreement is signed. If the parties agree to terms prior to

the end of a reporting period but do not execute the agreement until after the end of the period, the SEC staff will object to recognition of revenue until the following period.

(xi) **Discounting to Present Value.** The SEC staff has noted some software licenses involving payment terms that were not normal and customary in relation to the software vendor's typical payment terms. The SEC staff indicated revenues from such arrangements should be discounted in accordance with Accounting Principles Board (APB) Opinion No. 21, *Interest on Receivables and Payables*, if the discounting would be significant to the financial statements, even if the payments are due in less than 1 year. The SEC staff indicated that public companies should be cognizant of the impact of discounting on quarterly financial statements. In one case, a company filing with the SEC for an IPO was required to recirculate its "red herring" prospectus after completing its public offering road shows, the day before it was expecting its filing to become effective because of the material effects of discounting on the interim financial statements included in the filing.

(xii) **Customer Discount Coupons.** Customer discount vouchers, or coupons, was not discussed in much detail in SAB 101. However the SEC staff has noted that customer discount vouchers, or coupons are covered by AICPA Technical Practice Aid 3400.4, which indicates that for coupons distributed in connection with a current sale that are estimated will be redeemed, the redemption value should be recognized as a cost incurred in connection with the original sale.

(xiii) **Postcontract Customer Support.** The SEC staff believes that SOP 97-2 requires almost all software companies to account for postcontract customer support ratably over the period of the arrangement. It was expected that few companies would meet the criteria of the SOP for bundling the postcontract customer support and license revenues, recognizing those revenues together upon delivery of the product and simply accruing the costs of providing the postcontract customer support.

The SEC staff has challenged registrants, especially in the filings of initial public offerings (IPOs), who have not used ratable recognition for postcontract customer support. Comment letters issued by the SEC staff may raise questions asking for support for the accounting method used for recognizing postcontract customer support revenues and how the criteria in SOP 97-2 are met. Registrants that can clearly demonstrate that they meet the criteria should have support for their position. In addition, even though the postcontract customer support costs are insignificant, the SEC staff has required accrual of the remaining postcontract customer support costs. In IPOs, the staff has required registrants to restate their financial statements to include postcontract customer support costs, even though such costs may be considered by some to be immaterial.

In letters to registrants, the SEC staff has challenged registrants who stated their postcontract customer support costs were insignificant and at the same time could not provide data on the underlying costs. The SEC staff has stated, in letters to various registrants:

The staff believes that a registrant should be able to demonstrate sufficient, competent evidential support for maintenance costs that would include the following:

- The registrant should be able to demonstrate that it has an *existing* comprehensive system that clearly identifies and segregates all the related costs incurred in generating maintenance revenues. For example, the staff would expect the system to adequately identify personnel time and the associated costs incurred in providing the services required by the maintenance agreements.
- The registrant's accounting system should identify and accumulate all direct costs and directly allocable overhead costs incurred in providing all services required by the maintenance agreement.
- Such an accounting system should provide a reasonable basis for estimating the future costs expected to be incurred in generating the maintenance revenues. The system should also include procedures comparing such estimates with historical experience and making appropriate changes to such estimates on a timely basis.
- Costs for all services required to be provided by the maintenance agreement should be accrued and matched with the revenues in the period the revenues are recognized. This process would include the costs associated with maintenance revenues that are included in and bundled with the price of a software license agreement.
- The system should produce sufficient, competent, and verifiable evidence to be audited.

Further, Management's Discussion and Analysis should separately discuss the historical and expected trends in maintenance revenues that affect operating income and liquidity, such as when revenues are constant or declining and accrued costs have not been paid.

**(xiv) Output Measures.** The SEC staff believes that SOP 97-2 requires using the method that best measures progress-to-completion on elements of contracts for software. A registrant may use either input- or output-based measurements as long as the method chosen best reflects progress and performance on the elements of the contract. The SEC staff has expressed concern about the use of contract accounting to accelerate revenue recognition when actual performance has not been rendered by the contractor. For example, the SEC staff would challenge a registrant that included the value of hardware delivered at the vendor's or customer's site in measurement of progress-to-completion prior to installation.

Output measures such as milestones and value-added measures that are applied in assessing percentage-of-completion need to be objectively measurable and reflect progress on the contract. The SEC staff has challenged the use of output measures of off-the-shelf software if modifications are made to its functionality during installation. In that situation, the SEC staff and FASB staff have both indicated that they



believe the software is not off-the-shelf software for that transaction. Instead, the software should be regarded and accounted for as core software. Progress-to-completion for core software must be measured as the customization work is performed or upon completion of installation.

The SEC staff believes that if output measures are used, there should be clearly defined criteria or milestones that have been achieved and documented, with demonstration of acceptance of that portion of the contract by the customer. Registrants who are unable to document achievement of such milestones may be well advised to consult with their accounting advisors and the SEC staff.

**(xv) Estimates of Progress-to-Completion on Contracts.** In applying the percentage-of-completion method, software companies should consider technology risks of projects and reliability of cost estimates. The SEC staff has been concerned about software companies recognizing revenue on software development contracts prior to the establishment of the technological feasibility of the software. The SEC staff believes that if there is uncertainty about the ability to successfully develop a software product, the software company should use the completed contract method or, if it can be assumed that no loss exists, the zero gross profit method of contract accounting should be used until the uncertainty is eliminated. The SEC staff also noted that Statement No. 86 provides useful guidance with respect to assessing when the development of a software product should be considered to be in the research stage and when technological feasibility has been established. In reviewing such situations, the SEC staff is likely to focus on whether all significant uncertainties that might affect the success of completion of the product development have been clearly resolved. The SEC staff will have hindsight available when reviewing filings including contract accounting issues.

**(xvi) Gross or Net Presentation of Revenue.** In assessing whether revenue should be reported (1) on a gross basis, with a separate display of cost of sales, or (2) on a net basis, the SEC staff will consider whether the registrant

- Acts as a principal party in the transaction
- Assumes the title to the products
- Assumes the risks and rewards of ownership, such as risk of loss for collection, delivery, or returns
- Acts as an agent or broker and receives compensation on a commission or fee basis

If a company really performs as an agent or broker without assuming the risks and rewards of ownership that are associated with the goods, the SEC staff will require that sales be reported on a net basis.

**(xvii) Disclosures.** The SEC staff believes that companies that engage in multiple-element transactions should disclose their revenue-recognition policy for each element,

as well as disclose how each element was determined and valued. Also, companies should disclose changes in their estimate of returns that are recognized in accordance with Statement 48 when those changes are material (e.g., a change in estimate from two percent of sales to one percent of sales).

Additionally, the SEC staff believes that in accordance with SEC Financial Reporting Release No. 36 (FRR 36), *Management's Discussion and Analysis of Financial Condition and Results of Operations* the following events or transactions should be disclosed:

- Shipments of a product at the end of a reporting period that significantly reduce customer backlog and that reasonably might be expected to result in lower shipments and revenue in the next period
- The granting of extended payment terms that will result in a longer collection period for accounts receivable (regardless of whether revenue has been recognized) and slower cash inflows from operations, plus the effect that this will have on liquidity and capital resources (the fair value of trade receivables should be disclosed in the footnotes to the financial statements when the fair value does not approximate the carrying amount)
- Changing trends in shipments to, and sales from, a sales channel or a separate class of customer that could be expected to have a significant effect on future sales or sales returns
- An increasing trend toward sales that are made to a different class of customer (such as a reseller distribution channel that has a lower gross-profit margin than that which results from existing sales that are principally transacted with end users), and an increasing service revenue that has a different profit margin than that for product sales
- Seasonal trends or variations in sales
- A gain or loss from the sale of an asset or assets

As general disclosure, the SEC staff will expect full disclosure of all policies, estimates, and significant judgments subject to change.

### 3.4 OTHER SEC FINANCIAL REPORTING MATTERS

#### (a) Business Combinations

(i) **Amortization of Goodwill.** The SEC staff has indicated that it believes that rapid obsolescence and competition in the software industry should be considered in evaluating the period for amortization of goodwill related to the acquisition of software businesses. The SEC staff has indicated that it will challenge amortization of goodwill of a software business over a longer period than seven to ten years. A period of five to seven years may be necessary if a company is dependent on a single

high-technology product. The staff has also indicated that it will challenge purchase-price allocations in which little or no cost is allocated to software. In addition, the SEC staff has publicly stated that there is an SEC staff presumption that the amortization and allocation methods used currently for identifiable intangibles for income tax reporting purposes should also be used for financial reporting purposes.

**(ii) Acquired Research and Development.** Software companies typically have research and development projects in progress, as evidenced by the expenses classified as Research and Development in their income statements. Statement 86 establishes criteria for determining when a software development project is considered to be in the research and development stage and when it has achieved technological feasibility and is in the production stage. APB Opinion No. 16, *Business Combinations*, requires that the purchase price paid for a company be allocated to tangible and identifiable intangible assets. Any unallocated portion of the purchase price is then allocated to goodwill. In addition, FASB Statement No. 2, *Accounting for Research and Development Costs*, and FASB Interpretation No. 4, *Applicability of FASB Statement No. 2 to Business Combinations Accounted by the Purchase Method*, require that the purchase price be allocated to identifiable intangible assets, including any resulting from research and development activities of the acquired enterprise, or to be used in research and development activities of the combined enterprise. The intent of Statement No. 2 was to account for the costs of intangibles purchased in a business combination similar to those that are constructed or acquired for research and development projects. The subject was also addressed in EITF Issue 86-14.

Software companies that acquire an entity with research and development in process should follow the guidance in these pronouncements by allocating a portion of the purchase price to the research and development in process. The allocation should be based on fair value and should not be made so as to minimize or to avoid recording goodwill. The SEC may challenge a registrant that allocates a significant portion of a purchase price to acquired research and development but, in discussing the acquisition in a business description, MD&A, or notes to financial statements, indicates that the acquisition was completed primarily to obtain completed projects that are already being marketed. The SEC staff may also comment on a filing if there is no discussion of the impact on liquidity of the need for funds to complete the research and development in process at the acquisition date.

**(iii) Assumed Postcontract Customer Support Obligations.** An acquisition of a software business may include assumption of obligations to perform services under postcontract customer support (PCS) agreements when the acquired business has already received payment. The SEC staff has indicated it believes that in purchase price accounting, obligations to provide future PCS services should be recorded as a liability at present value of amounts to be paid in accordance with paragraph 88(h) and (i) of APB Opinion No. 16, *Business Combinations*. This results in no profit margins being recognized in postacquisition income statements for assumed PCS obligations.

Some have expressed the view that such contracts are similar to inventory or construction contracts in progress, and that they should be accounted for so that the acquirer reports a normal profit margin upon completing the obligations. This viewpoint is based on the theory that the acquirer should be able to report a profit on the PCS services it renders and that the purchase price negotiations take such services into consideration. The SEC staff has not accepted this view. The staff has noted that PCS, unlike a product such as inventory, is not being developed for sale: rather, an obligation for future performance is being incurred. The SEC staff has also noted that such accounting results in the recognition of a gross profit, even though it will never be realized through a subsequent collection of cash, because the cash has typically already been collected by the seller. As a practical matter, the profit on any acquired PCS contracts to be earned by the acquirer may be small and difficult to determine and very judgmental. Accordingly, any registrant who intends to use this accounting and recognize profits should consider discussing such accounting with the SEC staff prior to any filings.

**(iv) Pooling of Interests.** Some combining software companies prefer to have pooling-of-interests business combinations rather than purchase combinations. Most of the value of many software companies is imbedded in their software, an intangible asset. As a result the combining parties often wish to obtain warranties and representations. However, they may cause the transaction to fail the pooling criteria. Interpretation No. 30 of Opinion No. 16 provides, and the position of the SEC staff is, that in a pooling, any general representations or warranties must be resolved or expire at the date of the first postbusiness combination audit or in one year, whichever date is earlier. Specific warranties and representation may extend for longer periods.

Software companies should evaluate any representations and warranties in a business combination for which pooling-of-interests accounting is contemplated to be sure they do not violate the conditions for pooling. Specific warranties related to a specific product may qualify, yet not preclude pooling.

Issuances of new stock options or changes in terms of existing option agreements (such as a repricing) are considered a violation of the pooling rules if done in contemplation of the business combination. Generally, to overcome the presumption that such changes done within two years of the merger were in contemplation of the combination, a company must provide sufficient evidence of the business purpose for the stock option changes or issuances. Board of Director minutes, studies by outside compensation consultants, and evidence of industry comparisons, done at the time of the change to the plan, are examples of documentation the SEC staff typically asks for. The one exception to this general rule is that if a stock option agreement contains a *preexisting* clause that requires acceleration of vesting of stock options upon a change in control (but not a cash-out provision), then the acceleration is not considered to have been done in contemplation of the merger.

The FASB issued an exposure draft of a proposed FASB statement and continues to develop proposed new accounting rules for business combinations that would,

among other things, eliminate the pooling-of-interests method of accounting and would require use of the purchase method of accounting for all business combinations. Upon finalization of any related pronouncements, the preceding comments about pooling of interests accounting will be no longer applicable.

### **(b) Income Statement Captions**

Regulations S-X Article 5-03, requires registrants to separately disclose revenues from tangible products, services, and other sources, for each category that exceeds 10 percent of total revenues. In addition, for categories of revenues that are required to be disclosed, the related costs must be separately disclosed on the face of the income statement.

Accordingly, public software companies are required to separately present PCS revenues and related costs on the face of the income statement, if those revenues are more than 10 percent of total revenues. If PCS revenues exceed 10 percent of total revenues, the related costs must be presented separately on the face of the income statement, even if the costs are less than 10 percent of total costs. An inability to determine the costs of PCS may be indicative of an accounting system that does not provide sufficient evidence to support the accrual of PCS costs and up-front recognition of PCS revenue in the limited instances in which that accounting treatment is permitted.

### **(c) Management's Discussion and Analysis**

The SEC staff has been focusing closely on Management's Discussion and Analysis sections of filings by software companies since the release of FRR No. 36 in 1989, partly because of new and constantly changing trends in the industry. FRR No. 36 states the following.

MD&A [Management's Discussion and Analysis] is intended to give the investor an opportunity to look at the company through the eyes of management by providing both short- and long-term analysis of the company. The Item (MD&A) asks management to discuss the dynamics of the business and to analyze the financials.

Many SEC staff comments have been received by software companies with significant increases in revenues, where cash flows did not similarly increase because of increases in receivables. The SEC staff has noted that software companies have tended to discuss the increases in revenues but have often not discussed the increases in receivables, which have in some cases significantly affected the liquidity of the registrant. The SEC staff has indicated that it believes software companies should discuss the impact on operations and liquidity of significant increases in, and trends with respect to, the aging of receivables. The SEC staff recommends using the data in the statement of cash flows as a basis for discussing these trends, and that they should be

used to reconcile the increases in revenue in the income statement to increases in receivables in the balance sheet.

The SEC staff has indicated that MD&A should discuss historical and expected effects of trends in PCS revenues affecting operating income and liquidity, such as when revenues are constant or declining and related accrued costs have not yet been paid.

In reviewing filings, the SEC staff often looks for prior discussions in MD&A about the possibility of changes in the business that may result in future effects on trends or results of operations. This would apply to trends in product sales that could affect the recoverability of capitalized software development costs. The SEC staff has urged registrants to consider carefully the adequacy of such information provided in quarterly as well as annual filings.

The SEC staff will continue to review many software industry filings in developing its perceptions about the industry and its trends, such as changing products and market consolidations. Software companies should consider reviewing the filings of competitors, as well as those of others in the industry, to ensure that they can explain and justify perceptions of the industry and market trends in light of statements made by others.

Public software companies should ensure that their MD&As appropriately describe material events or trends that could reasonably cause an asset impairment and/or restructuring charge. Disclosure of such events or trends leading up to such charges being recorded in the financial statements may not only be useful, but will often be required by SEC staff.

The staff continues to focus on situations in which it appears that public companies have recorded what otherwise would be future period costs as a one-time reserve. Companies should discuss the reasons for these charges in the MD&A and must be able to demonstrate why such loss accruals are appropriate under Statement No. 5 and the guidance in EITF Nos. 94-3 and 95-3.

The SEC staff has indicated that software companies should ensure that the description of products in the foreparts of annual reports is consistent with the accounting used for the products. For example, if the cost of a newly acquired product is expensed as research and development in the financial statements, then it is expected that the MD&A section would include the status of the research and development, market uncertainties, and significant impacts on liquidity from further commitments required to develop the final marketable product.

#### (d) Quarterly Adjustments

Many software companies have reported significant fourth-quarter adjustments. AICPA Statement on Auditing Standards (SAS) No. 71, *Interim Financial Information*, includes a section that resulted from two enforcement actions taken by the SEC when registrants' auditors were aware of significant misstatements in clients' interim filings with the SEC, but did not discuss the misstatements with the clients' boards of directors and request the clients to restate their filings. The SEC authorized the SEC staff to draft a rule to address this problem, but the SEC also gave the AICPA's Auditing

Standards Board the opportunity to respond with its own guidelines, which resulted in SAS No. 66, which was superseded by SAS No. 71.

SAS No. 71 requires auditors who become aware of probable misstatements in interim filings with regulators, as a result of performing any interim review–related procedures, including merely discussing interim financial statements with a client, to discuss the probable misstatements with representatives of the board of directors and, in essence, resign if the filing is not corrected. Any such resignation would trigger the SEC’s Form 8-K filing requirements, and the misstatement would in that way be communicated to the SEC.

### (e) Initial Public Offerings

(i) **Stock Compensation.** Many software companies have IPOs with significant stock options held by employees. Staff Accounting Bulletin (SAB) Topic 4D notes that consistent with APB Opinion No. 25, *Accounting for Stock Issued to Employees*, registrants *must* recognize compensation expense for any issuances of stock and warrants to employees for less than fair value. Paragraph 25(b) of Opinion No. 25 states that the quoted market price must be used to measure cost related to issuing both restricted (or letter) and unrestricted stock through stock option, purchase, or award plans. The SEC staff has challenged registrants who have issued stock or stock options to employees at a price significantly below the public offering price, shortly before going public, when compensation was not recorded. They have also challenged accounting for stock issuances when the option exercise price or value placed on the shares was significantly lower than the prices paid for similar stock, issued at approximately the same time. Items affecting the staff’s decision on whether to challenge the compensation recorded (or lack hereof) will include:

- Whether there were any equity or convertible security transactions for cash within a reasonable period of time of the grant to the employee, and the size and nature of such transactions;
- Changes in the company’s business that would indicate there has been a change in the value of the business, such as new contracts or sources of revenues, more profitable operations, etc.;
- The length of time between the grant to the employee(s) and the date of the public offering, and
- Adequate documentation from the date of the grant or earlier that supports the valuation used by the company at that time.

The SEC staff has not accepted “haircuts” of, say 25 percent or 50 percent from the IPO price, or earlier cash price, without *persuasive* evidence supporting the valuation methodology and value used.

In one situation, a registrant granted stock options to management about 10 days before filing the registration statement with the exercise price at 50 percent of the IPO price. They argued that a 50 percent haircut was appropriate given the normal uncertainty about whether the offering would be completed successfully. They felt that at

the grant date, the stock was worth much less than the IPO price, since without the offering proceeds they could not repay high-coupon debt or expand operations. The staff agreed in principle that the value of a company immediately before an IPO may be something less than after a successful offering. However, in this case, the staff objected to a 50 percent haircut only days before filing of the registration statement. The staff ultimately did not object to measurement of compensation expense using a much smaller haircut to determine fair value. The staff will continue to resolve these issues on a case-by-case basis.

(ii) **Preferred Stock.** Many software companies receive funding from venture capitalists and other investors in the form of redeemable or convertible preferred stock. In an October 1987 letter, the SEC staff took the position that preferred stock that automatically converts into common stock on the *effective* date of an IPO should be reflected in the stockholders' equity section of the historical financial statements as being converted as of the earliest period presented, with the conversion also taken into consideration in the computation of earnings per share. The SEC staff had also indicated that for preferred stock converted into common stock on the *closing* date of an IPO, earnings per share should be provided on the face of the income statement for all periods presented *in lieu of* historical earnings per share. The SEC staff noted that in periods subsequent to the IPO closing, the preferred stock would be converted into common stock and, therefore, historical earnings per share for all subsequent periods presented would be comparable to the pro forma earnings per share. The staff noted that their position was consistent with SAB Topic 1(B)(2)(SAB No. 55).

In spring of 1992, the SEC staff changed its position as to preferred stock that converts into common upon the closing or the effective date of registration. In general, they now require the preferred stock to be reflected as such until the date the conversion occurs. Upon conversion, prior period financial statements should not be restated to show the preferred stock as common stock. Generally, the historical balance sheet or statement of operation should not be revised to reflect conversions or term modifications of outstanding securities that become effective *after* the latest balance sheet date presented in the filing, although pro forma data presented alongside the historical statements would generally be required if the conversion or modifications have a dilutive effect. If the registrant and its independent accountants elect to present a modification or conversion as if it had occurred at the date of the latest balance sheet (with no adjustment permitted to earlier periods), the SEC staff ordinarily will not object. However, if the original instrument legally accrues interest or dividends or accretes toward redemption value after that balance sheet date, or if the terms of the conversion do not confirm the historical carrying value at the latest balance sheet as current value, the registrant should not adjust the historical financial statements prior to the actual stock conversion. Instead, the effect of the conversion should be shown in a pro forma column presented alongside the historical balance sheet and in the earnings per share data.

If a conversion or term modification of outstanding equity securities will occur subsequent to the date of the latest balance sheet and the new terms result in a material reduction of permanent equity, the filing should include a pro forma balance sheet



(excluding effects of offering proceeds) presented alongside the historical balance sheet, giving effect to the change in capitalization. Pro forma earnings per share and capitalization should be provided preferably on the face of the balance sheet and income statement, to show the effect of conversions of preferred stock into common stock (but not the offering) upon either the effective date of the registration statement or the closing date of the offering. The SEC staff has noted that its position is consistent with SAB Topic 1B(2).

Rule 5-02 of Regulation S-X states that redeemable preferred stock is not to be included in amounts reported as stockholders' equity, and that the redemption amounts are to be shown on the face of the balance sheet. This rule requires the preferred stock to be reported in a "mezzanine" caption (before equity) so long as the redemption privilege is outside the control of the company. This includes situations in which redemption is not currently probable such as preferred securities that give the holder the right to put them back to the company upon a change in control or death of the shareholder.

**(iii) Escrow Share Arrangements.** The SEC staff has addressed accounting for escrow arrangements involving the stock of a company at or near the time of its IPO. The typical transaction involves some or all shareholders of the previously private company (some or all of whom also may be employees) placing a portion of their shares in an escrow account, somewhat analogous to a reverse stock split. The escrow shares generally are legally outstanding and may continue to have voting and dividend rights. The shares are to be released from escrow based on the attainment of certain performance measures by the company in subsequent periods, such as specified earnings or market price levels. If the levels are not achieved, the escrow shares are returned to the company and canceled.

Depending on facts and circumstances, the SEC staff believes that the subsequent release of shares from escrow could be viewed as a compensatory arrangement. The primary factors the staff would consider is whether the escrow arrangement includes only those shareholders who are also employees of the company or all shareholders of the company, whether the recipient has to fulfill an employment contract period, and whether the distribution is "across the board." Registrants can expect the SEC staff to challenge the release of escrow shares to management and other employees, which are not treated as compensatory. The SEC staff believes that even though the escrow shares have dividend or voting rights, a compensatory situation may still exist. The SEC staff also has concluded that an escrow arrangement involving shares owned by a corporate parent that also provides management services to the subsidiary should be considered "compensatory" (e.g., management fee expense).

#### **(f) Foreign Marketing Entities**

Some software companies interested in expanding their marketing efforts into foreign markets, such as Europe, are faced with the need for capital. There has also been a desire to expand internationally by some software companies, without having to report initial losses incurred in establishing the foreign marketing operations.

A special type of entity has sometimes been used to try to accomplish both objectives, such as where, for example, a foreign entity is formed with capitalization by venture capitalists in the United States and Europe. A U.S. software company contributes a minor amount of capital and may have a nonvoting position on the entity's board of directors. The software company receives a right of first refusal to acquire all the stock of the foreign entity at a predetermined price and time, and may enter into a contract to provide certain administrative support to the entity. The entity is licensed to market the software company's products. If the software company does not exercise its right to acquire all the stock of the entity at the predetermined time, the foreign entity retains the license to market the software company's software and may market other products as well.

The needed capital is obtained to establish the U.S. company's foreign marketing effort. Also, venture capitalists with expertise, who sometimes have established networks in the foreign markets, are available for assistance.

Under present consolidation practice, the software company does not have to consolidate the entity because it does not have majority ownership or control of the board of directors and foreign company. In addition, the venture capitalists have significant capital at risk. The SEC staff has indicated that the software company may account for its investment in such entities by either the cost or equity method. Because the software company's investment is minimal, there is a limit to the amount of losses the software company would be recognize in using the equity method.

A drawback to this type of entity, however, is that the SEC staff has indicated that it should not be "poolable," unless it is considered to be independent from the sponsoring company. If the software company is not poolable, and it exercises its right of first refusal, the purchase price is allocated to assets acquired, usually with an allocation to goodwill as a result of the established marketing organization. To overcome the SEC staff's concerns, the sponsoring company should not exercise significant influence over the sponsored entity, such as through a management contract or significant voting rights, and may have only a right of first refusal, not an option to acquire the entity. The marketing entity must clearly demonstrate that it is independently operated in order to be poolable.

### 3.5 SEC COMMENT LETTERS AND ENFORCEMENT ACTIONS

#### (a) Comment Letters

A review of SEC comment letters indicates that many filers are issued similar comments. The following SEC comments are typical of those being issued to registrants, including software companies:

1. Questions on why compensation expense was not recorded for stock options or warrants issued at a price below the IPO price.

2. The request for a supplemental discussion of customer's rights of returns, actual historical return experience, a comparison of that experience with returns accrued for, and the effect on revenues.
3. Comments on the cash flow statement including requiring the separate disclosure of borrowings and payments under lines of credit that mature in more than three months, segregation of restricted cash classification of payments made for financing costs or premiums paid on debt extinguishment as an operating activity, not investing and separate presentation of capitalized software costs as an investing activity.
4. The request for a separate Exhibit 11 on earnings per share.
5. Separate disclosure on the face of the financial statements of material related party transactions in accordance with Regulation S-X, Rule 4-08(k).
6. An expansion of the revenue recognition footnote.
7. The request for a Schedule VIII on valuation accounts for the allowance for bad debts.
8. A discussion of reasons for significant changes in revenues.
9. A request for a discussion of how accounts receivable average days outstanding and collections affect liquidity.
10. A request for information on how the filer accounts for research and development arrangements.
11. A discussion of the impact of trends of discretionary spending for research and development.
12. Requesting support for deferral of advertising costs.

### **(b) Enforcement Actions**

(i) **General.** Various SEC Accounting and Auditing Enforcement Releases have involved software companies, including their management and auditors. Landmark historical examples include AAER No. 190 (Cali Computer Systems, Inc.), AAER No. 205 (Intex Software Systems, International Ltd.), AAER No. 225 (Systems and Computer Technology Corporation), AAER No. 265 (Desk Top Financial Solutions), and AAER Nos. 271 and 351 (both related to 3CI, Inc.).

Typically, SEC enforcement actions have related to revenue recognition or capitalization of software development costs. The cases cited in the preceding paragraph included the following:

- Revenue recognition prior to the existence of a binding executed agreement
- Recognition of revenue when there were uncertainties about customer acceptance of the product, and when "side" or "out" agreements existed, enabling the customer to avoid the transaction
- Improper capitalization of research and development expenses

(ii) **The Oracle and Software Toolworks Cases.** Two landmark SEC enforcement cases in the software industry relate to Accounting and Auditing Enforcement Releases:

AAER No. 494, involving Oracle Systems Corporation, and AAER No. 495, involving Software Toolworks, Inc. (See Appendices 3-C and 3-D at the end of this chapter.)

In the *Oracle* case, the SEC alleged that inaccurate financial reports resulted from a lack of an adequate system of internal controls. Citing a company for an inadequate system of internal controls is an approach the SEC uses. The SEC takes the position that if a financial reporting error has occurred, there had to be a breakdown in the system and therefore an adequate system did not exist. In the *Oracle* case it was asserted there was double invoicing of customers, booking of contingent revenues or premature revenue recognition, and failure to credit customers for product returns. Accordingly, the SEC stated that Oracle Systems Corp. had failed to maintain accurate books and records as required under the federal securities laws.

Companies would be well advised to review their internal controls in light of the above case. The report of the Committee of Sponsoring Organizations, often referred to as the “COSO” or “Internal Control, Integrated Framework” report, provides an excellent framework and benchmark for assessing whether a company has an adequate system of internal controls. This report is available from the AICPA and was prepared as a result of the recommendations of the Treadway Committee.

In the *Oracle* case, the SEC used the new enforcement powers it received in the Securities Enforcement Remedies and Penny Stock Reform Act of 1990, and, for the first time, fined a software company, in the amount of \$100,000.

In the *Software Toolworks* case, the company and certain of its officials were cited for overstating the company’s revenue and gross profit by reporting fictitious sales, inappropriately accounting for sales with a right of return, and recognizing revenues from sales that were not consummated. In addition, AAER No. 495 noted the company’s failure to maintain a functioning audit committee to monitor the company’s financial performance and to safeguard against accounting improprieties. Trading in the company’s stock by certain company personnel, while using material nonpublic information, was also alleged, and the allegation resulted in the individuals involved disgorging the amount of the losses they had avoided.

As a result of the SEC’S enforcement action, Software Toolworks, Inc. agreed to: (1) account for sales, income, losses, receivable, and reserves in accordance with generally accepted accounting principles; (2) maintain a properly functioning audit committee; and (3) take reasonable steps to ensure that there is no improper trading by insiders in the company’s stock, based on material nonpublic information.

The above two enforcement cases provide examples of improper reporting that registrants should carefully consider. They are provided as appendices to this chapter, along with selected other AAERs that are important for software companies. Lack of adequate systems of internal controls and of an active, involved audit committee should be cause for concern to any public company in today’s regulatory and financial reporting environment.

**(iii) MD&A Enforcement Actions.** During the first half of 1994, the SEC issued several directives regarding the adequacy of MD&A disclosures by instituting administrative and enforcement proceedings against Shared Medical Systems Corporation,

Salant Corporation and its chief financial officer (CFO), and America West Airlines, Inc. for failing to comply with MD&A disclosure requirements. These directives were similar to a landmark case related to Caterpillar, Inc. in 1992. The SEC will monitor MD&A disclosures and take enforcement actions where it believes the disclosures are misleading to investors or omit material information.

The releases resulting from these cases contain information that a preparer of MD&A for a software company may find useful. In the Caterpillar case, the SEC highlighted the need for disclosure of foreign operations that have or may have a material effect on operations. In addition, the SEC cited Caterpillar for having an inadequate control system that did not ensure the proper preparation of its MD&A. In the Salant case, the CFO was personally cited for improper preparation of the MD&A. It was noted that the Salant director of internal audit had recommended changes to the MD&A be made which the CFO chose not to make. In the Shared Medical Systems, American West and Salant case, the MD&A disclosures had failed to note key trends including slowdowns in sales, excess inventories, cash flow and liquidity problems, and problems with negotiating bank agreements.

Management and members of the board of directors of software companies should consider instituting a control system such as review and sign-off of the MD&A by key senior management and operating personnel including the chief executive officer, chief operating officer, CFO, vice president of marketing, internal audit, and in-house counsel prior to its completion. In addition, the MD&A should be reviewed for consistency with the president's letter and financial statements included in Forms 10-K and 10-Q.

**(iv) Derivative Instruments Enforcement Action.** In 1995, the SEC issued landmark enforcement release No. 730, *In the Matter of Gibson Greetings, Inc.* The company treasurer and chief financial officer were also the subject of the enforcement action. In this action, the SEC cited the registrant for not properly marking to market certain derivative instruments. The release notes "that financial instruments used to speculate on interest rates, prices, or foreign currencies cannot be afforded favorable deferral accounting treatments." The SEC also cited Gibson Greetings for a lack of disclosures in MD&A regarding the impact on results from operations of these instruments, and a lack of adequate accounting books and records and internal controls.

### 3.6 CONCLUSION

The SEC has been significantly involved in the development of accounting principles affecting software companies. This involvement began in the early 1980s, with accounting for software development costs, and has continued through the completion of SOP No. 97-2. It can be expected that the SEC's keen interest in the software industry will continue into the foreseeable future, as the SEC staff monitors the

implementation and use of accounting principles in the industry and MD&A information of software registrants. Because of the SEC staff's unprecedented level of involvement in the development of accounting principles for the software industry, registrants who do not report within the boundaries they establish are likely to be challenged by the SEC.



## APPENDIX 3-A

# SEC Accounting and Auditing Enforcement Release No. 271

Securities and Exchange Commission v. Mehta, et al.

United States District Court for the District of Colorado. Civil Action No. 90-1596. Litigation Release No. 12609, September 10, 1990.

Robert H. Davenport, Administrator of the Denver Regional Office, announced that on September 10, 1990, the Commission filed a civil injunctive action against Rajiv P. Mehta (“Mehta”) and John A. Hoxmeier (“Hoxmeier”), both of Fort Collins, Colorado. Mehta and Hoxmeier were the president and vice-president, respectively, of 3CI, Incorporated (“3CI”), now known as Cordero Industries, Incorporated. 3CI, formerly of Fort Collins, engaged in the development and licensing of computer software for database management.

The Commission’s complaint alleges that Mehta and Hoxmeier violated the antifraud and other provisions of the Securities Act of 1933 and Securities Exchange Act of 1934 by causing 3CI to fraudulently record revenue in fiscal years 1985 through 1988. The revenue items at issue allegedly were improperly recorded because the transactions underlying the revenue were not finalized at the time the revenue was recorded or were never finalized, thereby violating 3CI’s revenue recognition policy and generally accepted accounting principles.

The complaint alleges that the fraudulently recorded revenue was included in financial information which 3CI disclosed to the investing public through filings made with the Commission and other public communications. Of 3CI’s twelve quarterly and annual reports which covered reporting periods ending from March 1985 through December 1987, eleven reports allegedly made materially false and misleading statements of revenue and net income or loss as a result of the fraudulent revenue recognition.

The fraudulently recorded revenue was also allegedly included in financial information disclosed to the public in connection with a public offering of stock made by



3CI in March 1987. 3CI received approximately \$8,700,000 in proceeds from this offering. Mehta and Hoxmeier also sold their personally owned stock in this offering, for which Mehta and his family received approximately \$1,210,000 and Hoxmeier \$340,000.

The Commission's complaint seeks permanent injunctions against Mehta and Hoxmeier, and disgorgement of the profits gained as the result of their illegal activities alleged in the complaint, including proceeds they received from the sale of their 3CI stock in the March 1987 public offering.

## APPENDIX 3-B

# SEC Accounting and Auditing Enforcement Release No. 351

Securities and Exchange Commission v. Rajiv P. Mehta and John A. Hoxmeier

United States District Court for the District of Colorado. Civil Action No. 90-B-1596. January 16, 1992. Litigation Release No. 13138.

The Securities and Exchange Commission (Commission) announced the entry of permanent injunctions and orders for disgorgement against Rajiv P. Mehta (Mehta) and John A. Hoxmeier (Hoxmeier) of Fort Collins, Colorado, by the United States District court for the District of Colorado on December 19, 1991. Mehta and Hoxmeier were the president and vice-president, respectively, of 3CI, Incorporated ("3CI") a now-defunct Fort Collins computer software company. Before ceasing business in 1990, 3CI's name was changed to Cordero Industries, Inc.

Mehta and Hoxmeier consented, without admitting or denying the allegations of the Commission's complaint, to entry of the permanent injunctions and orders of disgorgement. The injunctions bar Mehta and Hoxmeier from committing future violations of the anti-fraud provisions of the federal securities laws contained in Section 17(a) of the Securities Act of 1933 and Section 10(b) of the Securities Exchange Act of 1934 (Exchange Act) and Rule 10b-5 thereunder. The injunctions also prohibit future violations of the reporting and books and records provisions contained in Sections 13(a) and 13(b)(2) of the Exchange Act and Rules 13a-1, 13a-13, 13b2-1 and 13b2-2 thereunder. Additionally, Mehta was ordered to disgorge \$140,000, consisting of \$30,000 in cash and a lien on his Fort Collins residence for \$110,000. Hoxmeier was ordered to disgorge \$40,000 in cash. The disgorgement orders provide that the disgorgement monies and lien are to be turned over to the plaintiff class in *Alvarado Partners v. Mehta et al.* (U.S.D.C.D. Colorado Civil Action No. 88-B-781), a class action lawsuit filed against Mehta, Hoxmeier and others.

The Commission's complaint alleged that from 1985 through 1988, Mehta and Hoxmeier devised and implemented a scheme to defraud investors in 3CI stock by disseminating false and misleading financial information about 3CI based on fraudulent

revenue recognition. The alleged fraudulently recorded revenue related to sales which were not finalized at the time the revenue was recorded or to non-existent sales. Mehta and Hoxmeier allegedly disseminated the false and misleading financial information in 3CI's quarterly and annual reports filed with the Commission and in a registration statement filed to register stock in a 1987 public offering. The complaint further alleged that Mehta and Hoxmeier sold their personally owned 3CI stock under this registration statement, for which Mehta and his family received approximately \$1,210,000 and Hoxmeier \$340,000.

## APPENDIX 3-C

# SEC Accounting and Auditing Enforcement Release No. 494

Securities and Exchange Commission v. Oracle Systems Corp.

United States District Court for the Northern District of California. Civil Action No. C93 3517. September 29, 1993.

The Securities and Exchange Commission today announced that on September 24, 1993, a Complaint was filed in the Northern District of California seeking injunctive relief and civil penalties against Oracle Systems Corporation (“Oracle”) alleging that Oracle committed violations of Sections 13(a), 13(b)(2)(A) and 13(b)(2)(B) of the Securities and Exchange Act of 1934 (the “Exchange Act”) and Rules 12b-20, 13a-1 and 13a-13 promulgated thereunder. The Commission’s Complaint alleges that Oracle filed with the Commission reports that included financial statements which materially misstated revenues, net income and related captioned line items for the periods ended August 31, 1989 through November 30, 1990.

The Complaint alleges that Oracle’s materially inaccurate financial reports resulted from an inadequate internal accounting control system that failed to detect double invoicing of customers for products and/or technical support services, invoicing of customers for work that was not performed, failure to credit customers for product returns, booking revenues that were contingent and premature recognition of other revenue. The Complaint further alleges that, as a result, Oracle failed to maintain accurate books and records as required under the federal securities laws.

Simultaneous with the filing of the Complaint and without admitting or denying the Commission’s allegations, Oracle consented to the entry of a permanent injunction prohibiting future violations of Sections 13(a), 13(b)(2)(A) and 13(b)(2)(B) and Rules 12b-20, 13a-1 and 13a-13 and to the entry of an order imposing civil penalties pursuant to Exchange Act Section 21(d) in the amount of \$100,000. The civil penalties were imposed in connection with the two periodic filings that occurred after October 15, 1990, the effective date of the Securities Enforcement Remedies and Penny Stock Reform Act of 1990.



## APPENDIX 3-D

# SEC Accounting and Auditing Enforcement Release No. 495

Securities and Exchange Commission v. Software Toolworks, Inc.

United States District Court for the Northern District of California. Civ. Action No. 93-3581. September 30, 1993. Litigation Release No. 13813.

The Securities and Exchange Commission (“Commission”) announced that on September 30, 1993, the Commission filed a Complaint seeking permanent injunctive and other relief against the Software Toolworks, Inc. (“Toolworks”) and Toolworks’ official, Joseph Abrams, Leslie Crane, Theodore Hofmann and Dennis O’Malley, for violations of the antifraud and corporation reporting provisions of the federal securities laws. Toolworks is a California company, primarily engaged in the development and distribution of computer software for personal computers and Nintendo Entertainment Systems.

The Commission’s Complaint alleges as follows:

Toolworks, Crane and Abrams misled investors in connection with the company’s \$82 million secondary offering in July 1990 by making material misrepresentations and omissions in the company’s Registration Statement and in Toolworks’ annual report for the fiscal year ended March 31, 1990. These misrepresentations and omissions concerned events that arose during the company’s quarter ended June 30, 1990 and included, among other things, Toolworks’: (1) deteriorating sales of Nintendo software; (2) offering of over \$3.9 million of price concessions to the company’s Nintendo customers to stimulate sales; (3) shipment of \$5.2 million of the company’s Nintendo product to certain customers as conditional or fictitious sales; and (4) failure to maintain a functioning audit committee to monitor the company’s financial performance and to safeguard against accounting improprieties.

Toolworks, aided and abetted by Abrams and Hofmann, also allegedly overstated its revenues and gross profit in its quarterly report for the quarter ended June 30, 1990 by approximately \$7 million (31.8%) and \$2.6 million (22.4%), respectively. Abrams and Hofmann caused Toolworks to improperly recognize revenues from, among other

things, approximately \$3.7 million of fictitious sales, \$1.4 million of sales with a right of return, and \$1.88 million of sales pursuant to a purported an Original Equipment Manufacturer (“OEM”) license agreement that was not consummated. Toolworks then continued to conceal material facts concerning these transactions in the company’s quarterly report for the quarter ended September 30, 1990.

Between May 1990 and October 10, 1990, Abrams, Crane, Hofmann and O’Malley sold a total of approximately 1.35 million shares of Toolworks stock while in possession of material nonpublic information concerning the misrepresentations and omissions contained in Toolworks’ filings.

Simultaneous with the filing of the Commission’s Complaint, Toolworks, Abrams, Crane, and O’Malley consented to be permanently enjoined from further violations of the federal securities laws. Abrams, Crane, and O’Malley further agreed to collectively disgorge over \$2 million in losses avoided by their sales of Toolworks stock and to pay prejudgment interest on the amounts to be disgorged, totaled as follows: Crane \$1,661,510; Abrams \$792,990; and O’Malley \$44,496. Abrams also consented to be permanently barred from acting as an officer or director of any publicly held company. Toolworks consented to implement policies and procedures to ensure, among other things, the Toolworks: (1) accounts for sales, income, losses, receivables and reserves in accordance with GAAP; (2) maintains a properly functioning audit committee; and (3) takes reasonable steps to assure that Toolworks’ officers, directors and other employees do not purchase or sell Toolworks’ securities while in possession of material nonpublic information concerning Toolworks.

## APPENDIX 3-E

# SEC Accounting and Auditing Enforcement Release No. 730

In the Matter of Gibson Greetings, Inc., Ward A. Cavanaugh, and James H. Johnsen

Exchange Act Release No. 36357, Administrative Proceeding File No. 3-8866,  
October 11, 1995.

Order Instituting Proceedings Pursuant to Section 21C of the Securities Exchange  
Act of 1934 and Findings and Order

### I.

The Securities and Exchange Commission (“Commission”) deems it appropriate and in the public interest that public administrative proceedings be, and they hereby are, instituted pursuant to Section 21C of the Securities Exchange Act of 1934 (“Exchange Act”).

### II.

In anticipation of the institution of these administrative proceedings, Gibson Greetings, Inc. (“Gibson”), Ward A. Cavanaugh, and James H. Johnsen (collectively, “Respondents”) have each submitted an Offer of Settlement, each of which the Commission has determined to accept. Solely for the purpose of these proceedings and any other proceedings brought by or on behalf of the Commission or to which the Commission is a party, and without admitting or denying the findings set forth herein, the Respondents consent to the entry of the findings and to the issuance of this Order Instituting Proceedings Pursuant To Section 21C of the Securities Exchange Act of 1934 and Findings and Order (“Order”).



III.

The Commission finds the following:

A. RESPONDENTS

1. Gibson Greeting, Inc., headquartered in Cincinnati, Ohio, is a manufacturer of greeting cards and gift wrapping paper. Gibson's stock is registered with the Commission pursuant to Section 21(g) of the Exchange Act and listed on the NASDAQ/NMS.
2. Ward A. Cavanaugh was Gibson's Vice President, Finance and Chief Financial Officer from May 1982 until his retirement in December 1993. Cavanaugh was responsible, along with Gibson's Treasurer, for the preparation of Gibson's Forms 10-Q for the first three quarters of 1993 and signed each of those filings.
3. James H. Johnsen was the Vice President, Control and Treasurer of Gibson from 1986 until March 1994. Johnsen was responsible, along with Gibson's Chief Financial Officer, for the preparation of Gibson's Forms 10-Q for the first three quarters of 1993 and signed each of those filings. As Gibson's chief accounting officer, Johnsen reported directly to Cavanaugh and was responsible for maintaining the company's books and records.

B. FACTS

This matter involves violations of the reporting and books and records provisions of the federal securities laws in connection with the accounting for and disclosure of certain derivatives purchased by Gibson.<sup>2</sup> While the transactions were entered into on the advice of BT Securities, this Order involves the obligations of Gibson, as a registrant, and those of its senior officers, to comply with the reporting and books and records provisions of the federal securities laws. Those obligations are not excused by the fraud of BT Securities.

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<sup>1</sup>The findings herein are made pursuant to the Offers of Settlement submitted by Gibson, Cavanaugh and Johnsen and are not binding on any other person or entity named as a respondent in this or any other proceeding.

<sup>2</sup>The derivative products which are the subject of this Order were sold to Gibson by BT Securities Corporation ("BT Securities"), a broker-dealer registered with the Commission pursuant to Section 15(b) of the Exchange Act. In December 1994, the Commission instituted and settled administrative proceedings against BT Securities arising from the sale of derivatives to Gibson. See *In re BT Securities Corporation*, Ref. Nos. 33-7124, 34-35136, Administrative File No. 3-8579 (December 22, 1994). Bankers Trust Company ("Bankers Trust") and BT Securities are both wholly owned subsidiaries of Bankers Trust New York Corporation. Banker Trust was the counterparty to each derivative discussed herein sold to Gibson. In the *BT Securities* matter the Commission found:

## 1. Background

During the first three quarters of calendar year 1993, Gibson engaged in a series of transactions in derivatives which, for accounting purposes, amounted to trading or speculation. During that time, the company entered into, restructured, or terminated derivatives contracts, including on certain occasions cashing out derivatives, or portions of derivatives, which had unrealized gains,<sup>3</sup> while rolling over or restructuring those derivatives with unrealized losses. Those transactions were unrelated to Gibson's underlying debt obligations.

Gibson initially purchased derivatives with the expectation of reducing the effective interest rate of certain debt obligations. In May 1991, Gibson sold \$50 million of 9.33% fixed-rate senior notes ("the senior notes") in a private placement. Interest rates declined subsequent to the private placement, and because the senior notes could not be prepaid for a number of years, in November 1991 Gibson used interest rate swaps to convert \$30 million of the senior notes into variable-rate debt. The first two transactions related to the senior notes were conventional fixed-for-floating interest rate swaps, often referred to as "plain vanilla" swaps. However, these two swaps were terminated in July 1992 at a gain and then subsequently succeeded during October 1992 by two less conventional interest rate swaps known as the Ratio Swap<sup>4</sup> and the Basis Swap. Both the Ratio Swap and Basis Swap had notional amounts of \$30 million and were outstanding at December 31, 1992. Gibson accounted for these derivatives using settlement (or deferral) accounting and deferred all gains and losses for financial purposes.

## 2. Gibson's Derivatives Activities During 1993

In early January 1993 and continuing throughout the first three quarters of 1993, Gibson engaged in a series of derivatives transactions. While Gibson's fixed rate debt remained constant, during the first three quarters of 1993, with the knowledge and approval of Cavanaugh and Johnsen, Gibson entered into eighteen derivative transactions, including the purchase of six new derivative products and the termination of both the Ratio Swap and the Basis Swap. Only one of the six new derivatives entered into during 1993 resembled a conventional interest rate swap. Three of the

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During the period from October 1992 to March 1994, BT Securities' representative misled Gibson about the value of the company's derivatives positions by providing Gibson with values that significantly understated the magnitude of Gibson's losses. As a result, Gibson remained unaware of the actual extent of its losses from derivatives transactions and continued to purchase derivatives from BT Securities. In addition, the valuations provided by BT Securities' representatives caused Gibson to make material understatements of the company's unrealized losses from derivatives transactions in its 1992 and 1993 notes to financial statements filed with Commission.

*Id.* at 4.

<sup>3</sup>For accounting purposes, these payments were treated as deferred gains.

<sup>4</sup>The terms of certain of the derivatives entered into by Gibson are described in the Appendix.

new derivatives were highly-leveraged, meaning that the derivatives were structured to amplify changes in market interest rates. This degree of leverage exposed Gibson to material losses from relatively small adverse movements in interest rates.

As a consequence of the significant number of derivative transactions entered into in the first three quarters of 1993, the size of Gibson's derivatives portfolio purportedly linked to the senior notes increased substantially. In the third quarter of 1993, the total notional amount of the outstanding derivatives grew to \$167.5 million, more than three times the amount of the senior notes.

In 1993, Gibson's strategy relating to derivatives involved an effort to use restructurings to reduce unrealized losses from existing derivatives positions. Some of the restructurings involved cashing out unrealized gains in existing derivatives. However, at no time did Gibson pay cash to terminate a derivative with an unrealized loss. Instead, rather than incur a realized loss by terminating a derivative position, Gibson consistently attempted to trade out losses by agreeing to new or amended derivative.

The derivative transactions entered into by Gibson resulted in losses primarily because interest rate movements were not correctly anticipated. In addition, each time Gibson shifted unrealized losses into new or restructured derivative positions, the overall mark-to-market value of its derivatives portfolio worsened because pre-structuring losses were carried forward into the restructured position, along with a new loss representing dealer profits and hedging costs related to the restructuring itself. Gibson was not informed of and did not know the full extent of losses that accompanied the restructuring of these transactions.

Gibson's new derivatives and restructurings worsened the overall mark-to-market value of its derivatives and exposed Gibson to ever-increasing risk of losses. The new derivatives and restructurings were not disclosed in the company's Forms 10-Q filed with the Commission. Gibson's 1993 Forms 10-Q also did not disclose the current market values of the company's derivatives or the substantial changes in the company's derivatives positions which had taken place since year-end 1992. Throughout the first three quarters of 1993, Gibson deferred gains and losses from its derivatives transactions. Furthermore, Gibson did not provide any disclosure in the MD&A section of its 1993 Forms 10-Q concerning the nature or risks of its new derivative positions.

**(a) First Quarter 1993**

During the first quarter of 1993, Gibson entered into two new derivatives, a Spread Lock and a Treasury-Linked Swap, and significantly shorted the maturity of the Ratio Swap. As of the end of the first quarter of 1993, Gibson had four outstanding derivative positions with a total notional amount of \$120 million.

**(b) Second Quarter 1993**

During the second quarter of 1993, Gibson terminated the remaining term of the Ratio Swap and added a second Spread Lock. Then, following a rise in interest rates, Gibson reduced the notional amount of the Treasury-Linked Swap to \$17.5 million in exchange for amending both Spread Locks to less favorable levels. In addition, Gib-

son replaced the profit potential in the Treasury-Linked Swap with a \$25 million Knock-Out Call Option. As of the end of the second quarter of 1993, Gibson had five outstanding derivative positions with Bankers Trust with a total notional amount of \$132.5 million.

**(c) Third Quarter 1993**

During the third quarter of 1993, interest rates began to decline, which threatened to cause the Knock-Out Call Option to terminate with no value. To preserve unrealized gains related to the Knock-Out Call Option, Gibson agreed to enter into a Time Trade in order to amend the Knock-Out Call Option by lowering the knock-out barrier. On the same date Gibson also agreed to terminate the Basis Swap for cash. Gibson amended the Time Trade twice during August 1993 to pay for changing the terms of the Knock-Out Call Option to prevent its expiration. The day after the second amendment, Gibson terminated the Knock-Out Call Option in exchange for \$475,000 in cash.

As noted above, in the second quarter both Spread Locks had been raised to unfavorable levels to pay for reducing the notional amount of the Treasury-Linked Swap. Late in the third quarter, Gibson agreed to reduce the unrealized losses associated with the two Spread Locks by entering into a \$60 million Wedding Band. Near the end of the third quarter, the Treasury-Linked Swap expired without loss to Gibson.

As of the end of the third quarter of 1993, Gibson held four derivative positions with Bankers Trust with a total notional value of \$150 million.

**3. Gibson's Books, Records, and Internal Controls**

Gibson's books and records did not contain quarterly mark-to-market values for the derivatives and did not identify or separate transactions that for accounting purposes amounted to trading or speculation. Gibson also lacked adequate internal controls for ascertaining whether derivatives transactions were consistent with corporate derivatives objectives established by Gibson's Board of Directors. The Board had approved a resolution on April 15, 1992 authorizing the Vice President, Finance or his designee "to take such actions as he may deem appropriate from time to time to effectuate interest rate swap transactions relating to the Corporation's obligations upon such terms as he may approve." This resolution did not authorize transactions beyond interest rate swap transactions relating to the corporation's debt. No specific procedures were put in place to implement that resolution, such as procedures to place limits on the amounts, types or nature of derivatives transactions, or to assess the risks of derivatives transactions. Gibson also lacked adequate controls designed to ensure that its derivatives positions were accounted for in accordance with Generally Accepted Accounting Principles ("GAAP").

## IV. ANALYSIS

### A. APPLICABLE LAW

#### 1. Accounting Standards

Derivative positions must be marked to market and unrealized gains or losses from these positions must be recognized in income unless they meet the criteria for deferral accounting. The determination of whether deferral accounting is appropriate must be based on an evaluation of the accounting literature, industry practice, and the particular facts and circumstances of each situation and it is the registrant's obligation to make that determination. For accounting purposes, Gibson's course of conduct involving these derivative transactions amounted to trading or speculation, and therefore the derivative transactions did not qualify for deferral accounting.<sup>5</sup>

#### 2. Reporting Requirements

##### (a) Section 13(a) and Related Rules

Section 13(a) of the Exchange Act requires issuers of securities registered pursuant to Section 12 of the Exchange Act to file periodic and other reports with the Commission containing such information as the Commission by rule prescribes. Rule 13a-13 promulgated under Section 13(a) requires issuers to file quarterly reports on Form 10-Q with the Commission. Rule 12b-20 under the Exchange Act requires that periodic reports filed with the Commission contain all information necessary to ensure that the statements made are not materially misleading. The reporting requirement necessarily include the requirement that the information supplied be accurate. *See SEC v. Savoy Industries, Inc.*, 587 F.2d 1149, 1165 (D.C. Cir. 1978) *cert. denied*, 440 U.S. 913 (1979).

##### (b) MD&A Requirements

Forms 10-K and 10-Q require an issuer to supply in the MD&A section of those filings the information set forth in Item 303 of Regulation S-K. Item 303(a)(3)(iii) requires issuers to discuss in one component of the MD&A, the discussion of results of operations, "any known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations." Instructions 3 to Item 303(a) states: "The discussion and analysis shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results."

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<sup>5</sup>Despite the lack of definitive authoritative guidance on the use of deferral accounting for derivatives, there is a consensus in practice, and support in the accounting literature, for the proposition that financial instruments used to speculate on interest rates, prices, or foreign currencies cannot be afforded favorable deferral accounting treatment.

It is also management's responsibility in the MD&A:

to identify and address those key variables and other qualitative and quantitative factors which are peculiar to and necessary for any understanding and evaluation of the company.

Interpretive Release: Management's Discussion and Analysis of Financial Condition and Results of Operations; Certain Investment Company Disclosures, Release Nos. 33-6835, 34-26831, IC-16961, FR-36 (May 18, 1989) ¶ III.A (quoting Securities Act Release No. 6349 (September 28, 1981) (hereafter "Interpretive Release")). *See also In re Caterpillar, Inc.* Rel. Nos. 34-30532, AAER 363 (March 31, 1992).

For interim reports, such as a quarterly report on Form 10-Q, Item 303(b) requires a discussion and analysis of the results of operations "to enable the reader to assess material changes in financial condition and results of operations" that have occurred since the end of the preceding fiscal year. Discussions of material changes in results of operations must identify any significant elements of the registrant's income or loss from continuing operations which do not arise from or are not necessarily representative of the registrant's business. See Instruction 4 to Item 303(b); Section III.E, *Interim Period Reporting*, in Interpretive Release. Where MD&A disclosure is required, it must be "quantified to the extent reasonably practicable." *Id.*; *In re Caterpillar, Inc. supra*, at 11 and 14.

### 3. Books, Records, and Internal Controls Requirements

Section 13(b)(2)(A) of the Exchange Act requires issuers to "make and keep books, records, and accounts, which, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the issuer." A company's "books and records" include not only general ledgers and accounting entries, but also memoranda and internal corporate reports. Under Section 13(b)(2)(A), a company's books and records should reflect transactions in conformity with accepted methods of reporting economic events, and the transactions should be reflected in such a manner as to facilitate the preparation of financial statements in conformity with GAAP. Section 13(b)(2)(B) requires issuers to "devise and maintain a system of internal accounting controls" sufficient to provide reasonable assurances that, among other things, transactions are executed in accordance with management's general or specific authorization and are recorded as necessary to permit preparation of financial statements in conformity with GAAP.

## B. GIBSON

### 1. Books and Records and Internal Controls Violations

Gibson violated Section 13(b)(2)(A) and 13(b)(2)(B) of the Exchange Act with respect to its derivatives activities. Gibson failed to record the value of the derivative positions

that are the subject of this order on a mark-to-market basis during the first three quarters of 1993, and in fact did not obtain mark-to-market values for derivatives as of quarter end during that period. Gibson also failed to establish internal controls sufficient to identify such derivative positions and require that they be mark-to-market, and to ensure that derivative transactions were executed in accordance with the April 15, 1992 Board resolution. Gibson thus failed to “devise and maintain a system of internal accounting controls sufficient to provide reasonable assurances” that the company’s financial statements would be prepared in accordance with GAAP and that transactions would be executed in accordance with management’s authorization.

## **2. Reporting Violations**

### **(a) Gibson’s Financial Statements Contained in Its 1993 Forms 10-Q**

Gibson’s accounting treatment for its derivatives activities during 1993 failed to comply with GAAP. By the first quarter of 1993, Gibson’s derivatives described in this order had, for accounting purposes, become speculative, and remained so throughout the first three quarters of 1993. Such activities require mark-to-market accounting, with market value changes recognized through the income statement. Gibson, however, deferred gains and losses from derivatives transactions during the first three quarters of 1993. That practice caused material misstatements in the financial statements filed with the Commission by Gibson for the first three quarters of 1993. Gibson thus violated Section 13(a) of the Exchange Act and Rules 13a-13 and 12b-20.

### **(b) MD&A Disclosure**

The MD&A sections in Gibson’s Forms 10-Q for 1993 failed to comply with the requirements of Item 303 of Regulation S-K. Despite the significant quarter-to-quarter changes in the nature, terms, risks and fair values associated with Gibson’s derivatives, the 1993 Forms 10-Q were silent on the subject of interest expense and derivatives activities. Gibson failed to provide MD&A disclosure of known uncertainties caused by numerous changes in its derivatives positions, including the significant risks assumed by the company. Gibson thus violated Section 13(a) and Rules 13a-13 and 12b-20.

## **C. CAVANAUGH AND JOHNSEN**

Cavanaugh and Johnsen, as the Chief Financial Officer and Treasurer, respectively, were responsible for Gibson’s accounting for and disclosure of its derivative positions in 1993. Cavanaugh and Johnsen were also responsible for maintaining the company’s books and records and implementing internal controls. Both were involved in the decisions to enter into the derivatives and were familiar with their terms.

Cavanaugh and Johnsen’s failure to ensure that these derivatives transactions were marked to market and their failure to provide in Gibson’s 1993 10-Qs a disclosure of the company’s changing derivatives positions, caused violations by Gibson of Section 13(a) and Rules 13a-13 and 12b-20. Similarly, their failure to maintain, or require

that others maintain, adequate books and records and internal controls caused violations by Gibson of Sections 13(b)(2)(A) and 13(b)(2)(B).

## V. FINDINGS

Based on the foregoing, the Commission finds that Gibson violated Sections 13(a), 13(b)(2)(A), and 13(b)(2)(B) of the Exchange Act and Rules 13a-13, and 12b-20, and that Cavanaugh and Johnsen caused violations of Sections 13(a), 13(b)(2)(A) and 13(b)(2)(B) of the Exchange Act, and Rules 13a-13 and 12b-20 thereunder.

## VI. OFFER OF SETTLEMENT

The Respondents have each submitted an Offer of Settlement in which, without admitting or denying the findings herein, each consents to the Commission's issuance of this Order, which makes findings, as set forth above, and orders: (i) Gibson to permanently cease and desist from committing or causing any violation or future violation of Section 13(a), 13(b)(2)(A), and 13(b)(2)(B) of the Exchange Act, and Rules 13a-13 and 12b-20; and (ii) Cavanaugh and Johnsen to permanently cease and desist from causing any violations and any future violation of Sections 13(a), 13(b)(2)(A) and 13(b)(2)(B) of the Exchange Act, and Rules 13a-13 and 12b-20. In accepting Gibson's offer of settlement, the Commission notes that Gibson has restated its financial statements for the first three quarters of 1993.

## VII. ORDER

Accordingly, IT IS HEREBY ORDERED THAT

A. Gibson shall cease and desist from committing or causing any violation or future violation of Sections 13(a), 13(b)(2)(A) and 13(b)(2)(B) of the Exchange Act, and Rules 13a-13 and 12b-20.

B. Cavanaugh and Johnsen shall cease and desist from causing any violations of future violation of Sections 13(a), 13(b)(2)(A) and 13(b)(2)(B) of the Exchange Act, and Rules 13a-13 and 12b-20.

By the Commission.

## APPENDIX<sup>6</sup>

### *Ratio Swap*

Under the Ratio Swap, based on a \$30 million notional amount (the amount used to determine the periodic payments between the counterparties) for a period of five years Banks Trust would swap an interest payment determined at a fixed rate of 5.50% in exchange for Gibson's variable rate of interest payment determined by the square of

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<sup>6</sup>This appendix does not describe all of Gibson's derivative transactions or each of the amendments to the derivatives discussed.



the six-month London Interbank Offered Rate (“LIBOR”) rate divided by 6%, i.e.,  $(\text{LIBOR} \times \text{LIBOR})/6\%$ .

*Basis Swap*

Under the Basis Swap, for a period of four-and-a-half years, based on a notional amount of \$30 million, Bankers Trust and Gibson would swap variable rate interest payments structures such that Gibson would receive a net semiannual payment of as much as fourteen basis points, i.e., \$42,000, as long as six-month LIBOR was not more than 0.29% lower than six-month LIBOR at the beginning of the immediately preceding semi-annual period. If six-month LIBOR fell more than 0.29%, Gibson would have to pay \$1,500 to Bankers Trust for each additional basis point, or 0.01% decline in six-month LIBOR.

*Spread Lock #1*

As initially negotiated, Gibson locked in a spread related to a seven-year swap of 38 basis points commencing November 15, 1994. Gibson and Bankers Trust agreed to cash settle the transaction on November 15, 1994. The spread lock was amended five times during the first nine months of 1993, including changing the underlying dealer spread to be based upon ten-year swaps commencing August 15, 1995.

*Treasury-Linked Swap*

The Treasury-Linked Swap had a term of eight months. Under this transaction, Gibson was required to pay LIBOR and would receive LIBOR plus 200 basis points, on a \$30 million notional amount. At maturity, Gibson was required to pay Bankers Trust \$30 million, and Bankers Trust would pay the lesser of \$30.6 million or an amount determined by the following formula: [Not reproduced. CCH].

Amendments to the Treasury-Linked Swap, among other things, substituted the three-year Treasury yield for the two-year Treasury yield and altered the maturity.

*Spread Lock #2*

At the time the second Spread Lock was entered into, the first Spread Lock had already been amended so that it was based upon ten-year spreads and commenced on August 15, 1995. The structure of the second Spread Lock was substantially the same as the original structure of the first Spread Lock. That is, it was based upon seven-year spreads commencing November 15, 1994 but with a lower spread of 31.5 basis points. However, within two weeks, the second Spread Lock was amended such that both Spread Locks were based upon ten-year swap spreads locking in a spread of 36 basis points.

*Knock-Out Call Option*

The Knock-Out Call Option required Bankers Trust to pay Gibson on settlement date an amount calculated as follows:

$$(6.876\% - \text{Yield at maturity of 30-year Treasury security}) \times 12.5 \times \$25,000,000.$$

If at any time during the life of the Knock-Out Call Option, the yield on the 30-year U.S. Treasury security dropped below 6.48%, the option expired, or was “knocked out,” and became worthless. The option was not exercisable until maturity on September 28, 1993. The yield on the 30-year Treasury security at which the Knock-out Call Option expired was amended three times in August 1993.

#### *Time Trade*

Gibson would receive \$150,000 for each six-month period while paying Bankers Trust \$7,500 for each day during the six-month period that LIBOR was set outside of the specified range. The calculation periods and specified ranges for the purpose of determining the payments between Gibson and Bankers Trust were as follows:

August 6, 1993 - February 6, 1994—3.1875% - 4.3125% February 6, 1994 - August 6, 1994—3.2500% - 4.5000% August 6, 1994 - February 6, 1995—3.3750% - 5.1250 February 6, 1995 - August 6, 1995—3.5000% - 5.2500%.

The Time Trade was amended three times during the third quarter, including increasing Gibson’s per diem payment for LIBOR setting outside of the specific range to \$9,750 and then to \$13,800.

#### *Wedding Band*

The Wedding Band was a one-year option linked to both Spread Locks and thus a notional amount of \$60 million. The Wedding Band amended the Spread Locks such that the spread would be increased or decreased by an amount determined by the formula  $.85 \times [\text{six month LIBOR at maturity} - 3.75\%]$  if six-month LIBOR set at or outside of the range of 3.00% to 5.00% during the twelve months subsequent to entering into the transaction.



## CHAPTER FOUR

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# Software Revenue Recognition

Donald P. Keller

PricewaterhouseCoopers LLP

Dean A. Martinez

PricewaterhouseCoopers LLP

## 4.1 BACKGROUND

### (a) General

It has taken many years to develop software revenue recognition rules that adequately address the wide range of situations that can arise when a software vendor licenses or sells software and related services. Customers of software vendors often view the purchase of software as part of a long-term relationship with the software vendor. Software vendors' customers often need more than a straightforward purchase of currently available products and services, which frequently leads to software licenses being bundled into arrangements that have various deliverable products or services. These bundled arrangements include combinations of software products, software modifications, custom development, technical support, installation, or training. Known as "multiple-element arrangements," these often-complex software sales may require, or a vendor's business practices may imply, that the vendor has ongoing obligations after the initial software is delivered.

It is not unusual for software license arrangements, or a vendor's business practices, to involve rights of return, rights of exchange, or other concessions. As a result, subsequent modifications may be made to the terms or pricing of products or services contained in an original contract. Because the installation of software can take months,

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This chapter has been adapted from a monograph, *The User-Friendly Guide to Understanding Software Revenue Recognition*, which was prepared by PricewaterhouseCoopers LLP, with Donald P. Keller as the lead author.

or even years, customer requirements may change during this extended period. Longer-term installation periods can cause complications because software generally has a short technological life, which can even result in software becoming obsolete before it can be used, sometimes as a result of the introduction of competing products by other vendors. Customers' satisfaction with software is often affected by how well the software is integrated into, and interacts with, the customer's legacy systems. Such factors may lead to extended periods of time between shipment (when revenue is frequently recorded by the vendor) and ultimate satisfaction or acceptance of the products or services by the customer.

In the software sales process, vendors frequently refer potential new customers to existing customers. It is critical that existing customers be satisfied enough to serve as reference accounts. Because of the importance of reference accounts, many software vendors have, or may develop, a business practice of making concessions to customers that are not actual legal obligations. A software vendor's plans for future software product releases and strategic direction of software development sometimes influence the customer's decision to select a particular vendor's software. In such cases, customers may view development efforts and strategy as part of what they are buying, thereby creating expectations for future deliverables. Finally, software, by its nature and due to the evolution of the Internet and electronic commerce, continues to create new issues about what constitutes delivery.

### **(b) History of the Development of Current Revenue Recognition Rules for the Software Industry**

Statement of Position 91-1, *Software Revenue Recognition*, issued in December 1991, addressed many of the above issues, but much of its guidance was not being interpreted and applied consistently. The importance it placed on the subjective determination of whether any "significant" obligations remained after delivery of the software made it difficult to apply. Judgmental determinations about the significance of post-delivery obligations resulted in inconsistent revenue recognition practices among vendors. To add to this, the software industry has been plagued with financial statement restatements resulting from revenue recognition practices that were concluded to be improper.

Software revenue recognition is now governed by AICPA Statement of Position 97-2, *Software Revenue Recognition*, issued in October 1997 as amended and interpreted by SOPs 98-4 and 98-9 as well as numerous AICPA Technical Practice Aids (TPAs). SOP 97-2 was developed to address the shortcomings of SOP 91-1 and establishes a new overall framework from which software companies must develop more specific revenue recognition practices.

Before SOP 97-2 became effective and as financial statement preparers and their independent accountants started planning for its implementation, they focused on the evidentiary requirements with respect to what constitutes vendor specific objective evidence (VSOE) of the fair value of an element. VSOE is defined by SOP 97-2 as the price of an element when sold separately or that price for which the element is probable of being sold if the element is not yet sold separately. VSOE does not exist

if an element is never sold separately, even if there are other factors present that allowed for a reliable determination of its fair value. This led to concern that SOP 97-2 would lead to undue conservatism. The AICPA's Accounting Standards Executive Committee (AcSEC) then issued SOP 98-4, *Deferral of the Effective Date of a Provision of SOP 97-2, Software Revenue Recognition*, in March 1998, which deferred for one year the evidentiary requirements of SOP 97-2 that were needed to demonstrate fair value of an element but did not change the requirement that there be VSOE. During the one-year deferral period, AcSEC reconsidered what, if any, prescriptive evidentiary requirements would be retained after the one year-deferral period.

The result was the issuance in December 1998 of SOP 98-9, *Modification of SOP 97-2, Software Revenue Recognition, with Respect to Certain Transactions*. SOP 98-9 was effective December 31, 1998 and amended both SOPs 98-4 and 97-2. The principle introduced by SOP 98-9 is recognition of software revenue based on the "residual method," under which revenue is recognized for delivered elements of an arrangement for which VSOE does not exist, if VSOE does exist for all undelivered elements of that arrangement.

The most recent literature on software revenue recognition is a series of technical questions and answers (Q&As) on financial accounting and reporting issues associated with SOP 97-2, which has been prepared by the AICPA staff, helped by industry experts, and published as Technical Practice Aids (TPAs). Also, in December 1999 the SEC released Staff Accounting Bulletin No. 101, *Revenue Recognition in Financial Statements (SAB 101)*. Although SAB 101 clearly follows the framework established in SOP 97-2, there may be some areas of software revenue recognition that are ultimately affected by SAB 101. In particular, SAB 101 introduces delivery requirements based on a more stringent interpretation of whether a customer acceptance clause delays revenue recognition until acceptance occurs.

This chapter has been prepared to reflect current guidance on software revenue recognition under SOP 97-2 as amended or affected by SOPs 98-4 and 98-9, as well as the TPAs existing at the time of publication. Hereinafter, this cumulative body of current guidance will be referred to simply as SOP 97-2. As with any new accounting standard, other implementation practices, issues, and solutions are sure to develop. These may be addressed via additional TPAs, published implementation guidance of the Emerging Issues Task Force, or through practice.

## 4.2 SCOPE AND APPLICABILITY

### (a) General

SOP 97-2 addresses the accounting for revenue earned from the licensing, selling, leasing, and otherwise marketing of software, except where software is incidental to the products or services being offered as a whole. SOP 97-2 provides some indications about whether software is incidental to a product as a whole, which include (1) whether the software is a significant focus of marketing efforts or is sold separately, (2) whether the vendor provides post-contract customer support of the software, and

(3) whether the vendor incurs significant costs within the scope of Statement of Financial Accounting standards No. 86, *Accounting for the Cost of Computer Software to be Sold, Leased, or Otherwise Marketed*. Existence of any of these three conditions, among others, may indicate that software is not incidental to products as a whole and, therefore, that SOP 97-2 applies.

Although there can be some legal differences between contracts written as leases and licensing agreements, they should not affect revenue recognition and SOP 97-2 should be followed in either case.

Paragraph 4 of SOP 97-2 says that if a lease of software includes property, plant, or equipment, revenue for the property, plant, or equipment should be accounted for in accordance with FASB Statement No. 13, *Accounting for Leases*, and revenue attributable to the software, including PCs, should be accounted for separately in accordance with SOP 97-2. However, under SOP 97-2, paragraph 2, if the property, plant, or equipment contains software that is incidental to the property, plant, or equipment as a whole, the software should not be accounted for separately.

### **(b) Applicability Where Software Is Not Incidental**

Assume that a vendor sells a seismic data gathering system consisting of hardware and proprietary software. The vendor offers customers a support arrangement that provides upgrades and enhancements to the software. The vendor's marketing literature differentiates its product from those of its competitors based on the software's features and functions and states that the upgrades extend the useful life of the product. The vendor would likely conclude that the software is not incidental to the product and would apply SOP 97-2 in accounting for the arrangement. The software is a key part of the vendor's marketing efforts and would be considered by customers in a decision to purchase the system. Also, the fact that the maintenance agreements extend the useful life of the product because of the upgrades and enhancements would be a factor in the customers' buying decisions.

### **(c) Nonapplicability Where Software Is Incidental**

Assume that a vendor sells a spatial measurement system to a customer. The system contains proprietary software that provides features and functionality that distinguish the measurement system from those of the vendor's competitors. The vendor does not separately market the software nor does it provide upgrades or enhancements. The vendor has not capitalized significant development costs of the software. The vendor does not provide potential customers with software specifications that can be compared to the specifications of other vendors who provide software for the system manufactured by the vendor. The vendor offers a one-year maintenance agreement with the purchase of the system. In this case, the software is likely incidental to the system and SOP 97-2 does not apply. The software is not significant to the features and functions of the system. While the vendor does offer a maintenance agreement, it is for the entire system and not specific to the software.

To further illustrate, assume that a product consists of vendor-manufactured hardware and embedded software purchased from third-party vendors. The vendor capitalizes the cost of the software when it is purchased and subsequently, the hardware component of the product is completed. The vendor provides a 90-day warranty on the product but does not provide maintenance. No mention is made of the software in the vendor's marketing efforts or materials. In this case, the software is likely incidental. While the cost of the software is capitalized, the vendor does not develop the software internally, market the product based on the software, or sell the software separately. Further, no maintenance services are provided to customers.

### 4.3 BASIC PRINCIPLES

#### (a) General

If an arrangement requires significant production, modification, or customization of software, or includes services that are essential to the functionality of the delivered software, the entire arrangement must be accounted for as a construction-type contract. Contract accounting would be applied in conformity with ARB No. 45, *Long-Term Construction Type Contracts*, using the relevant guidance in SOP 81-1, *Accounting for Performance of Construction-Type and Certain Production-Type Contracts*. Contract accounting under SOP 81-1, as well as specific guidance relative to the software industry, is discussed in detail in Chapter 5.

Assuming that a software arrangement is not subject to contract accounting, the following four basic criteria must be satisfied before revenue can be recognized pursuant to SOP 97-2:

1. Persuasive evidence of an arrangement must exist;
2. Delivery must have occurred;
3. Vendor's fee must be fixed or determinable; and
4. Collectibility of fees must be probable.

#### (b) Persuasive Evidence of an Arrangement

(i) **General:** If the vendor's customary practice is to utilize written contracts, evidence of an arrangement does not exist until there is a contract that is signed by both parties. Without the signatures of both parties, the "agreement" is simply an offer. "Home office" sign-off may be an important internal control that precludes a vendor's salespeople from offering terms that could be detrimental to the overall good of the vendor. If the vendor does not use signed contracts, as is often the case in the shrink-wrapped software market, evidence of an arrangement may take the form of an authorized purchase order or other third-party authorization. The key to determining whether persuasive evidence of an arrangement exists is to evaluate whether the documentation that will ultimately exist between the vendor and customer is in place and executed.



**(ii) Vendor's Practice Is to Obtain Written Contracts:** Assume that a vendor customarily obtains signed contracts from its customers for each software order. A customer calls on June 28 (the vendor's fiscal year end is June 30) and orders a software product. The contract is not signed until July 5, even though the vendor ships the software to the customer on June 30. Prior to shipment, the customer provides the vendor with a "non-cancelable letter of understanding," which states that the letter includes the significant terms and conditions of the purchase and that the parties agree to finalize a mutually acceptable licensing agreement within a certain period of time after delivery of the software. In this case, the vendor does not have persuasive evidence of the arrangement until July 5 and recognition of revenue upon shipment is not appropriate. Because the vendor has a business practice of obtaining a signed contract, the only acceptable evidence of an arrangement is a contract signed by both the customer and the vendor.

**(iii) Vendor's Practice Is Not to Obtain Written Contracts:** Some vendors normally accept orders transmitted electronically (e.g., via electronic mail) and such orders are generally not signed. These orders often involve only a credit card number for billing purposes. If a vendor's practice is to ship its product after receiving an on-line authorization from the customer, this constitutes acceptable evidence of an arrangement.

It is important to note, however, that even if the vendor typically sells products based on evidence that does not include a written contract, the *customer* may require a written contract based on its policies. In this case, the customer's written contract is the documentation that must be in place for the vendor to recognize revenue from the arrangement.

Written correspondence, verbal promises, separate letters, or other arrangements outside of the sales contract (including future concessions) sometimes alter terms of signed contracts. These types of arrangements, whether written or verbal, must be considered in evaluating all of the revenue recognition criteria of SOP 97-2. Such arrangements may extend payment terms, provide rights of return, or commit the vendor to provide additional products or services in the future, any of which can change revenue recognition conclusions that are reached based solely on the terms stated in the contract.

### (c) Delivery

**(i) General:** Delivery of the software is the key criterion for recognition of revenue. Although it would seem that delivery would be the simplest criteria to evaluate for fulfillment, the method of delivery (shipment versus electronic), the destination (customer versus third party), and many other factors can bring into question whether delivery has occurred. The question as to whether delivery has occurred underscores the complexity of revenue recognition in the software industry.

SOP 97-2 defines delivery as follows:

- A physical transfer of tape, disk, integrated circuit, or other medium
- Electronic transmission

- Making available to the customer software that will not be physically transferred, such as through the facilities of a computer service bureau
- Authorization for duplication of existing copies in the customer's possession

Generally, delivery is considered to have occurred upon the transfer of the product master or, if a master copy is not to be delivered, then upon delivery of the first copy. The delivery criterion of SOP 97-2 is not met if there are undelivered elements that are essential to the functionality of the software that has been delivered. Further, the delivery criterion has not been met if there is uncertainty about customer acceptance of the software that has been delivered. Specifically, if the software is to be modified to interface with the customer's existing systems, is required to perform at levels or speeds that it has not previously achieved, is to be ported to a platform that it has not been previously interfaced with or has a substantive customer acceptance clause, the delivery criterion may not have been satisfied.

If a software vendor enters into a multiple-element arrangement and all elements are not delivered simultaneously, revenue recognition before delivery of all of the elements is permissible only if the entire fee can meet the standards for allocating revenue to each element of the arrangement. SOP 97-2 established the notion of VSOE as the only measure upon which an allocation of revenue can be made. If VSOE of fair value for each and every undelivered element can not be established, revenue has to be deferred until all elements are delivered.

#### (ii) Duplication of Software

*General.* Required duplication of software can also bring into question whether delivery has occurred, which will depend on whether the arrangement with the customer involves multiple copies or multiple licenses. Although SOP 97-2 does not specifically define these terms, paragraph 21 provides some parameters for analysis. *Multiple Copy Arrangements* are those that occur when the customer has the right to use multiple copies of a software product under a site license with an end user or to sell multiple copies of a product with a reseller for a fixed fee. Duplication is incidental under these arrangements because the fee is fixed and payable whether or not the customer receives, reproduces, or requests the additional copies. Revenue under these arrangements should be recognized upon delivery of the product master (if it is to be delivered) or the first copy, assuming all other revenue recognition criteria are met.

*Multiple License Arrangements* exist when the license fee is a function of the number of copies delivered to, made by, or deployed by the user or reseller. The fees from this type of licensing arrangement are not fixed or determinable at the outset of the arrangement. Duplication is not considered incidental under these arrangements and, therefore, revenue should be recognized as the copies are made by the user or sold by the reseller if the other criteria in SOP 97-2 for revenue recognition are met. Where duplication costs are determined not to be incidental to delivery, the estimated costs of duplicating the software should be accrued when the revenue is recognized. Arrangements that involve duplication require analysis as to whether the fee is fixed. An arrangement with a fee that is fixed but that

is also contingent on expected deployment of the software will generally indicate that the duplication of the software is not incidental.

*If Duplication Is Incidental.* Assume that a vendor sells 100 copies of its software for a non-refundable fee of \$1,000,000. On December 31, the vendor ships the fully functional software to the customer. Pursuant to the terms of the arrangement, the customer may request that the vendor duplicate the software for its sites located throughout the world. Total copies duplicated will not exceed the 100 copies specified in the arrangement. In this case, duplication is incidental to the arrangement. The fee is non-refundable even if the customer does not request all 100 copies of the software. The vendor should recognize the \$1,000,000 fee on December 31 and accrue the costs of duplication.

*If Duplication Is Not Incidental.* Assume that on September 28, a vendor licenses 5,000 seats of a product for a total fixed fee of \$500,000. The payments are payable at \$50,000 per month over the next ten months, which is not indicative of “extended payment terms” for purposes of this illustration. The customer indicates that this time period will approximate the deployment of the product. The linking of the payment terms to the expected deployment of the software might lead to the conclusion that duplication is not incidental and that the customer does not view those fees as payable until duplication occurs. This could be overcome by persuasive evidence of an ability to collect under this type of payment structure in accordance with the original terms of the agreement, regardless of the deployment of copies by the customer.

### (iii) Electronic Delivery, Keys, and Authorization Codes

*General.* Sometimes software is available to customers electronically and on-demand. In these cases, delivery is considered to have occurred when the customer takes possession of the software by download or the customer is provided with access codes that allow immediate possession of the software. In some circumstances, delivery of software that requires the use of authorization codes (or software keys) may not constitute delivery for purposes of revenue recognition unless the software “keys” are delivered as well. However, failure by the vendor to deliver a permanent key does not preclude revenue recognition if all other criteria prescribed by SOP 97-2 are met.

Although keys provide the customer with access to the software, delivery of a key is not necessarily required in order for the vendor to recognize revenue. In addition to the other requirements of SOP 97-2, paragraph 25 outlines the requirements for revenue recognition for arrangements involving the delivery of keys or authorization codes and indicates the following conditions that must be met:

- The customer has licensed the software, and the vendor has delivered a version of the software that is fully functional except for the permanent key or the additional keys (if additional keys are used to control the reproduction of the software).

- The customer's obligation to pay for the software and the terms of payment, including the timing of payment, are not contingent on delivery of the permanent key or additional keys (if additional keys are used to control the reproduction of the software).
- The vendor will enforce, and does not have a history of failing to enforce, its right to collect payment under the terms of the original arrangement.

Vendors often ship temporary keys that expire or can be turned off as a means of collecting fees. These situations require an evaluation of the vendor's business purpose and intent of the vendor with regard to the use of a temporary key. The vendor should have a customary business practice of using temporary keys for this purpose. Paragraph 25 of SOP 97-2 states that if a temporary key is used to enhance the vendor's ability to collect payment, the delivery of additional keys, whether temporary or permanent, is not required to satisfy the vendor's delivery responsibility provided that the conditions described above are met and use of a temporary key in such circumstances is a customary practice of the vendor.

The risk associated with the use of keys is that the fee under the arrangement may not be collectible at the date of the delivery of the software because the delivered software is under evaluation by the customer. In these cases, revenue recognition would be precluded. Selective issuance of temporary keys might indicate that collection is not probable or that software is being used only for demonstration purposes. If the vendor has a customary business practice of using temporary keys, delivery of the permanent key is not required to recognize the license fee, as long as the above criteria are met.

*Electronic Delivery.* Revenue recognition is appropriate when the customer has full access to the software if all other revenue recognition criteria have been met. Assume that a software vendor enters into an arrangement with a customer to license a product on June 29 and the vendor electronically transfers a fully functional version of the product to the customer on that date. The customer is traveling on business on June 29 and returns on July 1. The delivery criterion has been met on June 29 because the customer had full access to the software on that date. The fact that the customer did not utilize such access does not affect revenue recognition. The vendor has done everything in its control to transfer full use to the customer.

*Authorization Keys.* Assume that a software vendor makes a call and reaches an agreement for the sale of a product. The vendor agrees to leave with the customer one fully functional copy of the product, including one permanent key that allows the customer to use the software. On March 31, the customer sends the vendor a purchase order for 5,000 copies of the product (which is the vendor's only documentation requirement). The vendor e-mails the remaining permanent keys to the customer on April 2 that allow the customer to make copies of the product. Because the customer already has a fully functional version of the product on March 31, delivery of the software occurred on that date if all the other requirements of SOP 97-2 are met.

(iv) **Delivery to Other than the Customer:** Vendors may engage agents, often referred to as fulfillment houses, to duplicate or deliver software products to customers. Revenue from transactions involving delivery agents should be recognized when the software is delivered to the customer. Transferring the fulfillment obligation to an agent of the vendor does not relieve the vendor of the responsibility for delivery. This is the case even if the vendor has no direct involvement in the actual delivery of the software product to the customer.

(v) **Shipping Terms:** SAB 101 drew increased attention to shipping terms and their impact on revenue recognition for public software vendors. In response to SAB 101, TPA 5100.69 was issued to reiterate the relevance of shipping terms to all software sales. In short, software arrangements that include FOB destination terms do not meet the delivery criterion of SOP 97-2 until the customer receives the software. TPA 5100.69 further states that the delivery criterion is affected by shipping terms even for license arrangements in which title to the software is retained by the vendor.

#### (d) Fixed or Determinable Fees and Collectibility

##### (i) General

*Fixed or Determinable Fees.* SOP 97-2 requires that the fee be “fixed or determinable” in order for a software vendor to recognize license revenue upon the shipment of the software. The glossary of SOP 97-2 defines a “fixed fee” as “a fee required to be paid at a set amount that is not subject to a refund or adjustment. A fixed fee includes amounts designated as minimum royalties.” The concept is that on the date of shipment, the vendor must know the amount of revenue that will result from an arrangement and all the elements that will be included in the arrangement if the vendor is to recognize revenue. If the vendor subsequently adjusts the fee or adds elements at no additional (or at a reduced) cost, the fee in the arrangement may not have been fixed or determinable at the outset of the arrangement. If a vendor cannot conclude that a fee is fixed or determinable at the outset of an arrangement, revenue should be recognized as the payments become due.

Under SOP 91-1, substantial diversity existed in practice regarding the determination of fixed or determinable fees, particularly for cases in which extended payment terms existed. The requirement for a fixed fee and the factors that should be considered in determining whether a fee is fixed or determinable has not changed under SOP 97-2. Rather, SOP 97-2 has attempted to clarify and expand on the concepts that were set forth in SOP 91-1. The goal has been to provide more consistency in accounting for software revenue.

*Collectibility.* The requirement that the fee from the arrangement must be collectible has not changed. The collectibility criterion is clearly related to the other basic criteria for software revenue recognition. It is important to note that the satisfaction of collectibility criterion of SOP 97-2 is not intended to be based on an evaluation of

customer creditworthiness. The overriding principle with regard to collectibility and software revenue recognition is whether collection of the fixed or determinable fee, as discussed above, is probable. The definition of “probable” in FASB Statement No. 5, *Accounting for Contingencies*, is “the future event or events is likely to occur.” An assessment must be made regarding the probability of collecting the resulting receivable when all other revenue-recognition criteria are met.

SOP 97-2 notes that the collectibility criterion serves as a check against the other basic criteria for revenue recognition. That is, a customer is unlikely to pay for (1) an element that has not been ordered (persuasive evidence of an arrangement); (2) an element for which full use has not been realized (delivery), or (3) an element for which price adjustments, or other modifications to the arrangement, are expected (fixed or determinable fee).

The collectibility concept requires full revenue deferral, despite certain elements having been delivered, if the fee allocated to the delivered element is subject to forfeiture, refund, or other concession in the event the remaining elements are not delivered. In evaluating whether collection of the remaining fees is probable, the vendor should consider whether the arrangement specifically addresses requirements for customer acceptance, future deliverables and their respective prices, stated default and damage provisions, as well as the enforceability of payment obligations and the due dates for delivered elements. These payment obligations should be independent of the delivery of any future elements and must be supported by the vendor’s intent to require payment. The vendor should also consider whether the delivered software has been successfully implemented and whether the customer has purchased maintenance for the delivered software.

*Other factors.* Other factors that affect the assessment of whether a fee is fixed or determinable and collectible are discussed below and in other sections of this chapter. These factors include the right to return or exchange products and the impact of discounting. Issues regarding fixed or determinable fees and collectibility that are specific to resellers are discussed in section 4.8.

## (ii) Extended Payment Terms

*General.* Many arrangements specify a payment period that is short in relation to the period of time the customer is expected to use the software. Other arrangements have payment terms that extend over a substantial period of time after the software product is delivered. The guidance provided by paragraph 27 of SOP 97-2 makes it clear that the risk of collectibility is separate from the determination of fixed or determinable fees. It also emphasizes that extended payment terms increase the risk that a vendor may provide a refund or concession to a creditworthy customer to collect outstanding amounts due under the original payment terms of the arrangement. A history of software vendors actually making concessions outside of contractual provisions led to this specific guidance on extended payment terms. A product’s continuing value may be reduced due to technological obsolescence and other external factors such as the subsequent introduction of enhanced products by the vendor or its competitors.

Because of this risk, any extended payment terms outside of a vendor's normal business practices may indicate that the fee is not fixed or determinable.

SOP 97-2 provides specific guidance for evaluating extended payment terms and their effect on revenue recognition. The existence of payment terms that extend beyond the vendor's customary terms should be viewed as a strong, but refutable, indication that a fee is not fixed or determinable. Appropriate revenue recognition would be to defer revenue and recognize it as payments become due. This criterion exists because software industry experience indicates that the terms of an arrangement subject to longer payment terms are sometimes modified, or other concessions are provided to the customer. In cases involving extended payment terms, new products or updates (which were later made available by the vendor) may have been provided to the customer at no charge or for prices below fair value. These concessions may have been made despite the fact that there was no legal obligation to do so and, in substance, significantly modify the terms of the original arrangement. These types of situations are frequently accompanied by payment terms that are longer than customary. In such circumstances, evidence that clearly demonstrates the fixed nature of the fee will be required before revenue can be recognized. If the conclusion is reached at the outset that the fee is not fixed or determinable, the SOP requires that revenue be recognized only as payments become due.

If extended payment terms in excess of one year exist, there is a *presumption* that the fees are not fixed or determinable. If the presumption cannot be overcome, all revenue should be deferred and recognized in the period each payment becomes due. To overcome the presumption, there must be *persuasive* evidence that utilizing similar extended terms in like circumstances is a standard practice of the vendor *and* that the vendor has a history of successful collection pursuant to original terms in similar situations without making concessions to the customer. Overcoming the presumption of concessions in extended payment term arrangements is discussed in more detail below.

*Determining Whether a Significant Portion of a Fee Is Extended.* Assume that a software vendor offers three-year software licenses and also provides three-year payment terms. The license fee is paid 60% on delivery and the remainder on a monthly basis over the term of the license. The vendor represents that this is standard in its sector of the software industry and that it does not have a history of writing-off the receivables or otherwise making concessions. Considering that 27% of the total arrangement fee is not due until 12 months after date of delivery, it would appear that the payment terms have been significantly extended. There are no "bright lines" that determine what is considered "a significant portion of the fee" in applying the provisions of SOP 97-2; significance can only be determined in the context of the particular facts and circumstances. The belief that these types of payment terms are standard in a particular sector of the software industry may or may not be relevant. On the one hand, if competitors offer this type of payment terms, the vendor may have a valid business purpose for granting such terms (e.g., to remain competitive). On the other hand, the authors do not believe that the experience of others in the industry is relevant to assessing a particular vendor's historical experience with granting extended payment terms and making concessions related thereto. For instance, the vendor will

likely have no information as to competitors' business practices relative to granting of concessions. It is the individual vendor's experience that must be considered in making the determination as to whether fees are fixed or determinable at the outset of the contract, not an industry standard.

*Overcoming the Presumption of Concessions in Extended Payment Term Arrangements.* Once the determination has been made that a significant portion of the vendor's fee is due under extended terms, an evaluation must be undertaken to determine the effects on the vendor's ability to recognize revenue. First in making this determination is an understanding of the many types of concessions one is looking for.

*Types of Concessions.* The presence of extended payments terms brings into question whether a vendor will provide concessions to the customer during the time in which payments are due. It is therefore worth exploring in some detail what constitutes a concession within the context of SOP 97-2. TPA 5100.56, *Concessions and Software Revenue Recognition*, provides specific guidance for determining what constitutes a concession in a software sales arrangement. TPA 5100.56 states that concessions by a software vendor may take many forms and include, but are not limited to, any one of the following kinds of changes to the terms of an arrangement:

- Changes that would have affected the original amount of revenue recognized;
- Changes that reduce the arrangement fee or extend the terms of payment;
- Changes that increase the deliverables or extend the customer's rights beyond those in the original transaction.

The TPA also provides numerous examples of the types of concessions commonly encountered in the software industry for each of the broad categories listed above.

Concessions by a software vendor that reduce an arrangement fee or extend the terms of payment include, but are not limited to, the following:

- Extending payment due dates in the arrangement (except when the extension is due to credit problems of the customer).
- Decreasing total payments due under the arrangement (except when the decrease is due to credit problems of the customer).
- Paying financing fees on a customer's financing arrangement that was not contemplated in the original arrangement.
- Accepting returns that were not required to be accepted under the terms of the original arrangement.

Concessions by a software vendor that increase the deliverables include, but are not limited to, the following:

- Providing discounted or free post-contract customer support that was not included in the original arrangement.



- Providing various types of other discounted or free services (beyond those provided as part of the vendor's normal product offerings or warranty provisions), upgrades, or products that were not included in the original arrangement.
- Allowing the customer to have access to products not licensed under the original arrangement without an appropriate increase in the arrangement fee.
- For term licenses, extending the time frame for a reseller to sell the software or an end user to use the software.
- For limited licenses, extending the geographic area in which a reseller is allowed to sell the software, or the number of locations in which an end user can use the software.

Although the nature of a concession may vary by type of arrangement, many of the above concessions could be granted for any type of license arrangement regardless of its form (that is, term arrangement, perpetual arrangement, site license arrangement, enterprise license arrangement, etc.).

Examples of changes to the terms of an arrangement that are not concessions include, but are not limited to, the following:

- Changes that increase the deliverables with a corresponding appropriate increase in the arrangement fee, and
- Changes that eliminate the software vendor's delivery obligation without a refund of cash.

*Establishing a History of Granting and Collecting Under Extended Payment Terms.* Once a vendor is aware of the many types of concessions that can preclude revenue recognition, an evaluation of whether the presumption of concessions can be overcome continues with establishing a history of collections without having to make concessions. The guidance for determining whether a vendor has a sufficient history is available in TPA 5100.57, *Overcoming Presumption of Concessions in Extended Payment Term Arrangements and Software Revenue Recognition*. The TPA states that "to have a history of successfully collecting under the original payment terms without making concessions, a vendor would have to have collected all payments as due under comparable arrangements without providing concessions. For example, one year of payments under three-year payment arrangements would not provide sufficient history because all of the payments under the contracts would not yet have been paid as due." Factors that should be assessed in the evaluation of a vendor's collection history can be classified into three categories: similarity of customers, similarity of products, and similarity of license economics. TPA 5100.57 provides the following guidance in assessing each of the three categories as follows:

#### *Similarity of Customers*

***Type or Class of Customer:*** *New arrangements with substantially the same types and class of customer is an indicator that the history is relevant. Significant differences call into question the relevance of the history.*

*Similarity of Products Included*

**Types of Products:** *Similarity in the types of products included under the new license arrangement (e.g., financial systems, production planning, and human resources).*

**Stage of Product Life Cycle:** *Product maturity and overall stage within its product life cycle should be considered when assessing the relevance of history. The inclusion of new products in a license arrangement should not automatically preclude the vendor from concluding that the software products are comparable. For example, if substantially all of the products under one license arrangement are mature products, the inclusion of a small number of newly developed products in a subsequent arrangement may not change the overall risk of concession and economic substance of the subsequent transaction.*

**Elements Included in the Arrangement:** *There are no significant differences in the nature of the elements included in the arrangements. The inclusion of significant rights to services or discounts on future products in some arrangements, but not others, could indicate that there is a significant difference between the arrangements. For example, a history developed for arrangements that included bundled post-contract customer support (PCS) and rights to additional software products would not be comparable to an arrangement that does not include these rights.*

*Similarity of License Economics*

**Length of Payment Terms:** *In order for the history to be considered relevant, the overall payment terms should be similar. Although a nominal increase in the length of payment terms may be acceptable, a significant increase in the length of the payment terms may indicate that the terms are not comparable.*

**Economics of License Arrangement:** *The overall economics and term of the license arrangement should be reviewed to ensure that the vendor can conclude that the history developed under a previous arrangement is relevant, particularly if the primary products licensed are near the end of their lives and the customer would not be entitled to the updated version under a PCS arrangement.*

*No History of Extended Payment Terms.* Assume that a vendor manufactures software products that provide an enterprise-wide solution for its customers. Within the offering are individual suites that are separately sold and provide functionality in specific areas such as accounting, inventory management, and sales force automation. Payment terms are nearly always 30 to 60 days for existing sales. The vendor introduces a new suite within its enterprise-wide package to provide a human resources solution. The vendor has no history of offering extended payment terms but intends to do so with the introduction of its human resources solution. The vendor has not had a history of making concessions, refunds, or forfeitures in the past, even though it has introduced several new suites and platforms in recent years. The vendor sells an enterprise-wide solution to its first three customers that includes the new human resources suite and offers payment terms with 10% down at delivery and 90% due in

six months. All other revenue recognition criteria have been met. Circumstances such as these are seen often in practice and they can be troublesome to evaluate.

The first issue is whether six-month payment terms should be considered extended payments. If the vendor's standard business practice is to require payment within 30 to 60 days, it appears that six-month payment terms are outside of normal practices and do represent extended terms in spite of the fact that they are less than 12 months. In considering the vendor's history of granting extended payment terms and not making concessions, forfeitures, or refunds, it seems that the vendor does not have a history of granting concessions. However, the introduction of extended payment terms is a change in business practices and the vendor's historical business practice of not making concessions, forfeitures, or refunds may not apply after the adoption of the new business policy. Consequently, the vendor has no history with this new business practice and the likely conclusion is that revenue should not be recorded at shipment.

Another factor that may be relevant in this assessment is the impact of the introduction of the new suite. The introduction may be causing a change in the vendor's historical payment-terms business model due to uncertainty about acceptance or customer satisfaction with the new human resources suite. Alternatively, the vendor could be changing its practices for payments because of market conditions or competitors' pricing structures that may not have anything to do with the introduction of the new human resources suite.

*Applicability of History of Not Granting Concessions to Varying Situations.* Assume that a vendor has introduced a new product that it expects it will be able to market to customers who will deploy the product to desktop computers worldwide. For its larger customers, the vendor enters into new arrangements and grants payment terms of 12 to 18 months. The vendor represents that historically it has not had any significant write-offs of its receivables for sales of similar products to customers where extended payment terms (which the vendor has defined as greater than 60 days but less than 12 months) have been granted. The vendor's experience with less than 12-month extended payment terms proves that the vendor has not provided concessions in the past. The question is whether a vendor can overcome the presumption of concessions by demonstrating that it can collect receivables with greater than 12-month payment terms related to the new arrangements without granting concessions. Because the vendor has not granted (and collected under) 12 month, or longer payment terms previously, it is unlikely that the "similarity of license economics" criteria of TPA 5100.57 can be satisfied.

*Discounting to Present Value for Fixed Fees with Extended Payment Terms.* Assume that a fee for a software arrangement is \$500,000 and is deemed to be fixed or determinable and all other revenue recognition criteria have been met. Additionally, assume that the customer provided the vendor with a promissory note for the payments due under the arrangement. The vendor's borrowing rate is 8% and there are 18 monthly payments of \$27,778. The net present value of the monthly payments discounted at 8% is \$469,693. The net present value of the payments (\$469,693) would be recorded

as revenue upon delivery of the software product. The amount of unrecorded income (\$30,307) would be recognized as interest income during the 18-month period.

*Recognizing Revenue if There Are Extended Payment Terms and the Fee Is Not Fixed or Determinable.* Assume that a vendor has concluded that its sale of software to a customer does not meet the fixed or determinable criterion. Payment terms and collections related to the arrangement are:

<i>Fees</i>	<i>Payment Due Date</i>	<i>Date Cash Collected</i>
\$100,000	January 29, X2	March 31, X2
100,000	September 30, X2	October 25, X2
100,000	March 31, X3	April 30, X3
100,000	September 30, X3	September 30, X3
<u>\$400,000</u>		

Assuming all other revenue recognition criteria have been met, the payments should be recorded as revenue as they become due as indicated in the middle column. The fact that the cash is collected on later dates does not affect when the revenue should be recorded. If the vendor collects a payment before the due date, revenue may be recognized on the date of collection if all other revenue recognition requirements have been met, as indicated in TPA 5100.41.

*Subsequent Determination that a Portion or All of a Recognized Fee Will Not Be Collected.* Assume that a vendor makes a determination at the outset of a sales arrangement that a fee is fixed or determinable, that all other revenue recognition criteria are met, and that the vendor records revenue on delivery. Some of the payments are not received when due and the vendor determines that it is probable that some of the payments will not be collected. If the determination that the fee was fixed or determinable at the outset and that all other revenue recognition criteria were met, the write-off of the receivable should be recorded as a bad-debt charge in the period in which it is determined that the amounts would not be collected.

**(iii) Third-Party Financing Arrangements**

*General.* Financing arrangements for the payment of fees due under software licensing agreements are often seen in the software industry, particularly when software vendors license software, related PCS, and other services in volume quantities or at high prices. The introduction of the specific fixed or determinable criterion in SOP 97-2 has led to numerous questions regarding the effect that a third-party financing arrangement has on revenue recognition. Because risk of inappropriate revenue recognition associated with extended payment terms is not one of collectibility, the receipt of cash from a third-party financing agent by a software vendor does not necessarily lead to the conclusion that the fee in the arrangement should be considered fixed or determinable at the outset.

Financing arrangements may be solely between the customer and a third-party financing agent or the vendor may be involved. The vendor's involvement may vary significantly, from maintaining a list of third-party financing agents to providing financing directly to the customer. Generally, when the customer arranges financing and the order is not contingent on the customer's obtaining the financing, the existence of the third-party financing does not affect revenue recognition. As the vendor's involvement in the financing increases, so does the risk that the vendor may grant a refund or other concession in order to obtain payment of the fee. The vendor may wish to retain its relationships with those who provide third-party financing to its customers, which may lead to granting of concessions to its customers to encourage payment to the third-party financiers.

The determination of the effect that a third-party financing arrangement has on whether a fee is fixed or determinable is subjective. The key issue relating to whether fees are fixed or determinable in an arrangement involving a third party financier is how the involvement of the third-party financier impacts whether the vendor will provide a refund or concessions to either the third-party financing company or to the customer. Two significant factors in evaluating whether third-party-financed software arrangements result in incremental risk of refunds or concessions are (1) whether payment terms are extended and (2) the involvement of the vendor in the financing arrangement. A series of TPA's (Nos. 5100.60 through 5100.66), address the impact of third party financing arrangements on revenue recognition.

*Customer Financing Through Third Party with No Vendor Participation.* Assume that a vendor enters into an arrangement with an end user customer that contains customary payment terms (terms that are not extended within the meaning of SOP 97-2) and the end-user customer obtains, without the software vendor's participation, financing from a party unrelated to the software vendor. In this case, the payment terms are not extended, and the vendor has not participated in the financing arrangement, so the presence of the third party financier does not affect revenue recognition. TPA 5100.60 states that the vendor should recognize revenue upon delivery of the software product, provided all other requirements of revenue recognition in SOP 97-2 are met.

*Effect of Prepayments on Software Revenue Recognition When Vendor Participates in Customer Financing.* Assume a vendor enters into an arrangement with an end user customer that contains extended payment terms and the software vendor receives payments in advance of the scheduled due dates after the software vendor participates in the customer's financing with a third party. TPA 5100.61 states that if the vendor's participation in the customer's financing results in incremental risk that the vendor will provide a refund or concession to either the end user customer or the financing party, the presumption is that the fee is not fixed or determinable. Unless the vendor can overcome that presumption, revenue from the arrangement should be recognized as payments from the customer become due and payable to the financing party. The software vendor should account for any proceeds received from the customer or the financing party prior to revenue recognition as a liability for deferred revenue. TPA 5100.63 addresses when this presumption may be overcome.

*Indicators of Incremental Risk of Refund or Concessions and Their Effect on the Evaluation of Whether a Fee is Fixed or Determinable.* The discussion above addresses the impact of increased risk of refunds or concessions and its impact on revenue recognition when fees are deemed not to be fixed or determinable. Guidance as to what circumstances surrounding a vendor's participation in a financing arrangement would lead to a lack of, or a presumed lack of, fixed or determinable fees is provided by TPA 5100.62. The TPA states that a software arrangement fee is not fixed or determinable if the software vendor: (a) lacks the intent or ability to enforce the original payment terms of the software arrangement if the financing is not successfully completed, or (b) in past software arrangements, has altered the terms of original software arrangements or entered into another arrangement with customers, to provide extended payment terms consistent with the terms of the financing.

The TPA further states that any one of the following seven conditions or software vendor actions results in incremental risk and a presumption that the fee is not fixed or determinable:

- Provisions that require the software vendor to indemnify the financing party above and beyond the standard indemnification provisions that are explicitly included in the software arrangement between the software vendor and the end user customer.
- Provisions that require the software vendor to make representations to the financing party related to customer acceptance of the software that are above and beyond the written acceptance documentation, if any, that the software vendor has already received from the end user customer.
- Provisions that obligate the software vendor to take action (such as to terminate the license agreement and/or any related services), which results in more than insignificant direct incremental costs, against the customer on behalf of the financing party in the event that the end user customer defaults under the financing, unless, as part of the original arrangement, the customer explicitly authorizes the software vendor upon request by the financing party to take those specific actions against the customer and does not provide for concessions from the vendor as a result of such action.
- Provisions that prohibit or limit the ability of the software vendor to enter into another software arrangement with the customer for the same or similar product if the end user customer defaults under the financing, unless, as part of the original arrangement, the customer explicitly authorizes the software vendor upon request by the financing party to take those specific actions against the customer.
- Provisions that require the software vendor to guarantee, certify, or otherwise attest in any manner to the financing party that the customer meets the financing party's qualification criteria.
- Software vendor has previously provided concessions to financing parties or to customers to facilitate or induce payment to financing parties.
- Provisions that lead to the software vendor's guarantee of the customer's indebtedness to the financing party.

If the presumption is not overcome, the vendor should recognize revenue as payments from the customer become due and payable to the financing party.

*Overcoming the Presumption that a Fee is Not Fixed or Determinable When Vendor Participates in Customer Financing and Software Revenue Recognition.* The presumption that fees are not fixed or determinable due to incremental risk or refund or concessions can be overcome in certain circumstances. TPA 5100.63 states that the software vendor should use the guidance in paragraph 28 of SOP 97-2 and TPA 5100.57 to overcome the presumption.

Evidence is needed to support that the software vendor has a standard business practice of entering into similar arrangements with financing parties that have substantially similar provisions, and has a history of not providing refunds or concessions to the customer or the financing party.

*Indicators of Vendor Participation in Customer Financing That Do Not Result in Incremental Risk.* Examples of software vendor actions that generally do not cause the vendor to assume incremental risk of refund or concession due to the vendor's participation in an end user customer's financing of a software arrangement are provided in TPA 5100.64.

They are as follows:

- Software vendor introduces the customer and financing party and facilitates their discussions.
- Software vendor assists the customer in pre-qualifying for financing as long as the software vendor does not guarantee, certify, or otherwise attest in any manner to the financing party that the customer meets the financing party's qualification criteria.
- Software vendor represents to the financing party that the software vendor has free and clear title to the licensed software or the right to sublicense provided the software vendor makes the same written representations in the software arrangement with the end user customer.
- Software vendor warrants to the financing party that the software functions according to the software vendor's published specifications provided the software vendor makes the same written warranty in the software arrangement with the end user customer.
- Software vendor takes action, which was explicitly authorized by the customer in the original arrangement, to terminate the license agreement and/or any related services, or to not enter into another arrangement for the same or similar product.
- Software vendor makes customary recourse provisions to its customer related to warranties for defective software.

*Software Vendor Interest Rate Buy Downs on Customer Financing.* A vendor may desire to assist a customer in obtaining third party financing by “buying down” the interest rate inherent in the financing arrangement to a rate lower than that which the customer would otherwise receive. That interest rate “buy down” may occur simultaneously with the original arrangement between the software vendor and customer, or it may occur at a later point in time. Further, that interest rate buy down may occur with or without the customer’s awareness. TPA 5100.65 requires that vendors account for an interest rate buy down as (1) a reduction of the license fee, if done simultaneously with the arrangement, or (2) as a concession, if done at a later point in time. Whether or not the customer is aware of the buy down does not affect revenue recognition.

*Third-Party Financing in Reseller Transactions.* Third-party financing transactions for arrangements involving resellers should be evaluated based on the preceding guidance, as well as the guidance of paragraph 30 of SOP 97-2. This view is supported by TPA 5100.66, which states that the existence of financing by a reseller customer may increase the risk that:

1. Payment of the arrangement fee is substantially contingent on the distributor’s success at reselling the product.
2. The reseller may not have the ability to honor a commitment to pay, which could increase the risk of software vendor concessions regardless of the source of the financing.
3. Returns or price protection cannot be reasonably estimated because of the potential for increased concession risk.

#### (e) Cancellation Privileges

(i) **General:** A software vendor may have a practice of granting cancellation privileges to customers in general or may grant these privileges periodically to specific customers. SOP 97-2 indicates that, generally, fees from licenses that may be cancelled by customers are neither fixed nor determinable; consequently, revenue must be deferred until the cancellation privileges lapse.

Cancellation privileges may seem similar in nature to a right of return, which would be accounted for under FASB Statement No. 48, *Revenue Recognition When Right of Return Exists* (Statement 48). However, there is a significant inherent difference between cancellation privileges and a right of return. A right of return is generally extended when a vendor expects that only a limited portion of the fee associated with the software arrangement may be subject to the right of return or that only a few customers of a large homogeneous population are expected to return the product. In order to qualify pursuant to Statement 48, the vendor must have a legal right to bill and enforce collection after delivery occurs, or the delivery criterion has not been met. Statement 48 requires that there must be an adequate historical basis on



which a vendor can base its estimate of returns. Since this type of right of return is generally given to all customers in a consistent manner, it is possible in many situations for a software vendor to develop a historical basis for estimating returns. Further, when a customer will only accept a delivery in circumstances in which the arrangement can be unilaterally cancelled by the customer, it is clear that the customer has not committed to pay the related fee.

In responding to frequently asked questions regarding SAB 101, the SEC staff has indicated that unless a vendor has a clear and documented ability to make reasonable and reliable estimates of “returns,” the vendor is precluded from recognizing revenue until the customer’s return right lapses. The staff has commented that its expanded SAB 101 guidance on the right of return is directed heavily to “channel stuffing” transactions. These transactions may be entered into by companies whose prior history is not likely to provide a sufficient basis for making a reasonable estimate of the number of returns that can be expected to result from such “channel stuffing” transactions. In those circumstances, the staff would expect a company to defer all of the revenue related to the “channel stuffing” transactions. The SEC staff believes that unless the vendor can produce an estimate that, for the purposes of investors, is sufficiently “reliable,” the staff will conclude that management has not met the Statement 48 standard of a “reasonable” estimate.

It is also important to note that Statement 48 requires management to make a reasonable estimate of the amount of returns that it expects and precludes management from defaulting to the estimated maximum amount of returns within a wide range.

Cancellation privileges and return rights should be evaluated to determine whether the substance of the clause puts the entire fee at risk. If it does, the fee is not fixed or determinable until the cancellation privileges lapse. For arrangements in which the cancellation privileges lapse ratably, revenue should be recognized as the cancellation privileges lapse, assuming that all other revenue recognition criteria are met. There are two exceptions to this requirement: (1) a short-term right of return and (2) warranties for defective software, including warranties that are routine, short-term, and relatively minor.

**(ii) Short-Term Returns:** A short-term right of return, including a “30-day money-back guarantee,” as mentioned in SOP 97-2, should be evaluated in accordance with Statement 48, which requires that there must be an adequate historical basis on which a vendor can base its estimate of returns.

To illustrate, assume that a vendor enters into an arrangement with a customer for total fees of \$500,000 for the licensing of a product and the vendor completes delivery. The contract contains a provision that the customer can return the product for a full refund within 60 days after the completion of installation. Assume that the vendor generally gives customers a 30-day period during which they can “return” the product for a refund but that the 30-day clause is generally not linked to completion of installation. Additionally, the customer’s number of users is substantially higher than the majority of the vendor’s other customers. Despite the fact that the contract uses the word “return,” the essence of the clause is that it is a cancellation privilege. Addi-

tionally, the linking of the “return” clause to installation may indicate some uncertainty in the customer’s mind regarding the product’s performance in its environment. Lastly, the fact that this clause is different from “return” rights granted to other customers would be another indicator that the fees in the arrangement are not fixed or determinable at the outset of the arrangement. As such, the \$500,000 of revenue should be recognized when the cancellation privilege lapses.

**(iii) Warranties:** Warranties that are routine, short-term and relatively minor should be accounted for according to FASB Statement No. 5, *Accounting for Contingencies* (Statement 5). Such warranties should generally be given to all customers in a routine and consistent manner. If warranties vary significantly among customers, an evaluation would have to be made of whether the criteria of “routine, short-term, and relatively minor” have really been met. In order to account for warranties under Statement 5, it is important to ensure that warranties do not include the attributes of PCS, as described in Section 4.5 of this Chapter.

#### **(f) Fiscal Funding Clauses**

Under SOP 97-2, a software licensing arrangement with a governmental unit that includes a fiscal funding clause is considered non-cancelable if the likelihood of cancellation of the arrangement is remote (as defined by Statement 5). However, if a fiscal funding clause is stated or implied in an arrangement with a customer other than a governmental unit, the clause is considered a contingency that precludes revenue recognition until the requirements of the clause and all other revenue recognition requirements have been met.

#### **(g) Forfeiture or Refund Clauses**

**(i) General:** One of the most significant factors affecting the determination of whether a multiple-element arrangement fee is fixed or determinable and collectible relates to undelivered elements. Paragraph 14 of SOP 97-2 states that “no portion of the fee (including amounts otherwise allocated to undelivered elements) meets the criterion of collectibility if the portion of the fee allocable to delivered elements is subject to forfeiture, refund, or other concession if any of the undelivered elements are not delivered.” This is based on the view that a potential concession indicates that the customer would not have originally licensed the delivered products without simultaneously having had access to an undelivered element. Specific factors to consider, which are outlined in paragraph 14 of SOP 97-2, when evaluating whether a portion of the fee is subject to forfeiture or a refund are: (1) whether there is acknowledgment in the arrangement of products not currently available or not to be delivered currently, (2) whether separate prices are stipulated in the arrangement for each deliverable element, (3) any default and damage provisions as defined in the arrangement, (4) enforceable payment obligations or due dates for the delivered elements that are not dependent on the delivery of the future deliverable elements, coupled with the intent of the vendor to enforce rights of payment, (5) installation and use of the delivered

software, and (6) support services, such as telephone support, related to the delivered software being provided currently by the vendor. These factors should be considered in the analysis of whether a fee in an arrangement is fixed or determinable and collectible and should be evaluated in conjunction with all available evidence.

**(ii) Payment Dependent on Delivery of Additional Product:** Assume that a software vendor enters into a software agreement with a customer for the immediate delivery of two products and the delivery one month later of a third product, which is currently not deliverable. The total fees are \$1,000, which is also equal to the total VSOE of \$1,000, comprised of the first product being \$250, the second product being \$600, and the third product being \$150. The agreement contains a provision that if the third product is not delivered on or before its due date, the customer will receive a refund of \$200 against the fee of \$1,000. Paragraph 14 of SOP 97-2 precludes the recognition of revenue for any portion of the fees for the first and second product that would be subject to forfeiture, refund, or other concession if the third product is not delivered. Therefore, revenue of \$800 would be recognized on the delivery of the first two products and the additional \$200 would be recognized on the delivery of the third product. It should be noted that penalties cannot be used to establish VSOE. In this illustration, VSOE of the undelivered element was known and since it was less than the potential penalty, the amount of the penalty must be deferred. Under SOP 98-9, if VSOE of the undelivered elements is not known, revenue cannot be recognized.

**(iii) Effect of Past Business Practices on Determination of Whether a Fee Is Fixed or Determinable:** Paragraph 14 of SOP 97-2 introduces the concept that, in its analysis of the appropriateness of revenue recognition, a vendor must consider past business practices of making concessions beyond the stated contractual requirements. For example, if a contract contains payment terms that are based on delivery of the various elements, the software vendor must have a history of enforcing such payment terms successfully and without concessions in order to justify its assertion that it is probable that the fees will be collected when the various elements are delivered. Concessions, although not specifically defined in SOP 97-2, are addressed by TPA 5100.56, as described in Section 4.3(d)(ii).

To illustrate, assume that a vendor has recently announced a new product. The related marketing literature advertises that the product includes significant enhancements of prior products and will operate in a new operating environment that will make it more user-friendly. The vendor's standard software arrangement does not have contractual acceptance or rights-of-return provisions. However, the vendor has a history of delaying collections on licenses of new products, which appears to indicate that the customers were evaluating the software to determine whether it met the advertised functionality. Additionally, the vendor accepts returns of new products if customers are not satisfied and it has made concessions in the past. The vendor's past practices may indicate that the software is being tested in the marketplace during the product's initial release phase and that the fee is not fixed or determinable and collectible at the time of shipment. The customers have, in substance, a cancellation

privilege. License revenue for all products that are delivered during the initial phase should be deferred until sufficient evidence exists that the products will be accepted by the customers or the vendor no longer accepts returns, makes concessions, or changes its collection practices for the product.

#### (h) Customer Acceptance Clauses

**(i) General:** Paragraph 20 of SOP 97-2 says that “if uncertainty exists about customer acceptance of the software, license revenue should not be recognized until acceptance occurs.” Software arrangements may include a contractual acceptance provision that states acceptance criteria or a specific period in which the product must be accepted or returned. Conversely, implicit acceptance provisions may also exist based on the vendor’s customary business practices. All available evidence should be considered when a determination is being made of the effect of acceptance language in an arrangement or the implicit existence of an acceptance period has on revenue recognition. Generally, if the acceptance criteria are based on the product’s meeting normal published specifications and the acceptance period is short, revenue recognition would not be precluded.

In response to uncertainty surrounding the implementation of SAB 101 by public software companies, AcSEC issued TPA 5100.67 to address the impact of customer acceptance clauses on revenue recognition. TPA 5100.67 states that paragraph 20 of SOP 97-2 is not intended to suggest that the mere existence of a customer acceptance provision precludes revenue recognition until formal acceptance has occurred.

Items to consider in evaluating the effect of customer acceptance on revenue recognition include, but are not limited to: a) historical experience with similar types of arrangements or products, b) whether the acceptance provisions are specific to the customer or are included in all arrangements, c) the length of the acceptance term, and d) historical experience with the specific customer. The authors encourage public software companies to consider the guidance of SAB 101, and the Frequently Asked Questions to SAB 101, as it relates to customer acceptance.

**(ii) Customer Acceptance and Collectibility:** Assume that a vendor and customer enter into a software agreement for a product for which the standard license agreement contains a provision that the customer has 30 days from delivery to accept the product. If the customer does not accept the product, the vendor has 15 days to cure the defect. The vendor is an established software company and since the introduction of the product three years ago, there has been an extremely small number of situations in which there has been a defect in the product. In all of these limited situations, the defect was caused during shipment and the vendor cured the defect by shipping a new copy of the product. No concessions have been granted in relation to the acceptance provisions and there have been no cases in the vendor’s history in which the product was not ultimately accepted by a customer. Although all the facts and circumstances would have to be evaluated, particularly regarding the customer’s computing environment and the number of users compared to the past customer base, it is likely that the vendor would be able to mitigate the uncertainty surrounding the

stated acceptance clause for fee collectibility and recognize revenue upon the delivery of the product, if all other revenue recognition criteria have been met.

**(iii) Customer Acceptance with Additional Time Needed to Cure Defect:** Assume that a vendor is a relatively new software company that introduced a product one year ago. The vendor has 25 customers, all of whom were provided with a stated acceptance clause providing that the customer has 30 days from delivery to accept the product. If the customer does not accept the product, the vendor has 15 days to cure the defect. The vendor has experienced some defects in the products and, in all but two cases, the vendor's service engineers have been able to fix the problem within 15 days. All customers ultimately accepted the product. In the two cases in which the problem had not been fixed within 15 days, although the product was eventually accepted by the customers, the vendor committed to provide additional training days at no additional cost. All the available evidence would have to be evaluated. Despite the fact that the product has always eventually been accepted, the vendor had to incur time and expense to cure the defects after product delivery and provide concessions to ensure acceptance. This presents reasons for concern over the ability of the vendor to record revenue upon the delivery of the product.

## 4.4 MULTIPLE-ELEMENT ARRANGEMENTS

### (a) General

A "multiple-element arrangement" is any software arrangement that provides the customer with the right to any combination of additional software deliverables, services, or postcontract customer support (PCS). Unlike sales of many other types of products, multiple elements are very common in software arrangements because of the nature of the industry, in particular with regard to future products, maintenance, and implementation services.

Under SOP 91-1, post-delivery obligations were to be considered either significant or insignificant. Little guidance was given on how that determination should be made. SOP 91-1 did not address whether "when-and-if-available" deliverables constitute an obligation and did not differentiate between obligations involving future deliverables that were specified and those that were unspecified. As a result, substantial diversity in practice resulted regarding the treatment of post-delivery vendor obligations. Under SOP 91-1, if a post-delivery obligation was considered insignificant, deferral of revenue was not required; rather, the software vendor could recognize revenue and accrue the cost of the insignificant obligation. Therefore, when-and-if-available contract language regarding specified future deliverables was often used as a basis for differentiating obligations that were insignificant from those that were significant. An obligation to provide future deliverables was deemed insignificant based on the concept that the obligation must not be significant to the customer if the customer was willing to negotiate the future deliverable on a when-and-if-available basis.

SOP 97-2 eliminates the distinction between significant and insignificant vendor obligations and provides that for revenue recognition purposes, when-and-if-available

contract language must be considered, for accounting purposes, equivalent to an actual obligation to deliver a product. All future obligations, including additional software deliverables that will be delivered only on a when-and-if-basis, are considered elements to which the arrangement fee should be allocated based on the fair values of the individual elements. This change in the approach to revenue recognition is based on the concept that if an undelivered element is specifically mentioned in a contract, it must be an important factor in the customer's purchasing decision. Revenue recognition for multiple-element arrangements is complicated and will vary with the nature of each of the deliverables and how each deliverable may relate to or impact another element.

### **(b) Combining Closely Related Contracts**

One of the topics covered by the AICPA in its Technical Questions and Answers (Q&As) issued to supplement SOP 97-2 deals with the form of a multiple-element arrangement. It was indicated that a group of contracts or agreements may be so closely related that they are, in effect, parts of a single arrangement. The following are circumstances that could indicate that a group of contracts is really a multiple-element arrangement:

- All the contracts or agreements are negotiated or executed within the same, short timeframe.
- The different elements are closely interrelated or interdependent in terms of design, technology, or function.
- The fee for one or more contracts or agreements is subject to a refund or forfeiture or other concession if one of the other contracts is not completed satisfactorily.
- One or more elements in one contract or agreement are essential to the functionality of an element in another contract.
- Payment terms under one contract or agreement coincide with performance criteria of another contract.
- The negotiations are conducted jointly with two or more parties (e.g., from different divisions of the same company) to do what in essence is a single project.

### **(c) Revenue Recognition for Multiple-Element Arrangements**

For arrangements that involve multiple elements, the entire fee from the arrangement must be allocated to each of the individual elements based on each element's vendor specific objective evidence of fair value (VSOE). For revenue to be recorded for the delivered elements, the amount allocated to delivered elements may not be subject to a future adjustment. The portion of the fee that is allocated to an element should generally be recognized as revenue when all of the criteria for revenue recognition have been met for that element.

Recognition of revenue for a multiple-element arrangement is dependent on the ability to allocate the total arrangement fee to elements using VSOE. If revenue cannot be recognized for an element, all revenue from the arrangement may need to be

deferred until all elements have been delivered. The situations permitting revenue recognition for specific elements are: VSOE exists for all elements or VSOE exists for all undelivered elements (sometimes referred to as the “SOP 98-9 exception”). If, at the outset of an arrangement, neither of these two situations exists and it is later determined that one of them then exists, then revenue for one or more delivered elements may be recognized at that time. If it appears that the portion of a fee allocated to an undelivered element will not be sufficient to cover the vendor’s costs for delivering that element of the arrangement, a loss should be recognized in accordance with FASB Statement No. 5, *Accounting for Contingencies*.

The following exceptions to the general approach described in the preceding paragraph exist for PCS, other services and subscriptions.

- If the only undelivered element is PCS, the deferred revenue should be recognized ratably over the contract period.
- If the only undelivered element consists of services that do not involve significant production, modification, or customization of software (e.g., training or installation), the deferred revenue should be recognized over the period during which the services are expected to be performed.
- If the arrangement includes a software deliverable that requires significant production, modification, or customization, contract accounting should be used.
- If the arrangement is for additional software products, provides for a specified price per copy, and an allocation of the fee cannot be made at the outset, revenue should be recognized as copies are made by the customer (or furnished to the customer if the vendor is duplicating the software). Once the vendor has delivered the product master or the first copy of all products covered by the arrangement, any licensing fees that were not previously recognized should be recognized. If in substance the arrangement is a subscription, the entire fee should be recognized ratably.

#### (d) Vendor-Specific Objective Evidence of Fair Value

(i) **General:** The concept of allocating value to all elements, including elements described as being provided only on a when-and-if-available basis, is one of the fundamental principles of revenue recognition under SOP 97-2. Determining what that value is, as well as providing the necessary evidence to justify that amount, is one of the most difficult aspects of applying SOP 97-2. SOP 97-2 introduced very narrow criteria for the evidence that is required to account for an arrangement on an unbundled basis. If VSOE does not exist, all revenue for an arrangement must be deferred until all elements are delivered.

Paragraph 10 of SOP 97-2 sets forth the following two circumstances that provide acceptable VSOE:

1. The price charged when the element is sold separately
2. For an element not yet being sold separately, a price established by management having the relevant authority; it must be probable that the price, once established, will not change before the separate introduction of the element into the marketplace

SOP 97-2 states that the separate prices in contracts may not be indicative of the fair value of the related elements. Therefore, AcSEC developed the concept of VSOE—that there are inherent differences between similar products that are offered by different vendors. Consequently, although products may be similar, their fair values may be different. AcSEC concluded that the use of industry averages or competitor prices did not properly account for these differences and that, therefore, only VSOE is acceptable.

The total fee from a software arrangement with multiple elements should be allocated to the various elements based on VSOE, regardless of the separate prices for each element stated within the contract. When VSOE of the elements of a software arrangement is being determined, all of the factors that the vendor used in determining its pricing should be considered. In this respect, a vendor may base its pricing on factors such as a combination of user fees joined with a module or suite fee, the number of products delivered, the number of copies made or to be made, the number of users, the type of customer (e.g., end user or reseller), or the volume of purchases made or expected from the customer.

In most instances, VSOE will be an average price of recent, actual transactions that are priced within a reasonable range. List prices should not be misconstrued as being indicative of fair value. Because many software vendors regularly license software at amounts below standard list prices, price lists were rejected by the authors of SOP 97-2 as being evidence of fair value. VSOE should be determined by gathering historical pricing information over time for each of a vendor's product offerings based on actual prices.

Many software vendors have complicated pricing structures, which sometimes vary for different sales channels. Pricing often takes into account a variety of circumstances, such as the type of hardware employed, the number of processors, or other factors. The evaluation should consider prices applicable to completed transactions where the specific facts and circumstances that affected the historical pricing are similar to the transaction being considered.

The fair value of products may differ based on the type or size of a customer, the size of the purchase, or even the channel of distribution to that customer. Fair values may also be different for the same basic product sold in different territories around the world due to environmental or marketing variables. Thus, there could be more than one fair value for a given product because of the variety of considerations that impact the pricing in an arrangement for that element.

A vendor must determine whether VSOE exists for each element at the outset of the contract, except for circumstances covered by SOP 98-9, where VSOE exists for each of the undelivered elements. If VSOE is established after a balance sheet date but before issuance of the financial statements, VSOE would not exist at the balance sheet date and revenue should be deferred.

The authors of SOP 97-2 spent a significant amount of time determining what criteria should be used to establish the fair value of an element, and AcSEC debated the issue extensively. In the end, the strict definition noted above was adopted and all others were rejected. It is noteworthy that with the exception of circumstances covered by SOP 98-9, the words "sold separately" apply to every element in the arrangement.



Unless the vendor sells or licenses every element by itself, the “sold separately” criteria will never be met. As a consequence, if each element will not be or has not been sold or licensed by itself, VSOE of the entire arrangement cannot be determined. A “with and without” approach was rejected by the authors of SOP 97-2, as was an alternative approach to establish VSOE based on a defined penalty for fixed damages that would result if the additional element was not delivered. Neither of these were considered sufficient evidence to establish VSOE of an element.

The authors believe that the evidence required to support VSOE required by SOP 97-2 will generally involve much more recordkeeping by software vendors than in the past. Vendors will need to collect information based on product and on class of customer. Generally, vendors will need to have a significant amount of sales to prove that a class of customer has sufficient VSOE. In the case of a new company, this may mean that revenue will have to be deferred until a sufficient history is established to substantiate the VSOE of the new vendor’s products.

The narrow definition of VSOE and the limitations on what constitutes VSOE created an implementation problem that was strenuously debated. In particular, there was concern about accounting for a situation in which a software license is never sold without PCS, but PCS is sold without a license. Because the license is never sold separately, the SOP 97-2 requirements for VSOE of all elements would not be met and unbundling would not be permitted. This emphasized the limited circumstances in which VSOE could be met under SOP 97-2, as originally issued, which required that either every element covered by the arrangement would have to be sold separately, or no unbundling could occur. All revenue would be deferred and recognized over the term of the PCS portion of the arrangement. It was recognized that this result was not the intent of the authors of SOP 97-2 in that it produced an overly conservative pattern of revenue recognition.

As a result, in March 1998 AcSEC issued SOP No. 98-4, *Deferral of the Effective Date of a Provision of SOP 97-2, “Software Revenue Recognition.”* SOP 98-4 deferred for one year the effective date of the SOP 97-2 sections that define VSOE in order to give AcSEC an opportunity to discuss the issue and to determine if a change needed to be made. The limited relief provided by SOP 98-4 only affected multiple-element arrangements that involve a license fee always bundled with maintenance and/or training, and where there was VSOE of the undelivered services. The effect was to add a special situation that did not have to meet the “sold separately” criteria for VSOE.

After its additional deliberations on VSOE, AcSEC issued SOP 98-9, *Modification of SOP 97-2, Software Revenue Recognition, With Respect to Certain Transactions.* SOP 98-9 did not change the SOP 97-2 concept or definition of VSOE, or what constitutes VSOE. However, SOP 98-9 broadened the effect of SOP 98-4 (which only had an effect on multiple-element arrangements that involve a license fee always bundled with maintenance and/or training, and where there was VSOE of the undelivered services) to all situations. SOP 98-9 amended SOP 97-2 to require recognition using the “residual” method for any multiple-element arrangement when there is VSOE of all undelivered elements and where VSOE of fair value does not exist for

one or more of the delivered elements. Under the residual method, the total fair value of the undelivered elements is deferred and the difference between the total arrangement fee and the amount allocated to the undelivered elements is used as the revenue attributable to the delivered elements, for which revenue may be recognized. This assumes, of course, that all other revenue recognition criteria are met.

SOP 98-9 extended SOP 98-4's deferral of certain passages of SOP 97-2 through fiscal years beginning on or before March 15, 1999. The other provisions of SOP 98-9 are effective for transactions entered into in fiscal years beginning after March 15, 1999, with earlier application permitted for periods for which financial statements have not yet been issued. Restatement of previously issued financial statements is not permitted. It should be noted that discounts offered in an arrangement can have a substantial effect on the allocation of the total fee to each element. In effect, a discount must be allocated to all elements in the transaction (one exception is made for specified upgrades), assuming that VSOE can be determined for each element.

**(ii) VSOE Exists for All Elements:** Assume that a software vendor offers a package that includes a license for an accounting program and one year of PCS for a total fee of \$115,000. The accounting program has been on the market for three years and has a list price (without PCS) of \$115,000. The vendor has evidence showing that 30 of the 35 sales during the quarter were for \$100,000. Such sales did not involve PCS or any other elements. The vendor always sells renewal PCS for \$15,000 and has sufficient evidence to support that price as a fair value. These facts suggest that the vendor has VSOE for both the license and the PCS. Therefore, the vendor would recognize \$100,000 when all revenue recognition criteria have been met for the accounting program. The remaining \$15,000 would be deferred and recognized over the term of the PCS arrangement.

**(iii) VSOE Exists for the Undelivered Element Only:** Assume that a vendor enters into a multiple-element arrangement that includes a software license and one year of PCS for a total fee of \$250,000. The vendor does not have VSOE for the software because it is always licensed with PCS. The vendor always sells renewal PCS for \$35,000 and has sufficient evidence to support that price as fair value. Based on the exception provided by SOP 98-9, the vendor can drive the accounting based on the existence of VSOE for the undelivered element of PCS. The revenue to be recognized for the software on delivery (\$215,000) can be derived through the residual method by subtracting the VSOE of the PCS (\$35,000) from the total arrangement fee (\$250,000).

**(iv) Products Always Sold in Combination with Other Products:** Assume that a software vendor markets a variety of different software products, none of which are ever sold separately. Each product is sold with many combinations of the other products. The prices for each of the individual products are always stated separately in the software arrangement and the stated prices are derived and negotiated with the customers based on a discount from the vendor's published price list. The vendor can

demonstrate, based on historical data, that the prices stated in its software arrangements for each individual product fall within a reasonable range of prices for that product regardless of the combination of products included in an arrangement. The vendor enters into an agreement with a customer to license four of the products for a fee of \$500,000. The prices stated in the agreement for the products fall within the vendor's reasonable price range for each product. Two of the four products are delivered currently and delivery dates for the remaining two products are not specified. Because SOP 97-2 requires that VSOE of fair value be based on prices at which each element is sold separately, it may be difficult for the vendor to establish a verifiable fact pattern to support the "reasonable range" described in the example. A great deal of judgment will be required in determining whether VSOE of fair value for each element exists. If it is concluded that the evidence is insufficient, all revenue from the arrangement should be deferred until sufficient objective evidence does exist or until all four products are delivered to the customer.

(v) **Effect of Change in License Mix:** TPA 5100.45 addresses changes in product and license mix. Arrangements involving changes in license mix may allow a customer to change or alternate its use of multiple products/licenses included in a license arrangement after those products have been delivered. These arrangements typically involve a customer having licensed the right to use at least one copy of each of several delivered products (that is, the user has a license to use each delivered product). The products may or may not be similar in functionality. These arrangements may limit the customer's use at any time to any mix or combination of the products as long as the cumulative value of all products in use does not exceed the total license fee. Certain of these arrangements may not limit usage of a product or products, but rather, they may limit the number of users that simultaneously can use the products (referred to as concurrent user pricing). Based on TPA 5100.45, revenue should be recognized upon delivery of the first copy or product master for all of the products within the license mix. Subsequent remixing is not an exchange or a return of software because the master or first copy of all products has been licensed and delivered, and the customer has the right to use them.

#### (e) Upgrades

(i) **General:** An upgrade right is the right to receive one or more specified upgrades or enhancements, even if offered on a when-and-if-available basis. SOP 97-2 defines an upgrade or enhancement as "an improvement to an existing product that is intended to extend the life or improve significantly the marketability of the original product through added functionality, enhanced performance, or both. The terms upgrade and enhancement are used interchangeably to describe improvements to software products." Judgment must be used in evaluating whether an element represents a warranty-type bug fix for which costs would be accrued under Statement 5, an upgrade, or a new product, because the accounting for each is dramatically different.

Neither SOP 97-2 nor its predecessor, SOP 91-1, define what constitutes a “new product.” Factors to consider include the significance of the increased features and functionality that will be included in the new version; the significance of the effort required to develop the new version; whether the new version will be marketed as an upgrade or a new product; the comparability in the pricing of the old and the new version as well as the significance of the fee being charged to upgrade; and whether the customer even intended to implement the delivered version.

SOP 97-2 defines an upgrade right as “the right to receive one or more specific upgrades/enhancements that are to be sold separately.” The granting of an upgrade right may be evidenced by a specific agreement or commitment or by a vendor’s established business practices. Sometimes it is difficult to distinguish between a right for a specified upgrade and a right to receive any additional software products, which is an important distinction for revenue recognition purposes. It is also important to distinguish between a right to receive specified upgrades or enhancements versus a right to receive unspecified upgrades or enhancements on a when-and-if-available basis, which is considered to be part of PCS.

A specified upgrade right generally allows a customer to upgrade to a newer version of the same software product for a fee that is substantially less than the price a new customer would pay to license the newer version. Such rights are often granted to customers when the vendor will soon be releasing a new version of the software product. Customers may decide to go ahead and license the current version, with the right to receive the newer version at a lower price when it becomes available.

Specified upgrade rights should be accounted for as separate elements and, therefore, should be allocated a portion of the total arrangement fee based on the VSOE of the upgrade, which would be the price that existing users of the software product will be charged for the upgrade. No portion of any discount should be allocated to the upgrade right. The portion of the total fee that is allocated should be recognized as revenue when all of the criteria for revenue recognition have been met for the upgrade right.

The rules for accounting for specified upgrades seem to have been written to specifically apply to situations in which the upgrade will be licensed separately. Many vendors make major upgrades available to customers without charging an upgrade fee, as the upgrades are included as part of PCS, which creates an accounting issue for such vendors, because specified upgrades will not be licensed separately and, therefore, no VSOE can be determined. Accordingly, no revenue from the arrangement can be recognized until the specified upgrade is delivered. Even a when-and-if-available specified upgrade cannot be accounted for as PCS, as it is not unspecified. The authors believe that these new rules substantially impact some vendors’ business practices and their willingness to offer upgrades in contracts on a specific or implied basis, and even impact whether a vendor decides to charge a separate fee for major upgrades.

In allocating an arrangement fee based on VSOE of the elements, the value that is to be assigned to a specified upgrade right is the price that will be charged to existing users of the software upon its being upgraded. In practice, this amount will often

vary according to whether a customer is current with its PCS payments. Sometimes a vendor will require customers to become current with their PCS payments before they can be entitled to reduced upgrade prices, or the vendor will require the customer to pay the full price of a license for the upgraded software. Thus, the amount could vary from the upgrade fee to the full price of a license for the upgraded software. The authors believe that the intent of SOP 97-2 is that the fees for an arrangement should be allocated based on the upgrade fee for customers that are current on their PCS payments.

If sufficient evidence exists to reasonably estimate the percentage of customers that are not expected to exercise the upgrade right, the revenue allocated to the upgrade right should be reduced to reflect that percentage. Several situations that may cause customers to not exercise an upgrade right are: the benefits gained from the related upgrade or enhancement may not be important to the customer, the customer may not wish to learn how to use the upgraded software for what may be perceived by that customer as marginal improvements, the upgrade or enhancement would require more hardware functionality than the customer currently has, and the implementation of the upgrade may require too much effort on the part of the customer.

**(ii) Accounting If Exercises of Upgrade Rights Cannot Be Estimated:** If a software vendor does not have sufficient VSOE of fair value to estimate the percentage of upgrade rights that will be exercised, such as when sufficient historical information does not exist to make an estimate, it should be presumed that all customers will exercise the upgrade right. Deferred revenue related to upgrade rights should be recognized as revenue over the period of time the upgrade rights are used or when they expire.

**(iii) Specified Upgrade Rights with VSOE For All Elements:** Assume that a vendor offers a software package over the Internet for \$35. The customer is advised that an upgrade to the software package will be released in 60 days and, as part of the licensing arrangement, the customer will receive the right to purchase the upgrade for \$10. VSOE for the software package is \$35 (without the upgrade). The vendor believes that minimal effort will be required to develop the upgrade as the upgrade is being designed only to allow the program to take advantage of improved operating systems. The upgrade will be marketed to existing users for \$15, which represents VSOE for the upgrade. The vendor expects that the customer will exercise the upgrade right. The vendor has VSOE for the original version and for the upgrade, \$35 and \$15, respectively. However, the total fee from the arrangement is only \$45 so there appears to be a \$5 discount involved in the transaction. SOP 97-2 requires that the entire \$15 be deferred until the delivery of the specified upgrade, with the remaining \$30 being recognized at the time of delivery of the original software. This effectively allocates the entire discount to the delivered element.

**(iv) Accounting If the Vendor Can Reasonably Estimate Extent of Exercise of Upgrade Rights:** Assume that a software vendor licenses a web site development tool, which has a wide array of features and functionality that enable users to develop simple to highly elaborate web sites. The vendor has a practice of charging

customers a fee for upgrades. In order to continue to attract new customers and encourage existing customers to purchase upgrades, the vendor continually updates the features and functionality of its tool, as well as incorporates all upgrades and enhancements into it as they are developed and tested. The vendor has an established practice of marketing new features and functionality that it expects to incorporate into its tool in the near future (generally four to six weeks prior to the upgrade's expected general release), as well as a practice of including and specifying these upgrades in the contracts, for a specified fee. The vendor licenses its products to a variety of end users, including individuals who purchase software for their personal use, small business owners, and programmers in large, corporate IT functions. Historically, therefore, upgrade rights have not been exercised by all customers because their software needs and uses vary. Because the vendor is continually upgrading its product, each upgrade or enhancement offered is developed and introduced for a specific target market. The vendor's service department has maintained records that the vendor uses to determine the number of customers that will be expected to exercise a given upgrade right.

The vendor licenses the product to 50 customers in multiple-element arrangements that include a specified upgrade right. The total arrangement fee for each arrangement is \$100. VSOE for the product is \$100, and the vendor expects to charge existing customers \$20 to upgrade to the new version of the product, representing VSOE of the upgrade right. The vendor's historical analysis clearly supports that only one-half of the customers will exercise the upgrade right.

Upgrades and enhancements are generally offered for sale to all customers who purchase the current version of the software product. However, for various reasons, a customer may not exercise the upgrade right. As a result, the percentage of customers that are not expected to exercise the upgrade right should be estimated, and the portion of the fee allocated to the upgrade right should be reduced by this percentage. In the above situation, the vendor has sufficient VSOE to estimate the percentage of customers who will not exercise the upgrade right. The vendor should record \$4,500 in license fees from the arrangements when the product is delivered and defer an aggregate of \$500 ( $\$20 \text{ VSOE of the upgrade} \times 50 \text{ customers} \times 50\% \text{ of customers expected to exercise the upgrade right}$ ). The \$500 of deferred revenue should be recorded as income over the period of time the upgrade rights are used or when they expire.

**(v) Specified Upgrades That Will Be Included with PCS:** Assume that a software vendor offers a version of a software package for \$35. The customer is advised that an update will be coming out in 60 days and, as part of the arrangement, the customer receives the right to receive the specific upgrade for free. VSOE of the fair value of the software package is \$35 (without the upgrade). The vendor is going to offer the upgrade for free to all of its customers that are currently paying for PCS. It is not appropriate to allocate zero value to an upgrade right that is specified in a contract but will be made available for free to customers paying for PCS. Note that the upgrade right is specified and therefore cannot be accounted for as PCS. Since VSOE is not available for the undelivered element of the contract, all arrangement fees would have

to be deferred until the upgraded version is delivered or VSOE becomes available, assuming all other revenue recognition criteria have been met.

## (f) Additional Products

### (i) Distinctions Between Additional Products and Specified Upgrades

*General.* Software arrangements often include the right to obtain additional products that can be similar to specified upgrade rights. The evaluation of whether an undelivered element is an upgrade or a new product is important because the accounting for each is very different. SOP 97-2 does not provide specific guidance on distinguishing between specified upgrades and additional products. The authors believe that in making this distinction, the following factors should be considered:

- *Significance of differences in features and functionality.* What constitutes “significant” may vary. The authors believe that if the new features do not enhance the basic functionality of the software, but rather, can operate independently from the previously delivered software, this may suggest that the right relates to a product and not an upgrade.
- *Use of the undelivered element.* An additional software product generally does not supersede or replace the delivered element, whereas an upgrade frequently does.
- *Pricing.* New features and functionality that will substantially increase the price of the delivered product may indicate that the right to receive these new features and functionality relates to an additional software product. Conversely, if the new features and functionality provide the vendor with only the ability to keep prices at a constant rate, the right to receive these would be considered an upgrade. The magnitude of the upgrade fee should also be considered. Upgrade rights are frequently priced at 10 to 20% of the original license fee.
- *Development effort.* The more significant the development effort to create the undelivered element, the more likely it is that the element will be a product and not an upgrade.
- *Marketing.* New features and functionality offered in connection with the delivered product (e.g., as an optional or added feature of the same product) would indicate that the right to receive the features and functionality is an upgrade. Alternatively, marketing efforts that are focused solely or substantially on the new features and functionality would indicate that the right relates to a new product. Additionally, new features and functionality that are marketed toward new industries, applications, or customer bases could indicate that these rights relate to a product.
- *Performance domain.* If the undelivered element performs functions in areas outside the domain of the delivered version of a product, it is likely that the element provides a solution that the delivered product does not. This may suggest that the undelivered element is a product rather than an upgrade.
- *Same name.* If the undelivered element has the same name as the product’s original version, this may indicate that it is an upgrade and not an additional product.

*Undelivered Element Is an Additional Product.* Assume that a software vendor enters into an arrangement with a customer to license software package A for \$1,000,000. The arrangement also specifies that the vendor will provide software package B for no charge when it becomes available in one year. Software package B will be licensed for \$500,000 when it becomes available. The customer will install and use software package A. VSOE exists for both software package A (\$1,000,000) and software package B (\$500,000). The facts suggest that software package B is an additional product rather than a specified upgrade, because each package will be utilized independently of the other. However, all the factors discussed in the preceding section would need to be considered. If it is concluded that software package B is an additional product, the vendor would recognize 66.7% of the license fee, or \$666,667, upon the delivery of software package A, assuming that all other revenue recognition criteria have been met. The remaining \$333,333 would be deferred and recognized when all revenue recognition criteria have been met for software package B.

*Undelivered Element Is a Specified Upgrade.* Assume the same facts as in the preceding illustration, except that while considering the factors described above that may distinguish additional products from specified upgrades, the vendor determines that software package B enhances the current functionality of software package A, will replace software package A, and these facts suggest that software package B is an upgrade of software package A. With this conclusion, the vendor would recognize software license revenue of \$500,000 on delivery of software package A, assuming all other revenue recognition criteria are met. This is because no discount in an arrangement can be allocated to a specified upgrade right.

#### **(ii) Distinctions Between Specified and Unspecified Additional Software Products**

*General.* Generally, specified additional software products are evidenced by a vendor's commitment to deliver a specific product or a product with specific features and functionality. Rights to unspecified additional software products are generally (such that the vendor will deliver new products it introduces over time) without regard to specific features and functionality, since these may not be known yet.

Specified additional software products, including those offered on a when-and-if basis, should be accounted for separately, so that a portion of the fee is allocated to the additional software products based on VSOE. If VSOE exists, revenue allocated to the additional software products should be recognized when an additional element is delivered and all other criteria for revenue recognition have been met. As with other elements, if VSOE of the additional software products does not exist, all revenue for the arrangement is deferred until the earliest of when sufficient VSOE does exist or when all elements of the arrangement have been delivered. The existence of any discounts will affect the allocation.



Additional software products may be incorporated into multiple-element arrangements in several ways. In some circumstances, the fee associated with the additional software products is stated on a price-per-product basis. In those situations, revenue for the additional software products should be recognized when the additional software products are delivered, assuming there is VSOE for each specified product.

If no allocation can be made, revenue should be recognized as each copy of the software product is delivered or until the first copy or product master of each product under the arrangement has been delivered to the customer. Assuming that VSOE exists, revenue from the price-per-copy or fixed-fee arrangement should not be fully recognized until either delivery is completed for all products covered by the arrangement or the aggregate revenue attributable to all copies of the software products delivered is equal to the fixed fee, provided that the vendor is not obligated to deliver additional software products under the arrangement. At this point, all remaining license fees that were not previously recognized as revenue should be recognized, and any costs associated with subsequent duplication should be accrued. If the arrangement terminates before all of the fees are recognized under the revenue recognition criteria, then the vendor should recognize any license fees that were not previously recognized.

Unspecified additional software products are generally included in software arrangements. Such arrangements allow customers to obtain limited new products (e.g., within a family or suite of products), over a limited period. A vendor may offer customers such a right under PCS arrangements to encourage them to maintain a current service arrangement or to help customers to maintain the latest available technology (e.g., a technology protection program). These arrangements are similar to PCS arrangements. However, the rights relate to unspecified products instead of unspecified upgrades or enhancements. SOP 97-2 precludes accounting for these rights as PCS because the future products are unspecified such that VSOE cannot be determined for purposes of allocating a fee. If a vendor is obligated to deliver additional products only if they are available during the term of the arrangement, there may be situations in which delivery is never required. Deferral of all the software-product-related revenue to the end of the arrangement was considered too onerous and, as a result, subscription accounting has been designated as the most appropriate method for avoiding the acceleration of revenue related to future deliverables. That is, the fee should not be allocated among any of the software products. Instead, all software-product-related revenue under the arrangement should be recognized ratably over the term of the arrangement or over the economic life of the products if no term is stated, beginning with the delivery of the first product, assuming that all revenue recognition criteria have been met.

*Specified Additional Software Products with No Limit to Duplication.* Assume that a vendor enters into an arrangement with a customer for three products: Product A, Product B, and Product C. The arrangement is dated in December and has a total value of \$1,000,000. The vendor can duplicate software based on the following values, but only to the extent that the total value of all deployed seats cannot exceed \$1,000,000: Product A, \$25,000 per seat; Product B, \$10,000 per seat; and Product

C, \$30,000 per seat. There are no specifications in the arrangement with regard to a maximum number of times that a particular product can be duplicated. Payment terms for the \$1,000,000 is 30 days. Products A and B were delivered in December and Product C was delivered in June of the following year. Revenue recognition upon delivery of the initial two products would result in inappropriate revenue recognition because the vendor does not know how many seats of Product C the customer will desire. From the time of the delivery of the initial two products in December, up to the delivery of Product C in June, the vendor should recognize revenue as the software for the initial two products is duplicated by the customer. If all other revenue recognition criteria have been met, upon the delivery of Product C, all remaining revenue should be recognized, as the delivery criterion for all three products will have been completed.

*Specified Additional Software Products with Limited Duplication.* Assume the facts in the preceding illustration, except that the arrangement provides that upon the delivery of Product C, the customer can duplicate Product C a maximum of only four times. Paragraph 46 of SOP 97-2 provides guidance for this situation. An allocation should be made assuming that the customer will elect to receive the maximum number of the undelivered product or products. In this illustration, the vendor would recognize \$880,000 in December upon the delivery of Products A and B. This is based on the calculation that the maximum number of four copies of Product C at \$30,000 each would receive a maximum allocation of \$120,000. The remaining \$120,000 would be recognized in June upon the delivery of Product C, assuming all revenue recognition criteria are met. However, if prior to the delivery of Product C, the customer duplicates Products A and B in sufficient quantities that the number of copies multiplied by the per copy price exceeds \$880,000, the vendor would recognize the revenue in excess of \$880,000.

*Specified Additional Software Products with Various Delivery Dates and Where Duplication Is Incidental.* Assume that a software vendor enters into an arrangement with a customer to license several of its products for a total fee of \$15,000. None of the products is essential to the functionality of the other products. The vendor performs duplication, which has minimal cost, and after the customer has accepted delivery of a product, the related fees are not subject to adjustment, nor can the delivered product be returned or exchanged. The products will be licensed at stated prices per copy, all of which represent VSOE, as follows: Product A, \$250 per copy; Product B, \$400 per copy; Product C, \$750 per copy. The fee is fixed and nonrefundable regardless of whether the customer accepts delivery of any or all of the products. The customer has six months to accept the delivery of all of the products available under the arrangement. The arrangement commences on July 1 and ends on December 31. On July 31, the customer accepts delivery of 15 copies of Product A. On September 15, the customer accepts a delivery of five copies of Product A and five copies of Product C. On October 20, the customer accepts a delivery of 10 copies of Product B. Revenue should be recognized based on the number of copies delivered of Products

A and C until October 20, at which time all of the remaining fees should be recognized. Thus, on July 31, revenue of \$3,750 would be recognized (15 copies of Product A at \$250 each); on September 15, revenue of \$5,000 would be recognized (5 copies of Product A at \$250 each and 5 copies of Product C at \$750 each); and on October 20, revenue of \$6,250, representing the remaining portion of the fee, would be recognized. Since Product B was the only product not delivered before October 20, when Product B is delivered, all of the remaining fees should be recognized because all of the criteria for revenue recognition will have been met, including the delivery criterion (as the fee is fixed and nonrefundable regardless of whether the delivery of any or all of the products is accepted).

*Specified Additional Software Products with Fixed Fee and Delivery of Any or All.* Assume the same facts as in the preceding illustration, except that no further copies were requested after the July 31 delivery of 15 copies of Product A, at which time revenue of \$3,750 was recognized, leaving a remainder of \$11,250 deferred. The remaining revenue of \$11,250 should not be recognized until December 31 because the delivery was not complete for all of the products prior to December 31, nor were sufficient copies of Products A, B, or C ordered such that the price per copy multiplied by the number of copies was more than \$3,750. The remaining \$11,250 may be recognized at the end of the arrangement because the fee is nonrefundable and the vendor has no obligation to deliver any other products.

*Arrangement Includes Undelivered Product Involving Functionality.* Assume the same facts as in the next to last illustration above, except that in addition to the three products, the vendor commits to deliver Enhancement X, which does not directly impact the core functionality of any of the three products. Instead, it enables the three products to work more effectively in the customer's software environment. The customer would not have entered into the agreement without the vendor's commitment to develop and deliver Enhancement X. A product is considered to have not been delivered if the delivery did not include certain products that are essential to the functionality of the delivered element, because the customer would not have full use of the delivered element. If a product or an element of a software arrangement has been delivered but will not meet the customer's functionality requirements until one or more additional products or elements are also delivered, the license revenue allocated to the product or element should not be recognized until all of the elements have been delivered and the customer has full use of them. Although it is unclear in this illustration whether the enhancement is essential to the functionality of the delivered element, the fee related to the delivered element may be subject to forfeiture only if Enhancement X is not delivered. It is likely that revenue under the arrangement will be recognized when Enhancement X is delivered.

*Unspecified Additional Software Products.* SOP 97-2 discusses the application of subscription accounting to software sales. This involves recording revenue on a time-elapsed basis over the period of time covered by the contract. If no period is speci-

fied, the life of the product involved is generally used. Subscriptions are defined as an obligation to deliver unspecified additional software products (as contrasted to unspecified upgrades or enhancements that are part of PCS) in the future, including platform transfer rights that do not qualify as exchanges or returns. To illustrate, assume that a vendor licenses its products in the form of a suite and historically adds new products to the suite. A customer may choose to become a member of Vendor's subscriber network, which allows customers to gain access to a portion of the vendor's web site and to download all new product offerings in the suite. Customers pay an annual fee to become subscribers. The vendor has determined that for its Product Suite A, it does not intend to offer any new products for a specified period. Vendors offering unspecified products, particularly under programs such as those described above, do so in order to ensure a constant cash flow for their investments in new products. That is, customers who enter into such arrangements willingly agree to pay an additional fee for the right to receive new products. It would be unlikely that vendors would be able to market these arrangements if new products were not offered for extended periods of time. Therefore, an intent on the part of the vendor not to develop new products during the term of the arrangement does not relieve the vendor of the requirement to recognize revenue ratably over the term of the arrangement, beginning with delivery of the first product.

#### **(g) Other Services in a Multiple-Element Arrangement**

Services should be separately accounted for in a multiple-element arrangement only if they do not require significant production, modification, or customization of the software also being delivered; are not essential to the functionality of any other element; and are separately described in the contract such that the total price would be expected to vary as a result of their inclusion or exclusion. Judgment must be exercised in determining what is "essential to the functionality"; general criteria are discussed in paragraphs 70-71 of SOP 97-2. If services are included in the multiple-element arrangement and they do not satisfy the criteria to be accounted for separately, contract accounting must be used to account for the entire arrangement. Accounting for services is covered in more detail in Section 4.10.

## **4.5 POSTCONTRACT CUSTOMER SUPPORT**

### **(a) General**

Postcontract customer support (PCS) is an inherent element in virtually every software arrangement other than consumer "shrink wrap" products. PCS may be a separate element, bundled with other products and services or simply implicitly included in an arrangement. Regardless of whether PCS is separately stated in a contract, every software arrangement should be evaluated for the potential impact of PCS and, if it exists as part of an arrangement, it should be considered a separate element in determining revenue recognition.

The glossary of SOP 97-2 defines PCS as follows:

The right to receive services (other than those separately accounted for as described in paragraphs 65 and 66 of the SOP) or unspecified product upgrades/enhancements, or both, offered to users or resellers, after the software license period begins, or after another time as provided for by the PCS arrangement. Unspecified upgrades/enhancements are PCS only if they are offered on a when-and-if basis. PCS does not include:

- Installation or other services directly related to the initial license of the software
- Upgrade rights as defined in the SOP
- Rights to additional software products

PCS may be included in the license fee or offered separately. The right to receive services and unspecified upgrades/enhancements provided under PCS is generally described by the PCS arrangement. Typical arrangements include services, such as telephone support and correction of errors (bug fixing or debugging), and unspecified upgrades/enhancements developed by the vendor during the period in which the PCS is provided. PCS arrangements include patterns of providing services or unspecified upgrades/enhancements to users or resellers, although the arrangements may not be evidenced by a written contract signed by the vendor and the customer.

Previously, under SOP 91-1, all upgrades and enhancements had been considered unfulfilled vendor obligations that were required to be evaluated for their significance in making a determination of whether any portion of the fee associated with the software license should be deferred. Consequently, there was diversity in practice related to accounting for unfulfilled vendor obligations, particularly because of the subjectivity involved in determining significance. Therefore, SOP 97-2 specifically addressed upgrades and enhancements. Under SOP 97-2, rights to unspecified upgrades and to unspecified upgrades and enhancements that are offered on a when-and-if-available basis are considered PCS.

Upgrades and enhancements are defined in SOP 97-2 as follows:

An improvement to an existing product that is intended to extend the life or improve significantly the marketability of the original product through added functionality, enhanced performance, or both. The terms upgrade and enhancement are used interchangeably to describe improvements to software products; however, in different segments of the software industry, those terms may connote different levels of packaging or improvements. This definition does not include platform-transfer rights.

The qualifier “when-and-if-available” is broadly used to refer to a variety of contractual commitments. In the case of unspecified upgrades and enhancements, the qualifier serves to emphasize that the upgrade or enhancement would not have been

known or expected to be delivered at the time that the right was granted. The definition of PCS encompasses unspecified upgrades and enhancements but excludes unspecified software products. SOP 97-2 also addresses PCS arrangements with resellers. Additionally, the concept of VSOE as it pertains to the allocation of the fee among the elements, including PCS, has resulted in a number of revenue recognition issues, which are discussed in the following sections.

The rules for accounting for PCS in SOP 97-2, as originally issued, appear to contemplate PCS in arrangements involving perpetual software licenses. However, term licenses have become increasingly common in the software industry in recent years. Term licenses typically involve the sale of a license to use the software for one- to five-years. Because of the shorter-term nature of the arrangements versus perpetual licenses, it is common for PCS for all or part of the license term to be bundled together with the software license. Because the vendor nearly always sells the term license and the PCS together, issues arise as to how, and whether, VSOE of fair value of the PCS exists. PCS considerations particular to term licenses are discussed in more detail in section 4.5 (j) below.

### (b) Overall Guidelines for PCS Revenue Recognition

Revenue for fees related to PCS, whether sold separately (e.g., renewal-period PCS) or as an element of a multiple-element arrangement, should generally be recognized ratably over the term of the PCS arrangement. The PCS obligation is met by the vendor's delivery of the services, upgrades, and enhancements or by fulfilling other obligations under the arrangement or by the passage of time. It is usually not practical to estimate the timing of the costs for delivering PCS over the term of arrangement. In some relatively rare situations, the costs of fulfilling the PCS obligations may be incurred in such a manner that the use of the straight-line basis does not estimate the timing of when the software vendor actually incurs the costs. In those situations, revenue should be recognized on a pro rata basis, based on when the amounts are expected to be charged to expense.

The nature of PCS services that are provided will often vary, depending on the nature of the software, the method of delivery, or the complexity of the software product. Consequently, there are certain exceptions to the above guidance on revenue recognition for PCS.

### (c) Determining VSOE for PCS Arrangements

**(i) General:** Usually, VSOE of a PCS arrangement will be based on renewal rates for PCS, which are to be charged when the term of the initial PCS period expires. If a vendor offers PCS rates that are lower than the PCS renewal rates for a fully deployed license, a discount is embedded in the arrangement.

PCS generally includes both (1) customer support, provided either by phone or electronically and (2) the right to unspecified upgrades, updates, and enhancements on a when-and-if-available basis. In some PCS arrangements, a customer may actually be

receiving just one of these two types of benefits. This is certainly the case when a customer is entitled to receive, or the vendor's business practice is to provide, upgrades, updates, and enhancements during an implementation period. The customer may not be willing to pay for PCS until the implementation is completed because no customer support will be received (nor is it necessary) until the software is installed.

Some have suggested that the aforementioned two benefits offered under a PCS arrangement are of equal value to a customer and that, therefore, the VSOE of the fair value of updates, upgrades, and enhancements should be only half of the rate customers pay for typical PCS, which includes customer support. Correspondingly, if customer support alone is provided, the VSOE of the support would be equal to one-half of the normal PCS rate. Few vendors sell PCS with customer support alone or with only the right to unspecified upgrades, updates, and enhancements, so it is unlikely that in determining VSOE for PCS a vendor will be able to use anything other than the maximum PCS rate that is charged to customers. Allocating the value of a PCS contract between the two types of benefits can be supported only if a vendor actually sells each of the benefits separately, instead of combining them under a PCS arrangement.

**(ii) VSOE Does Not Exist for PCS Without Customer Support:** Assume that a vendor licenses a software package in which the customer is responsible for installation, during which the vendor will provide upgrades but no customer support. The vendor's typical PCS arrangement provides customer support as well as upgrades and VSOE exists for the typical PCS arrangement and for the license. The authors believe that even though VSOE does not exist for the PCS that does not include customer support, the vendor can use the VSOE of a typical PCS arrangement in determining the appropriate amount of revenue to defer. The authors do not believe that the vendor can sustain a position that only a portion of the fair value of a typical PCS arrangement represented VSOE of the PCS that does not provide customer support.

#### **(d) Explicit and Implied PCS Arrangements**

**(i) General:** PCS will usually be explicitly stated in a software arrangement. However, any implied PCS is considered to be an additional element of the software arrangement to which a portion of the total arrangement fee should be allocated. PCS includes a vendor's expected performance based on historical patterns, even if that performance is entirely at the vendor's discretion and not pursuant to a formal arrangement. A software vendor may have developed a historical pattern of regularly providing all customers, or certain classes of customers, with services or unspecified upgrades and enhancements that are normally associated with PCS, even though the vendor is under no written contractual obligation to provide these additional features. In these situations, there may be an implied PCS arrangement that commences at the time of delivery of the software.

If a vendor offers a "warranty" period during which a customer has the right to both phone support and to unspecified upgrades and enhancements that significantly enhance the functionality of the delivered software, an implied PCS arrangement exists.

This type of warranty clearly goes beyond conventional warranties offered with products sold in other industries because it involves much more than a representation that the product will perform in accordance with certain specifications or that the vendor will replace or fix the product if it ceases to work properly. “Bug fixes” of software that are offered pursuant to a warranty do not represent an implied PCS arrangement and can be accounted for as a warranty cost, as specified in TPA 5100.43.

**(ii) Implied Customer Support:** Assume that a vendor licenses software for \$100 per copy. The vendor does not offer upgrades and enhancements because the vendor licenses new versions of the product each year. The software license provides the customer with a customer-service phone number that the customer may call should it have questions relating to matters other than warranty issues, but it does not explicitly state that the customer support is provided as part of the software arrangement. If the customer calls and requests assistance, the customer-service representative will request a product identifier that indicates the year of purchase and will assist only customers that have licensed the software within the past year. These facts indicate that an implied PCS arrangement may exist.

**(iii) Implied PCS Arrangements with Upgrades and Enhancements Provided During Installation Period with No VSOE for the License:** Assume that a vendor enters into an arrangement to license a software package with several modules. The arrangement fee is \$1,000,000 and provides that the customer will install the software, a process that is expected to take approximately nine months. The arrangement provides for PCS commencing with the completion of installation. VSOE of the software package is not available. The VSOE of one year’s PCS is \$160,000. As a matter of business practice, the customer will be upgraded to any new software enhancements rolled out during the installation period. This business practice creates an implied PCS arrangement. By providing upgrades and enhancements during the installation period, the vendor indicates that it is providing PCS for the software package during that period. The implied PCS should be accounted for as an element that is separate from the other elements of the arrangement and unbundled from the license fee if all revenue recognition criteria have been met. Deferred revenue of \$120,000 (equal to nine months’ PCS prorated based on the annual charge of \$160,000) should be recorded and recognized as revenue ratably during the installation period. The vendor should recognize \$880,000 (determined by the residual method) at the time of delivery of the software, assuming that all other revenue recognition criteria have been met. The concept of implied PCS during the installation or deployment period is discussed in TPA 5100.44.

**(iv) Implied PCS Arrangements with Upgrades and Enhancements Provided During Installation Period Where VSOE for the License Exists:** Assume the same facts as in the preceding illustration, except that VSOE of the fair value of the license is known to be \$1,000,000. The implied PCS would be subject to accounting that would allow the discount to be allocated as VSOE of all elements becomes available.



An allocation of the discount would be made to each element included in the arrangement, since the amount of the discount is determinable, as follows:

	<i>VSOE of Fair Value</i>	<i>Percentage of Total Fair Value</i>	<i>Allocation of Discount</i>	<i>Allocated Fees</i>
License fee	\$1,000,000	89.3%	\$107,160	\$ 892,840
Implied PCS	120,000	10.7%	12,840	107,160
	<u>\$1,120,000</u>	<u>100.0%</u>	<u>\$120,000</u>	<u>\$1,000,000</u>

License revenue of \$892,840 would be recognized at the time of delivery of the software and \$107,160 would be deferred as implied PCS revenue and recognized ratably over the installation period.

The fair value based on VSOE of PCS renewal contracts may reflect VSOE of the implied PCS when the length of the installation period is determinable. If the length of the installation period cannot be reasonably determined, VSOE of the implied PCS during the installation period may not be determinable. In such cases, the total arrangement fees allocated to the licensing arrangement and to the implied PCS would be deferred and recognized when the installation is completed, assuming that PCS is the only undelivered element.

#### (e) PCS Is the Only Undelivered Element and VSOE Does Not Exist

SOP 97-2 requires that software arrangement fees be allocated to the various elements based on VSOE of each element. VSOE may not always be determinable for PCS because of the vendor's business practices. Paragraph 58 of SOP 97-2 provides that if VSOE does not exist but PCS is the only delivered element, the entire fee for the arrangement should be recognized ratably over the contractual PCS period (for arrangements with explicit rights to PCS) or the period during which PCS is expected to be provided (for arrangements with implicit rights to PCS).

There are situations in which, for example, VSOE exists for one-year PCS arrangements but not for two-year arrangements. TPA 5100.52 states that, provided the PCS renewal rates are substantive, the value of a one-year PCS arrangement can be multiplied by two to determine the VSOE of a two-year bundled PCS arrangement. The authors believe that this would be possible only when the services that are to be provided in both PCS arrangements are substantially the same.

#### (f) PCS Revenue Recognizable with Initial License Fee

If certain criteria are met, PCS revenue may be recognized simultaneously with the initial license fee at the time the software is delivered, along with an accrual of the estimated costs of providing the services, including upgrades and enhancements. In

order to account for PCS and related costs this way, all of the following criteria of paragraph 59 of SOP 97-2 must be met:

- The PCS fee must be included in the initial fee.
- The PCS included with the initial license must be for one year or less.
- The estimated cost of providing PCS during the arrangement is insignificant.
- Unspecified upgrades and enhancements offered during the vendor's PCS arrangements have historically been and are expected to continue to be minimal and infrequent.

The last criterion requires that the software vendor demonstrate not only that upgrades and enhancements have been minimal and infrequent in the past, but also that they will continue to be so. "Minimal" and "infrequent" are characteristics that are subjectively determined and therefore the interpretation of these characteristics may vary from vendor to vendor. The authors believe that it would be rare that this criterion would be met in an arrangement in which upgrades and enhancements are provided.

To illustrate, assume that facts described in the illustration of an implied PCS arrangement in the next-to-last paragraph of section 4.5(d)(ii) above. Also assume that the historical and expected cost of providing the PCS is insignificant. Because the customer support is offered at no charge and because of the history and expectation of insignificant costs, the portion of the fee that would be allocated to the customer support may be recognized at the time of delivery of the software. The vendor should estimate and accrue the cost of providing the customer support when the PCS revenue is recognized.

Certain factors should be considered when determining whether the vendor has a history of providing most customers with substantially all of the customer support services within one year. Business practices are vendor-specific and therefore require a consideration of the individual facts and circumstances that are relevant to the vendor's past practices, which should include considering:

- The product's estimated useful life
- The resources allocated to customer support compared to those allocated to current-year licenses
- The number of customer support calls received throughout the year compared to those received when the software was licensed
- Other information obtained through the vendor's communications with customers (e.g., periodic surveys taken by the vendor's representatives may support the vendor's assertion)

#### **(g) PCS Provided During Warranty Period at No Additional Charge**

PCS generally includes both customer support and the right to unspecified upgrades, updates, and enhancements on a when-and-if-available basis. In some situations, software products may not require PCS beyond customer support. Customer support

may be specified as an element of the software vendor's standard warranty or may be the vendor's accepted practice. Whether or not it is explicitly stated in an arrangement, customer support that extends beyond the situation discussed in TPA 5100.43 is PCS and should be accounted for as an element of the arrangement that is separate from the license. If the vendor offers customer support at no additional charge and has an established history of providing substantially all of the minimal and infrequent support within the first year after the initial licensing of the software product, then the criteria in paragraph 59 of SOP 97-2 may be regarded as having been met. Therefore, the revenue allocable to customer support could be recognized at the time that the initial license fee is recognized and the cost of providing the customer support would be accrued.

Assuming the vendor has not met the criteria of paragraph 59 of SOP 97-2, revenue for the implied PCS must be deferred based on VSOE. To illustrate, assume that a software vendor licenses its software products with a 90-day warranty. The customer may also purchase an annual PCS arrangement that commences upon expiration of the warranty period. The warranty provides for standard limited warranties (merchantability, performance, specification, bug fixes, etc.). Additionally, the customer will have the right to receive customer support and unspecified upgrades and enhancements, if any, during the 90-day period. The warranty constitutes an implied PCS arrangement. VSOE of the fair value of the implied PCS arrangement would be necessary for the fee to be allocated among the multiple elements. Any fees allocated to the implied PCS would be recognized ratably over the warranty period.

#### **(h) Implied PCS Arrangements for Correction of Errors Necessary to Maintain Compliance with Published Specifications During Warranty Period**

Assume the facts in the preceding illustration. Also assume that the customer is entitled to nothing more than correction of errors that would be necessary to maintain the software's compliance with published specifications ("bug fixes") during the warranty period. The vendor does not have an implied PCS arrangement in this situation, as a bug fix is usually considered a correction of a defective product and, therefore, is not indicative of a PCS arrangement. TPA 5100.43 addresses this issue and states that a vendor's obligations related to warranties for defective software that are routine, short-term, and relatively minor should be accounted for on the cost accrual basis. The estimated costs to provide bug fixes that are necessary to maintain compliance with published specifications should be accrued in accordance with Statement 5.

#### **(i) PCS Bundled with Contract Accounting Arrangement**

Although contract accounting for software arrangements is the subject of Chapter 5, it is worth noting here the special considerations given PCS bundled with an arrangement accounted for using contract accounting, as described in TPA 5100.49. For

arrangements subject to contract accounting that include PCS-related services (other than those meeting the cost accrual criteria in paragraph 59 of SOP 97-2), the software vendor should account for such PCS-related services separately from the balance of the arrangement that is being accounted for using contract accounting.

### (j) PCS Considerations Particular to Term Licenses

**(i) Fair Value of PCS in a Short-Term Time-Based License and Software Revenue Recognition:** TPA 5100.53 addresses arrangements that include time-based software licenses and PCS services wherein the duration of the time-based software license is so short that a renewal rate or fee for the PCS services does not represent vendor-specific objective evidence (VSOE) of the fair value of the bundled PCS.

Assume a vendor sells a multiple-element software arrangement consisting of a 12-month time-based software license that includes six months of bundled PCS services for a total fee of \$100,000. The specified renewal rate for a six-month PCS contract is \$5,000. TPA 5100.53 states that for time-based software licenses with a duration of one year or less, the fair value of the bundled PCS services is not reliably measured by reference to a PCS renewal rate. The short time frame during which any unspecified upgrade provided under the PCS agreement can be used by the licensee creates a circumstance whereby one cannot objectively demonstrate the VSOE of fair value of the licensee's right to unspecified upgrades. Consequently, VSOE for the PCS does not exist in this case. Accordingly, the total arrangement fee would be recognized ratably over the PCS period.

**(ii) Fair Value of PCS in a Multi-Year Time-Based License and Software Revenue Recognition:** TPA 5100.54 addresses arrangements for multi-year time-based software licenses that may include: 1) initial (bundled) post-contract customer support (PCS) services for only a portion of the software license's term (for example, a five-year time-based software license that includes initial PCS services for one year) and 2) a renewal rate for PCS for an additional year(s) within the time-based license period.

In this case, the issue is again whether VSOE for the PCS exists. In such situations the renewal rate constitutes VSOE of the PCS provided that the renewal rate is substantive. The TPA provides the following examples of circumstances in which the renewal rate is *not* substantive:

- The period of initial (bundled) PCS services is relatively long compared to the term of the software license (for example, four years of initial PCS services in connection with a five-year time-based software license, with a specified PCS renewal rate for the remaining year).
- The aggregate PCS renewal term is less than the initial (bundled) PCS period (for example, a 5-year time-based software license with three year bundled PCS and two annual PCS renewals).

- A PCS renewal rate that is significantly below the vendor's normal pricing practices in combination with a time-based software license that is for a relatively short period (for example, a two-year time-based software license that includes initial (bundled) PCS for one year for a total arrangement fee of \$1,000,000 and that stipulates a PCS renewal rate for the second year of \$25,000 when the vendor's normal pricing practices suggest higher renewal rates).

(iii) **Fair Value of PCS with a Consistent Renewal Percentage But Varying Renewal Dollar Amounts:** Assume a software vendor charges Customer A \$100,000 for a software license with a post-contract customer support (PCS) renewal rate of 15% of the license fee while charging Customer B \$150,000 for the same software license with a PCS renewal rate of 15% of the license fee. Here the issue is whether the existence of varying dollar amounts of PCS renewal fees for the same software product indicates an absence of VSOE for the PCS or the possible presence of discounts. This example comes from TPA 5100.55, which states that in the case, as long as the PCS renewal rate is expressed as a consistent percentage of the stipulated license fee for customers and is substantive, that PCS renewal rate would be the VSOE of the fair value of PCS.

(iv) **Fair Value of PCS in Perpetual and Multi-Year Time-Based Licenses:** TPA 5100.68 addresses the issue of using VSOE for PCS sold with a perpetual license as a "surrogate" for VSOE for PCS in a term license. Assume a vendor currently offers licenses for the same product on both a perpetual basis and on a multi-year term license basis. Pricing of the licenses reflects the duration of the license rights. Vendor-specific objective evidence (VSOE) of fair value exists for post-contract customer support (PCS) services in the perpetual licenses. For the multi-year time-based licenses, PCS services for the *entire* license term are included (bundled) in the license fee and there is no renewal rate as the time-based license rights are co-terminus with the PCS service period. SOP 97-2 states that VSOE of fair value is provided by the price charged when the same element is sold separately. PCS services for a perpetual license and PCS services for a multi-year time-based license are two different elements. Though the same unspecified product upgrades or enhancements may be provided under each PCS arrangement, the time period during which the software vendor's customer has the right to use such upgrades or enhancements differs based on the terms of the underlying licenses. In this case, because PCS services are bundled for the entire term of the multi-year time-based license, those PCS services will never be sold separately.

The TPA does list rare circumstances in which the PCS renewal terms in a perpetual license provide VSOE of the fair value of the PCS services element included (bundled) in the multi-year time-based software arrangement. Those circumstances are when: (1) the term of the multi-year time-based software arrangement is substantially the same as the estimated economic life of the software product and enhancements during that term; and (2) the fees charged for the perpetual (including fees from

the assumed renewal of PCS for the estimated economic life of the software) and multi-year time-based licenses are substantially the same.

## 4.6 DISCOUNTS

### (a) General

VSOE of each element is required in order to determine if any discounts exist in an arrangement. If a discount is determined to exist, the discount must be applied pro rata to each element based on relative fair values. However, no discount should be allocated to a specified upgrade right. Small discounts on future licensing transactions for existing products are not considered a separate element requiring allocation.

Apart from a discount that is inherent in the pricing of a multiple-element arrangement, the arrangement may provide for future “general purpose” discounts (i.e., discounts that are not applicable to a specified future product purchase) that are, themselves, additional elements. SOP 97-2 states that significant discounts or other concessions provided as marketing or promotional incentives for future business are presumed to be elements of the arrangement. As such, a portion of the revenue from the arrangement would be attributed to the future discount, and such amount would be deferred until the discount is used or expires. It may not be unreasonable to conclude that its fair value is the maximum discount provided that is beyond the levels that are routinely provided to customers of the vendor.

### (b) Determining Whether a Discount Is Significant

The evaluation of the significance of any discounts that are extended to customers should be based on the software vendor’s historical business practices and other vendor-specific evidence. The evaluation of significance should be made from the perspective of the customer. The difference between the discount offered and the discount that is generally offered to other customers (i.e., the difference between the contract amount and VSOE) is the amount that should be assessed for significance.

Evaluating the effects of discounts offered by the vendor to future purchases made by the customer requires care to insure that revenue from the current arrangement is accounted for correctly. Guidance for evaluation of the impact of future discounts is provided by TPA 5100.50, the definition of more-than-insignificant discount and software revenue recognition. TPA 5100.50 states that a more-than-insignificant discount with respect to future purchases is one that is:

- incremental to the range of discounts reflected in the pricing of the other elements of the arrangement,

- incremental to the range of discounts typically given in comparable transactions, or
- significant.

TPA 5100.50 goes on to state that insignificant discounts and discounts that are not incremental to discounts typically given in comparable transactions are not unique to software transactions and are not included in the scope of SOP 97-2. Judgment is required when assessing whether an incremental discount is significant.

An area that is particularly confusing and frustrating to many software vendors is the actual definition of a “discount.” It is rare for software and services in the software industry to be licensed or sold strictly at a “list price,” particularly for complex, high-end software products. The actual fees received generally result from lengthy negotiations between the vendor and the customer over fairly long sales cycles. Inherent in these negotiations is a measure of give-and-take on both sides. Prices can vary significantly based on the timing of the arrangement, the number of seats, where the product is in its life cycle, the prestige of the customer, and the total volume with the customer. Each of these factors can impact the negotiation and the resultant pricing of an arrangement. Two contracts involving the same product can render drastically different pricing arrangements, depending on any of these factors. The complexity of the pricing schemes in the software industry makes it difficult to determine what a “discount,” as contemplated by SOP 97-2, really means. It is important to remember that a discount must always be evaluated relative to VSOE of the element in question and not its list price.

### **(c) Multiple-Element Arrangements with VSOE Known for All Elements**

The practice of allocating discounts to the various elements of an arrangement is fairly straightforward if VSOE exists for all the elements. The concept is that a vendor may offer products at one price if a customer is going to buy only one product. If, however, the customer intends to purchase several products, the pricing becomes more advantageous to the customer. This practice is consistent with other industries, as most customers would expect a greater discount if they were, for example, purchasing both a car and a truck than if they were purchasing a single car.

If VSOE exists for all elements (delivered and undelivered) in the arrangement and none of the elements are an upgrade right, the vendor should total the sum of the fair values of all the elements. The vendor would then recognize revenue for the amount of the total arrangement fee that is proportionate to the aggregate value of the delivered elements as compared to the total value of all elements. To illustrate, assume that a software vendor enters into an arrangement to provide a license, PCS services, and five days of training for a total of \$5,000. VSOE of fair values of the elements is: license, \$4,000; PCS, \$500; and training, \$1,500. So, the total VSOE is \$6,000, the total fee for the multiple-element arrangement is \$5,000, and the inherent discount is 16.7% and the allocated revenue to each element is based on a factor of

83.3% of the VSOE for each. If the license fee is the only recognizable revenue on delivery of the elements, the amount recognized at that time would be \$3,332 ( $\$4,000 \times 83.3\%$ ). The remaining revenue for the training of \$1,250 ( $\$1,500 \times 83.3\%$ ) and for the PCS of \$418 ( $\$500 \times 83.3\%$ ) would be recognized when the applicable revenue-recognition criteria are met for these undelivered elements.

#### (d) Multiple-Element Arrangements with VSOE Only for Undelivered Elements

SOP 98-9 provides a narrow exception to the original guidance of SOP 97-2 for situations in which VSOE exists for undelivered element(s) (e.g., PCS) but not for the delivered element(s). SOP 98-9 allows the fair value of the undelivered elements to be deferred and the difference between the total arrangement fee and the VSOE of the undelivered elements to be assigned to the delivered element(s). Any discount in such an arrangement is allocated solely to the delivered element(s).

To illustrate, assume that a software vendor licenses a software package for \$10,000, which includes one year of PCS. The software vendor has never licensed the software without PCS, so VSOE for the license without PCS does not exist. Similar agreements indicate that there is an inherent discount in the arrangement. The VSOE of the PCS is \$1,500. SOP 98-9 allows the vendor to defer \$1,500 for the PCS and to recognize the difference of \$8,500 on delivery for the licensing fee, even though VSOE does not exist for the license.

#### (e) Multiple-Element Arrangements Involving an Upgrade Right

If one of the elements in an arrangement is a specified upgrade right, SOP 97-2 precludes the allocation of the inherent discount to the upgrade right. The accounting for specified upgrades is distinct from the accounting for additional products and unspecified upgrades.

To illustrate, assume that a software vendor licenses software, an upgrade right, PCS, and five days of training for \$10,000. VSOE of the elements are \$7,000 for the license, \$2,000 for the upgrade right, \$1,500 for the PCS, and \$2,000 for the training. The total VSOE of the elements is \$12,500 and the inherent discount in the arrangement is \$2,500, or 20%. None of the discount should be allocated to the upgrade right. With the upgrade right receiving a full allocation of \$2,000, the remaining fee of \$8,000 is allocated to the other elements in proportion to their respective VSOE. The aggregate VSOE of the other elements is \$10,500 (total VSOE of \$12,500 less VSOE of the upgrade right of \$2,000). The difference of \$2,500 ( $\$10,500$  less  $\$8,000$ ) results in an inherent discount for these elements of 23.8% of VSOE ( $\$2,500$  divided by  $\$10,500$ ), so the revenue allocated to each of these element is 76.2% (100.0% less 23.8%) of their VSOE. If the license is the only element delivered at inception of the arrangement, license revenue of \$5,334 ( $\$7,000 \times 76.2\%$ ) would be



recognized at that time. Fee amounts allocated to the PCS of \$1,143 ( $\$1,500 \times 76.2\%$ ) and training of \$1,524 ( $\$2,000 \times 76.2\%$ ) will be recognized as they meet the criteria for revenue recognition. The full \$2,000 of VSOE of the upgrade right will be recognized upon delivery of the upgrade.

## (f) Discounts on Future Products

(i) **VSOE Is Known for All Elements:** Sometimes a software vendor offers a discount on a second product to customers who license a first product (sometimes in the form of a “coupons”). The second product should be considered to be an additional element of the arrangement in which the first product is licensed and the discount offered should be applied to all elements of the arrangement, including the first product.

To illustrate, assume that a software vendor licenses and delivers a first product to a customer, along with a coupon for \$25 off the purchase of a second product. VSOE for the first product is \$50 and VSOE of the second product is \$85. The second product is currently available for delivery but has not yet been delivered. The coupon results in a multiple-element arrangement, with the second product being the additional element, and the discount associated with the second product should be allocated to all elements as follows:

<i>Elements</i>	<i>VSOE of Fair Value</i>	<i>Percentage of Total Fair Value</i>	<i>Allocation of Discount<sup>a</sup></i>	<i>Allocated Fees</i>
First product	\$ 50	37%	\$ 9	\$ 41
Second product	85	63%	16	69
	<u>\$135</u>	<u>100%</u>	<u>\$25</u>	<u>\$110</u>

<sup>a</sup>\$25 coupon allocated to Product A and Product B based on each product's percentage of total fair value.

Assuming that all other revenue recognition criteria are met, when the vendor delivers the first product, revenue of \$41 would be recognized and deferred revenue of \$9 would be recorded. If the customer subsequently uses the coupon in a purchase of the second product, the vendor would recognize \$69 upon the delivery of the second product (\$60 of cash received plus the \$9 of deferred revenue). If the discount coupon expires unused, the \$9 of deferred revenue would be recognized at the expiration date.

## (ii) VSOE for Elements Varies

*General.* Complications arise if the products subject to the discount or the maximum amount of the discount are not known. Some believe that in such cases all revenue should be deferred due to the uncertainties related to the ultimate fee that is to be received. Revenue recognition in these situations should be determined on a case-by-case basis. Factors that should be considered is whether: there is VSOE for the prod-

uct that is covered by the discount or coupon, whether the discount is predefined, whether the coupon relates to a specific element, whether the element covered by the discount is currently deliverable, whether there is a limit to the discount, and whether the maximum amount of the discount can be determined.

*Covered Elements Varies but Is Limited to Currently Deliverable Products.* Assume that a software vendor sells a product for \$50 and includes a coupon for \$25 off the purchase price of any one of vendor’s currently available products. The VSOE for the first is \$50 and VSOE of fair value and list prices for all of the vendor’s currently available products range from \$40 to \$90. This is a multiple-element arrangement that is limited to products that are currently available, with the second element not being specified. The discount associated with the coupon would be allocated to all the elements. The authors believe that the vendor should assume the coupon is used on the product with the lowest fair value, as this will result in the most conservative revenue recognition. This is illustrated below:

<i>Elements</i>	<i>VSOE of Fair Value</i>	<i>Percentage of Total Fair Value</i>	<i>Allocation of Discount<sup>a</sup></i>	<i>Allocated Fees</i>
First product	\$50	55.6%	\$14	\$36
Other products	40	44.4%	11	29
	<u>\$90</u>	<u>100%</u>	<u>\$25</u>	<u>\$65</u>

<sup>a</sup>\$25 coupon allocated to Product A and Product C based on each product’s percentage of total fair value.

Upon delivery of the first product, the vendor would recognize \$36 of revenue and defer \$14. When the coupon is used, the vendor would recognize the fees from the additional product plus the \$14 of deferred revenue. If the discount expires unused, the \$14 of deferred revenue would be recognized at the expiration date.

*Discount for Unspecified Products.* Assume that a customer purchases five site licenses for a software vendor’s software. As part of the contract, the vendor offers the customer a \$200,000 discount off the purchase of unspecified products that may or may not be currently available. The total arrangement fee is \$1,000,000. VSOE for the unspecified future products is unknown because there is no way of determining what product purchases the discount will be applied to. The authors believe that because the maximum discount has been defined at \$200,000, it is reasonable for the vendor to record the \$1,000,000 less the maximum discount of \$200,000, or \$800,000, when all revenue recognition criteria have been met for the five site licenses. The \$200,000 would be deferred until the customer uses the discount or the discount offer expires.

*Guaranteed Discount on List Prices.* Assume that a customer purchases five site licenses for a vendor’s software. As part of the contract, the vendor agrees to guarantee the customer a 10% discount off of list price of all currently available products for pur-

chases made over the next two years. The vendor generally sells its currently available products at an average of 10 to 20% off of list. This future discount would not affect the revenue recognition on the purchase of the site licenses if the vendor can determine that the 10% discount off of list price represents no actual discount relative to the VSOE of products that could be covered by the arrangement. In effect, the guaranteed reduction off of list price is not indicative of a true discount in this situation because other customers could obtain the same products at the same price. As discussed previously, under TPA 5100.50 the discount on future purchases in this arrangement is not incremental to the discount inherent in the current arrangement, or in comparable transactions, and therefore does not result in deferral of current arrangement revenues.

*Discount on Future, Yet-to-Be-Developed Products.* If a discount is offered on products that are not yet developed or specifically identified, VSOE of fair value may not be available. The vendor will most likely be unable to determine if a discount has actually been given to the customer, because the discount is stated as a percentage of an amount that cannot be determined at the outset of the arrangement and no maximum discount can be computed. Therefore, the vendor may have to defer recognizing revenue until either it can be determined that no future products will be objectively developed, or the period for which the discount is granted lapses.

#### **(g) Discounts on Additional Copies of Delivered Software**

TPA 5100.50, which addresses the definition of more-than-incidental discounts also clarifies the accounting for discounts granted by the vendor on future purchases of additional copies (seats) of delivered software. Footnote 3 to paragraph 3 of SOP 97-2 states that “if the discount or other concessions in an arrangement are more than insignificant, a presumption is created that an additional element(s) (as defined in paragraph 9) is being offered in the arrangement.”

TPA 5100.50 states that the provisions of footnote 3 to paragraph 3 of SOP 97-2 should not be applied to an option within an arrangement that allows the customer to purchase additional copies of products licensed by, and delivered to, the customer under the same arrangement. Revenue should be recognized as the rights to additional copies are purchased, based on the price per-copy as stated in the arrangement. Additional copies of delivered software are not considered an undelivered element. Paragraph 21 of SOP 97-2 says that duplication of software is considered incidental to an arrangement, and the delivery criterion is met upon the delivery of the first copy or product master.

#### **(h) Discounts in PCS Arrangements**

**(i) General:** Discounts related to PCS may be negotiated for a variety of business reasons. A vendor may want to induce the customer to purchase seats up front by offering volume pricing and then negotiate PCS pricing based on the actual deployment of seats. Another reason the vendor may be willing to accept such pricing is its perception that this type of structure would simulate the effort the vendor expects to expend in providing the customer support element of PCS.

In connection with a new arrangement to license software, a vendor may offer initial period PCS for free or offer to provide renewal period PCS for a fee that is lower than that charged to existing customers. In those situations, the arrangement should be evaluated to determine whether the discount offered on the initial period PCS or the subsequent year is a discount element to which a portion of the total fee should be allocated. However, if one of the elements in the arrangement is an upgrade right, SOP 97-2 specifically precludes allocation of any discount to an upgrade right.

When discounted PCS is offered as part of an arrangement, the timing of recording of revenue is clearly impacted. Specifically, the amount of revenue recorded at delivery will be reduced because of the allocation of the discount to the license fee. Additionally, software vendors frequently reflect license fees in their income statement on one line and PCS revenue on another line, often aggregated with service revenue. Software vendors generally receive higher valuations associated with the license fee portion of their total revenue than for the services element because the license fees typically have higher margins and will lead to increased revenue from annual PCS fees. The fact that the total license fee revenue from the arrangement will be reduced because of the allocation of the discount associated with PCS is perhaps as great a concern to vendors as is the timing of the revenue recognition. The services revenue will be increased to the extent the license fees are reduced, but this could have a significant impact on the valuation of the vendor's business.

**(ii) Discounted PCS in the Initial Contract:** Assume that a vendor enters into an arrangement with a customer to deliver a product and to provide PCS for a period of one year for a nonrefundable fee of \$100,000. In addition, the arrangement specifies that the customer may renew the PCS for an additional one-year period for \$10,000. VSOE for the fair value for the product and for the annual fee for PCS related to the product both exist and are \$80,000 and \$20,000, respectively. The vendor has offered a discount of \$10,000  $[(\$80,000 + \$20,000 + \$20,000) - (\$100,000 + \$10,000) = \$10,000]$  that needs to be accounted for in allocating the fee of \$100,000 to the elements covered by the arrangement. Based on VSOE of fair value for all elements, the allocation would be:

	<i>VSOE of Fair Value</i>	<i>Percentage of Total Fair Value</i>	<i>Allocation of Discount</i>	<i>Allocated Fees</i>
Software license	\$ 80,000	66.6%	\$ 6,660	\$ 73,340
Initial Period PCS	20,000	16.7%	1,670	18,330
Renewal Period PCS	20,000	16.7%	1,670	18,330
	<u>\$120,000</u>	<u>100%</u>	<u>\$10,000</u>	<u>\$110,000</u>

The portion of the fee allocated to the software license (\$73,340) would be recognized upon delivery, assuming all of the other criteria for revenue recognition have been met. The fee allocated to the initial period PCS would be deferred and recognized ratably over the one-year PCS term. The fee allocated to the renewal period

PCS would be deferred until the customer renews the PCS, and then ratably over the PCS term. If the customer notifies the vendor that it will not renew the PCS arrangement, the deferred revenue would be recognized at that time.

**(iii) Discounted PCS Offered Based on Expected Deployment of Licenses Where VSOE Exists for All Elements:** Assume that a vendor enters into an arrangement for a license fee and three years of PCS for \$100,000, \$5,000, \$10,000, and \$15,000, respectively, for a total fee of \$130,000. The pricing structure is intended to mirror the customer's deployment of seats over the next three years. The annual renewal rate for PCS in year four is expected to be (and currently is) \$15,000 and is considered to be VSOE of fair value of the PCS. VSOE for the license fee has been established as \$100,000. The total fee is paid up-front. Based on the total VSOE of fair value of \$145,000 (\$100,000 for the license and \$45,000 for the three years of PCS), there is a \$15,000 discount built into the arrangement. As VSOE for each element is available, the total fees of \$130,000 should be allocated:

	<i>VSOE of Fair Value</i>	<i>Percentage of Total Fair Value</i>	<i>Allocation of Discount</i>	<i>Allocated Fees</i>
License—	\$100,000	68.98%	\$10,347	\$ 89,653
PCS year one	15,000	10.34%	1,551	13,449
PCS year two	15,000	10.34%	1,551	13,449
PCS year three	15,000	10.34%	1,551	13,449
Total	<u>\$145,000</u>	<u>100.00%</u>	<u>\$15,000</u>	<u>\$130,000</u>

The \$89,653 should be recorded as revenue at delivery, assuming all other criteria for revenue recognition have been met. The fees allocated to the periods covered by PCS (\$40,347) should be recorded as PCS revenue in the amount of \$13,449 during years one, two, and three.

The authors have noted that discounted PCS based on deployment is a fairly common practice and that some would argue that VSOE of PCS is justifiably less in the years 1 and 2 in the example above because fewer users have deployed the software. Those who make this argument would not defer license revenue due to discounted pricing of the PCS because they believe the discounted PCS reflects fair value. The authors believe it to be extremely rare, however, that a vendor would actually provide PCS only to those users who have been deployed. To illustrate, assume that a vendor licenses version 2.0 to the customer in year 1 and by the time all users have been deployed in year 3, the vendor has enhanced the product to be version 2.3. In order to argue that only the deployed users are receiving PCS, the vendor would have to demonstrate that the last users to deploy the product did so using version 2.0 and not version 2.3. If the last users to deploy do so on version 2.3, then they were in fact receiving the value of PCS prior to deployment. Therefore, the discounted pricing of PCS to mirror deployment does not give consideration to the value inherent in PCS being provided to all (both deployed and undeployed) seats.

(iv) **Discounted PCS Offered with Only VSOE of Fair Value for the PCS Element:** Assume the original facts as described in section 4.6(h)(iii), except that VSOE of fair value for the license fee does not exist because the vendor always sells the license with PCS. This specific situation represents the narrow exception provided for in SOP 98-9. As VSOE of fair value is available for only the undelivered elements, the discount should be applied completely to the delivered element. This would result in only \$85,000 of license fee revenue at delivery, assuming all other revenue recognition criteria are met. Consequently, \$45,000 of the fees from the arrangement would be deferred and recognized ratably over the three-year period of PCS covered by the arrangement.

(v) **PCS—Discounted Maintenance with a “Free” Software Product:** Assume the original facts as described in section 4.6(h)(iii), except that the vendor sells three years of PCS for \$45,000 and includes the license for no charge. Assume that VSOE is available for all elements. As VSOE for each element is available, the total fees of \$45,000 should be allocated:

	<i>VSOE of Fair Value</i>	<i>Percentage of Total Fair Value</i>	<i>Allocation of Discount</i>	<i>Allocated Fees</i>
License—	\$100,000	68.98%	\$ 68,980	\$31,020
PCS year one	15,000	10.34%	10,340	4,660
PCS year two	15,000	10.34%	10,340	4,660
PCS year three	15,000	10.34%	10,340	4,660
Total	<u>\$145,000</u>	<u>100.00%</u>	<u>\$100,000</u>	<u>\$45,000</u>

The \$31,020 should be recorded as revenue at delivery, assuming all other criteria for revenue recognition have been met. The fee allocated to the periods covered by PCS (\$13,980) should be recorded as PCS revenue in the amount of \$4,660 in years 1, 2, and 3. The effect of this methodology is to create license revenue even though the contract stated that the license was granted for free. We believe that if a vendor is public and a significant amount of its revenue is from these types of arrangements, it may be appropriate to discuss these transactions in the Management’s Discussion and Analysis section of the vendor’s SEC filings.

## 4.7 EXCHANGE AND RETURN RIGHTS

### (a) General

If arrangements such as return rights, trade-in credits, or exchange rights qualify for “exchange” accounting and all other criteria for revenue recognition are met, all revenue from the arrangement may be recorded at initial delivery of the software and subsequent exchanges do not impact revenue recognition. Such arrangements can be included in software arrangements in that customers can be concerned about major

technology purchases in that a better product or version may be released, the software may not work as well as expected in the customer's current technology environment, the customer may want to migrate to a new platform in the future, the software may not really solve the problem the software was licensed for, or the software may fail to meet future requirements.

It can be difficult to ascertain whether a right given to a customer is for a return or an exchange of the software. The prescribed accounting for returns is significantly different from accounting for exchanges. The fact that the software is required to be, or does not have to be, physically returned does not determine whether the right is accounted for as an exchange versus a return. Further, if the customer has a continuing license to use the previously delivered software, any additional software that is to be delivered constitutes an additional element and is not considered a return or an exchange (see below). The distinction under the new SOP between an exchange and a return right relates to the similarity of the products involved. Rights given to an end user (not a reseller) that allow for the exchange/return of one product for a similar product with no more than minimal differences in price, functionality, or features are considered exchange rights, similar to someone who exchanges a size "large" sweater for a size "medium" one. If the product received by the customer after the exchange/return is a dissimilar product, the right is viewed as a right of return. If the product to be exchanged or returned is not yet developed when the initial product is delivered, there must be persuasive evidence that demonstrates that there will be only minimal differences in price, features, and functionality to qualify as an exchange right. This will not be the case if there is a significant amount of development costs yet to be incurred for the other product.

An important factor to consider is whether the end user customer is entitled to continue to use the software that was initially delivered after the exchange or return right was exercised. If the end user customer is entitled, either by contractual terms or by business practices of the vendor, to continue to use the software initially delivered as well as the software received in the exchange or return, the right does not constitute an exchange or a return. Such a transaction is, in fact, an arrangement to deliver an additional software product and must be accounted for as a multiple-element arrangement. If the end user customer is not entitled to continue to use the product initially delivered once the exchange/return occurs, the transaction with the end user may qualify for exchange accounting.

Revenue from arrangements involving return rights should be accounted for in accordance with Statement of Financial Accounting Standards No. 48, *Revenue Recognition when Rights of Return Exist*. Under Statement 48, several criteria must be met for revenue recognition to occur, including the fact that the amount of future returns must be reasonably estimable. If information is not available to allow for a reasonable estimate of the extent of returns or payments for price protection (e.g., because the product has only recently been made available), revenue recognition is precluded until such an estimate can be made or the product is delivered to the end user.

As discussed in Section 4.3(e)(i), in responding to frequently asked questions regarding SAB101, the SEC staff provided additional guidance regarding what it believes is necessary to establish a reasonable estimate of returns. The authors caution

readers to carefully consider SAB 101 with respect to return rights. In response to implementation difficulties surrounding SAB 101, the SEC staff was asked how long a history would be required to estimate returns in a product sale transaction (note that the SEC has indicated that a two-year history is necessary for new service offerings). The SEC staff responded that it does not believe there is any specific length of time necessary in a product transaction, but that Statement 48 states that returns must be subject to reasonable estimation. The staff also stated that financial statement preparers and auditors should be skeptical of estimates of product terms when little history with a particular product line exists, when there is inadequate verifiable evidence of historical experience, or when there are inadequate internal controls that ensure the reliability and timeliness of the reporting of the appropriate historical information. The SEC staff further stated that start-up companies and companies selling new or significantly modified products are frequently unable to develop the requisite historical data on which to base estimates of returns.

### (b) Returns

(i) **General:** The accounting for a right of return is set forth in Statement 48. If a seller gives the buyer the right to return the product, paragraph 6 of Statement 48 allows recognition of revenue at the time of sale only if all six of the following conditions are met:

1. The seller's price to the buyer is substantially fixed or determinable at the date of sale.
2. The buyer has paid the seller, or the buyer is obligated to pay the seller and the obligation is not contingent on the resale of the product.
3. The buyer's obligation to the seller would not be changed in the event of theft or physical destruction or damage of the product.
4. The buyer's acquiring the product for resale has economic substance apart from that provided by the seller.
5. The seller does not have significant obligations for future performance to directly bring about the resale of the product by the buyer.
6. The amount of returns can be reasonably estimated.

Paragraph 8 of Statement 48 indicates that whether a reasonable estimate of returns can be made depends on the unique factors present in the particular circumstances and that the presence of the following circumstances may impair the ability to make a reasonable estimate of returns:

- The susceptibility of the product to significant external factors, such as technological obsolescence or changes in demand
- Relatively long periods in which a particular product may be returned
- Absence of historical experience with similar types of sales of similar products, or inability to apply such experience because of changing circumstances, for example,



changes in the selling enterprise's marketing policies or relationships with its customers

- Absence of a large volume of relatively homogeneous transactions

Certain of these criteria, particularly the susceptibility to technological obsolescence, changes in demand, and an absence of a large volume of homogeneous transactions are quite applicable to the software industry. If a software vendor cannot reasonably estimate returns because of the above factors, revenue should be deferred until a reasonable estimate can be made or until the right of return lapses.

Estimating returns in the software industry can be difficult because of the operating environment, even for products that have been sold for some period of time. Because of the short technological lives of many products or the introduction of newer and superior products by competitors, it may not be possible to estimate returns once a product is shipped.

Vendors may grant resellers such as original equipment manufacturers (OEMs), value-added resellers (VARs) or distributors rights of return, stock rotation rights, or price protection. Because resellers are not the end user, such rights must be accounted for as returns. For transactions with resellers, difficulty in estimating returns can be exacerbated if the expected period of sell-through for the "inventory" of licenses maintained by a reseller is lengthy. Because actual returns may not be estimable for resellers' sales, these types of sales may have to be recorded on a "sell-through" basis that results in revenue being recognized only when the distributor sells to an end user and notifies the vendor of such sale.

**(ii) Implicit and Explicit Rights of Return:** A right of return may be explicit, specifically stated in arrangements, or a vendor may have established an implicit right of return with a certain class of or all customers based on its customary business practices. Whether the right of return is explicit or implicit, the Statement 48 criteria must be met in order for revenue to be recognized upon the delivery of the initial product. All available evidence should be evaluated when a determination is being made of whether a vendor has an established business practice of granting rights of return. For example, it is not uncommon for vendors to agree to take products back on a limited basis when the customer has a valid business purpose for requesting the return. If the right to return software occurs only in selective instances and cannot be reasonably anticipated at the time of delivery, the practice may not be considered indicative of an overall implicit right of return and the return should be accounted for at the time that the return and refund or credit is made. However, if the practice of accepting returns is pervasive or the customer could reasonably believe that it has the right to return the product because of prior vendor business practices, the vendor's practice indicates that an implicit right of return exists. In this situation, the criteria in Statement 48 should be evaluated in a determination of whether revenue should be recognized, including whether the vendor can reasonably estimate the amount of returns.

To illustrate, assume that a vendor licenses its products to end users and resellers. The terms and conditions of the licenses are set forth in standard contracts for each customer type. The licensing arrangements do not provide customers with a right of return. However, in practice the vendor has historically agreed to take products back and issue a refund, make concessions, or credit other outstanding balances of customers, even if there was nothing wrong with the products. Determining whether or not there is an implicit right of return in this situation requires careful evaluation of all factors. It is not uncommon for a vendor to agree to take back products in circumstances that could not have been reasonably anticipated at the time of delivery. In those situations, the return should be accounted for when the return and refund or credit are made. Generally, such returns would not suggest that a vendor is offering an implicit right of return in its licensing arrangements. However, if a vendor's practices of accepting returns is common and customers believe that they have the right to return a product, the vendor's practice represents an implicit right of return. In this situation, the criteria in Statement 48 should be evaluated in the determination of whether revenue should be recognized, including whether the vendor can reasonably estimate the amount of returns. If no estimate of returns can be made, the vendor should not record revenue on delivery of the product.

### (iii) Return Rights for Specified Products

*General.* The ability to reasonably estimate returns in accordance with Statement 48 can be affected by whether or not the specific products are currently available. For example, if a vendor has recently announced that it intends to release a new version of its product next year, it may need to provide customers with an incentive to purchase the current version. One way would be to allow the customers to "return" the current version and receive partial credit toward the purchase of the new version. Reasonably estimating returns in this situation would be particularly difficult unless the vendor had previously completed a similar marketing promotion to a similar population of customers. Factors that would make such a reasonable estimation difficult are: the period of time that the return right exists, the inherent susceptibility of software to technological obsolescence, a lack of definitive evidence regarding competing product introductions that might impact demand, and a lack of historical data from which to prepare estimates if this is the first time such a marketing campaign is done.

If a reasonable estimate of returns cannot be made upon shipment of the initial product, revenue should be deferred until the earlier of when the return privilege is considered to be substantially expired or when a reasonable estimate of returns can be made.

*Right of Return for Specified Products That Are Currently Available.* Assume that a personal finance software vendor has a product for personal stock portfolio tracking. Sales for the product have been disappointing. The vendor develops a marketing campaign providing that if a customer purchases the personal stock portfolio tracking software and is unsatisfied, the customer can return the product within 60 days

for full credit toward the vendor's mutual fund rating software. The mutual fund rating software is currently available and is the vendor's most popular product. The vendor has sufficient documented evidence that the population of purchasers of the mutual fund rating software are homogenous to the purchasers of the stock portfolio tracking program and the vendor can predict how many customers will return the personal stock portfolio product based on the return rate of the mutual fund rating software. Because the return period is short and the vendor has a sufficient documented return history with a homogeneous population, a reasonable estimation of returns may be made. If so, revenue should be recognized upon shipment of the initial product with a returns reserve recorded against the revenue, assuming all other revenue recognition criteria are met.

To further illustrate, assume that a vendor currently has four products, Product A, Product B, Product C, and Product D, which are all in the same product family, have been available for five years, and are marketed to high-income adults. They have different functionality levels and are licensed at significantly different prices. VSOE can be determined for each product. The vendor's experience indicates that 20% of these products are returned. The vendor enters into an arrangement with a customer for the licensing of Product A for \$500. Included in the arrangement is the provision that for six months after the delivery of Product A, the customer can return Product A and receive a 50% credit of the sales price of Product A toward license fee for Products B, C, or D. These facts suggest that a reasonable estimate of returns can be made. Key factors supporting the vendor's return history are that Products A, B, C, and D have been marketed for five years, are marketed to a homogeneous population, and are all in the same product family. If a reasonable estimate of returns can be made, revenue under the arrangement should be recognized upon delivery of Product A, assuming all other revenue recognition criteria are met. The vendor would record a returns reserve, based on its Statement 48 analysis of returns.

*Right of Return for Specified Products That Are Not Currently Available.* To the facts described in the preceding illustration, add the assumption that the vendor plans to introduce a fifth product next year, which will begin a new family of products that will be marketed to children. The vendor enters into an arrangement to license Product B for \$1,000. The arrangement provides that upon the introduction of Product N, the customer can return Product B and receive a 50% credit toward the license fee for the new product for up to 90 days after the date the new product is first available. VSOE for Product B and the new product both exist. These facts and circumstances suggest that a reasonable estimate of returns cannot be made. Key factors are that the return right involves a new product and is not yet available, the new product will be marketed toward a new population of consumers, the new product is in a new product family of products with which the vendor does not have experience, and that the return period is long because the new product will not be introduced until next year. Revenue would not be recognized until the new product is delivered or until the return right lapses.

#### (iv) Return Rights for Unspecified Products

*General.* It is difficult to estimate returns for a product not currently available, but estimating returns for unspecified products can prove even more problematic. For example, a software vendor may attempt to mitigate a potential customer's technological obsolescence risk by allowing a customer to "trade-in for full credit" any current product toward the purchase price of any product introduced in the future. For return rights related to products not currently available, factors that make a reasonable estimation difficult include: the length of time for which the return right exists, the inherent susceptibility of software to technological obsolescence, a lack of definitive evidence regarding competing product introductions that might impact demand, and a lack of historical data with regard to the products subject to the return right.

Such situations should be evaluated carefully in determining the appropriate revenue recognition. If the vendor concludes that a reasonable estimate of returns cannot be made, the fee from the arrangement should be recognized either when the return privilege has substantially expired or a reasonable estimate of returns can be made.

*Return Rights for Unspecified Products with a Specified Term.* Assume that the vendor in the preceding illustration enters into an arrangement to license Product A for \$5,000. The vendor's strategy is to make its lower-end product, Product A, very attractive to potential customers by pricing it competitively. However, all of the vendor's arrangements provide that the customer can receive full credit for the purchase price of Product A when purchasing any of the vendor's other existing products or new products for a 12-month period. The purpose is to induce customers to purchase its higher-end products, for which the margins are substantially greater, during the 12 months after delivery of Product A. These facts suggest that because the vendor can reasonably estimate returns at 20% of the total licenses of \$5,000, or \$1,000, revenue of \$4,000 should be recognized at the time of shipment of Product A and the remaining \$1,000 deferred and recognized when the return privilege has substantially expired or when the returns actually occur and the additional product is delivered, assuming all other criteria for revenue recognition have been met. It is important to note that the vendor's estimate of returns is based on a history of selling to a homogenous population.

*Return Rights for Unspecified Products with an Unlimited Term.* Assume that a vendor licenses Product Z for \$100,000. Product Z is an inventory tracking system that runs on Platform A. The vendor also has developed Products A, B, and C that operate on Platform B. As part of the license agreement, the customer is given the right to return Product Z for a 25% credit toward the license fee for another product at any time. These facts, with a return right with an indefinite term, suggest that it will be difficult for the vendor to reasonably estimate returns. If no such estimate can be made, all the revenue will have to be deferred until a reasonable estimate of returns can be made.

**(v) Return Rights in Multiple Element Arrangements:** A vendor may grant a right of return in a multiple-element arrangement in which only one element or some

combination but not all of the elements can be returned for a refund in the future. Estimating returns in this situation can be difficult. In order to reasonably estimate returns, a vendor must have a value on which to base the estimate of the fees that are covered by the return right, which should be VSOE of fair value for each of the elements that is subject to the right of return.

If VSOE does not exist for all of the elements in an arrangement, revenue must be deferred until the earliest of when such evidence does exist or all elements have been delivered. If VSOE does not exist at the outset of an arrangement but subsequently becomes available, a vendor may then be able to make a reasonable estimate of returns based on the VSOE if all the criteria of Statement 48 have been met. The authors believe that for situations in which VSOE does not exist for all elements of a multi-element arrangement, it will be extremely difficult to reasonably estimate the dollar amounts that would be involved in a return. In some cases, it may be possible to estimate the maximum amount of potential returns, which would allow the recognition of some revenue from the arrangement.

### (c) Exchange and Platform-Transfer Rights

(i) **General:** If a right to exchange a delivered element for another element qualifies for exchange accounting and all other revenue recognition criteria have been met, all revenue from an arrangement may be recognized at the time of delivery of the initial software. A subsequent exchange of products has no effect on revenue recognition. If a customer is entitled, either by contractual terms or business practices, to continue using the software that was initially delivered as well as the software received in the exchange without paying additional fees, the right should be accounted for as a right to an additional product. The initially delivered software does not have to be physically returned if the customer's contractual right to use the initially delivered software has terminated.

The revenue implications of an exchange right, which is the right to return or exchange software for products with no more than minimal differences in price, functionality, or features, are different from those of a right of return. Platform-transfer rights can be accounted for in a manner similar to the way an exchange right is accounted for when the right is for the same product and does not increase the number of copies or concurrent users of the software product available under the license agreement. The products involved in the exchange right must be marketed as the same product.

#### (ii) Exchange and Platform-Transfer Rights for Specified Products That Are Currently Available

*General.* If an arrangement includes the right to exchange software for products with no more than minimal differences in price, functionality, or features, recognition of revenue at the time of delivery of the initial product is appropriate if all other revenue recognition criteria have been met and the products and/or platforms eligible for

exchange are currently available. Determining whether differences in price, functionality, or features are minimal can be subjective. Two products may be considered the same even though there may be differences between them that arise from environmental variables such as operating systems, user interfaces, and platform scales. Indications that products have been marketed as the same product include usage of the same name (although version numbers may differ), similar pricing, and an emphasis on the same features and functions. Factors that may indicate the existence of more than minimal differences between products or that one product is not marketed the same way as one or more other products include: if a product that is to be received in an exchange has a different name, if a new product performs functions in areas outside the domain in which the original product operates, if the reporting options available to the customer in the new software are either more numerous or more limited than the original software, if marketing materials promote significantly increased functionality or features, and if a customer orders more copies or site licenses for the new product than it had for the initial product, indicating that functionality may have increased enabling more users to benefit from the product.

*Exchange Rights for Same Product.* Assume that a software vendor enters into an arrangement with a customer for \$250,000 for a product on a specific platform. Pursuant to the terms of the arrangement, the customer can exchange the product for the same product on another platform at any time in the future. The product has the same features and functionality on each platform and is marketed as having the same current price, features, and functionality in the version for each platform. The arrangement specifically states that the customer surrenders the right to continue to use the product on the first platform upon receipt by the customer of the version for the second platform. This arrangement qualifies for exchange accounting. The customer's right to the product version on the first platform terminates upon receipt of the version for the second platform. The vendor can recognize revenue of \$250,000 on delivery, assuming all other criteria for revenue recognition are met.

To further illustrate, assume that a software vendor licenses software that allows users to customize reports from information stored in databases. The vendor has ported the software to various database platforms; however, the software is marketed and sold for individual platforms. A customer places an order to license the software for a specific database platform and informs the vendor that, while it will use the product in the interim, it is in the process of implementing a new database platform. The customer expects to complete implementation of the new platform in five months and expects to be able to exchange the initial product for the new database platform version at that time. The new platform version is currently available and sells for the same price as the platform version that the vendor will deliver initially. The second platform version is marketed as the same product as the first platform version and the customer will not be able to continue to use the first platform version after the exchange occurs. The vendor can record revenue on delivery of the first platform version, assuming all other criteria for revenue recognition are met. The right may be accounted for as an exchange if the vendor can demonstrate that there are no more than minimal differences

in price, functionality, or features and is marketed as the same product. Additionally, the customer must not be licensed to continue to use the product exchanged.

*Exchange Rights for the Same Product with Complicating Customer Intentions.* Customer intentions can become a factor in evaluating whether exchange right or platform-transfer rights should be recognized using exchange accounting. To illustrate, assume the same circumstances as described for the preceding illustration, except that the customer has no intention of using the first platform version and purchases it solely due to the vendor's advantageous quarter-end pricing for the first platform version. The vendor is aware of the customer's intent at the time of delivery of the first platform version. Despite the fact that there are minimal differences between the two platform versions, the substance of the transaction is that the customer's intent is to purchase the second platform version and if the second platform version is not delivered, the fees under the arrangement would likely be at risk. Revenue recognition on delivery of the first platform version in this situation would probably be inappropriate because the fees would not be considered fixed or determinable if the second platform version is not delivered.

*Exchange Rights with Continued Use of Original Version.* Assume that a software vendor enters into an arrangement with a customer for \$250,000 for a product on a specific platform. Pursuant to the terms of the arrangement, the customer can exchange the product for the same product on another platform at any time in the future and that the customer has no contractual obligation to return the software product version for the first platform and will be entitled to continue to use that version. The product has the same features and functionality on each platform and is marketed as having the same current price, features, and functionality in the version for each platform. This arrangement does not qualify for exchange accounting. In this situation, where the initial software is not physically returned and the customer contractually is entitled to continue to use the previously delivered software, paragraph 50 of SOP 97-2 requires that the arrangement be accounted for in the manner prescribed for additional software products. Since the VSOE for Product A on both platforms is the same at \$250,000, there is a discount in the arrangement and each product would be allocated \$125,000 of revenue.

### **(iii) Exchange and Platform-Transfer Rights for Specified Products That Are Not Currently Available**

*General.* In order to use exchange accounting where all the products are not currently available, there must be persuasive evidence demonstrating that there will be no more than minimal differences in price, features, and functionality among the products. A more than minimal difference in functionality exists if the vendor expects to incur a significant amount of development costs related to the other product. Factors to consider in evaluating whether there is persuasive evidence include: whether the specifications for the new version are similar to those of the initial product, whether the difference between the prices of the two versions can be reasonably estimated as

minimal, whether the marketing material for the two versions is similar, and whether the period preceding the introduction of the new version into the market is short, and whether the impact of possible changes in environmental factors that could change the vendor's plans are minimal.

*Platform-Transfer Rights for a Specified Product That Is Not Currently Available with Insignificant Development Costs Yet to Be Incurred.* Assume that a vendor licenses for \$500,000 a product that operates on Platform A, which is the platform currently being used by the customer, and that the product is delivered. The arrangement provides that the customer can exchange its current version of the product for a new version of the product that operates on a different operating system (Platform B), to which the customer is in the process of converting. The vendor anticipates that its new version of the product will be available in one month. The price for the two versions will be the same and the same features and functionality are being marketed with both versions. Exchange accounting may be used for the arrangement if the vendor has persuasive evidence that there will be no more than minimal differences in price, functionality, or features between the two versions; all of the other criteria for revenue recognition have been met; and the customer will not be entitled to continue using the Platform A version of the product after the exchange occurs. These facts suggest that it is a platform-transfer right for which exchange accounting would be used, although there could be some question as to whether the fees should be considered fixed or determinable if the customer purely wishes to have the Platform B version and would not pay for just the Platform A version.

*Platform-Transfer Rights for a Specified Product That Is Not Currently Available with Significant Development Costs Yet to Be Incurred.* Assume the same facts as in the preceding illustration, except that the vendor does not anticipate that the Platform B version of the product will be available for two years. The vendor anticipates that the development costs for the new version will be in excess of the fee for the current arrangement but significantly less than the anticipated revenue for the year following the delivery of the Platform A version to the customer. Because the length of time between the delivery of the initial product and the delivery of the new product extends for two years, it is unlikely that this arrangement can qualify for exchange accounting. Due to the length of time, the risk of changes in market conditions and the underlying technology is very high. It may be difficult or impossible for the vendor to establish that the features, functionality, and pricing of the new version will be the same as for the initial product delivered. The right to receive the new product may be considered a right of return and, considering the length of time required to release the new version, it may be unlikely that an estimate of returns can be made.

**(iv) Exchange and Platform-Transfer Rights for Unspecified Products:** Some software arrangements involve exchange rights for unspecified products or platforms. If the criteria in paragraphs 50 and 55 of SOP 97-2 are met, the right may qualify for exchange accounting. Paragraph 48 of SOP 97-2 indicates that if the right does not qualify for exchange accounting, subscription accounting should be used.



#### (d) Decision Chart on Accounting for Exchanges and Returns

To help with properly understanding the accounting for exchange/return rights, see Exhibit 4.1. This guidance is generally appropriate to evaluate accounting for an exchange/return right. To start, assume that the contract includes, or the vendor's practices provide for, an exchange/return right.

### 4.8 SOFTWARE LICENSED TO RESELLERS

#### (a) General

Resellers are entities that do not use a licensed software product for their own purposes. Resellers include distributors and value-added resellers (VARs), original equipment manufacturers (OEMs), and system integrators. Software vendors license resellers to market the vendor's software to end users or to other resellers, typically by agreements to sublicense, reproduce, or distribute the software.

Special issues encountered in reseller software licenses include return, exchange, and stock, rotation rights; price protection; fixed, minimum fees for a combination of products; rights to obtain licenses or to distribute additional, selected products with a fixed, minimum purchase required for existing products, products being developed, or a combination of both; upgrades of products held by the reseller, even if there is no formal PCS arrangement; reproduction of the software by the vendor under the same contract or under a separate contract; and payment terms that often include non-refundable advance payments, fixed fees, or royalties.

Where a vendor sells software through a reseller, certain factors specified in paragraph 30 of the SOP should be considered in determining whether the vendor's fee is fixed or determinable. Such factors include consideration of uncertainties related to the reseller's operating environment, the ability to determine the number of copies to ultimately be sold, the reseller's business practices and financial position, as well as the specifics of the reseller's distribution arrangements. Because resellers are not the end users of the software product, evaluation of these particular factors is required to determine whether the vendor's fees are fixed or determinable even after considering the reseller environmental factors.

Additionally, complexity often exists in reseller transactions because the payment terms may often include nonrefundable advance payments, fixed or guaranteed minimum payments, or royalties. The fees may be paid based on the passage of time, the volume of use, some other variable pricing arrangement, or fixed prices plus royalties. Given the array of variables in many of these arrangements, it is often difficult to determine the true economics created by the arrangements and where the various risks reside, such as technological obsolescence risk. Significant issues include determining when a fee can be considered fixed, which party is providing support, and whether the vendor is obligated to provide the end user with updates and enhancements. These issues all impact revenue recognition for licenses with resellers. The following subsections will review reseller licenses with respect to persuasive evidence

of an arrangement, delivery, fixed or determinable fees and collectibility, rights of return or exchange and price protection, implied PCS arrangements, and nonrefundable prepaid royalties.

As discussed in Section 4.3(d)(iii), TPA 5100.66 addresses issues that arise in reseller arrangements that include third-party financing.

### **(b) Persuasive Evidence of an Arrangement**

Although arrangements with resellers vary in form and should be closely reviewed for their specific terms and conditions, they generally do not present unique interpretation issues with regard to the requirement for persuasive evidence of an agreement. This criterion applies equally to licenses with resellers and end users. Generally, there are no issues related to this criterion that are unique to arrangements with resellers.

### **(c) Delivery**

The delivery requirements under SOP 97-2 apply to both users and resellers. However, in certain circumstances, questions may arise as to whether the basic revenue recognition criterion has been met when an arrangement is entered into with a reseller. Reseller arrangements have historically contributed an unusually high level of troublesome revenue recognition situations that have led to restatements.

The issues associated with resellers relate to whether the reseller has actually taken responsibility for the product such that the vendor will not be requested to accept returns, provide price protection, conduct exchanges, or agree to payment terms that are subject to the reseller's receiving payment from its customer, which may or may not be the end user. Not only do matters such as these raise concerns about whether the fee is fixed or determinable—they are also delivery issues because ultimately they relate to whether the reseller has accepted the vendor's product.

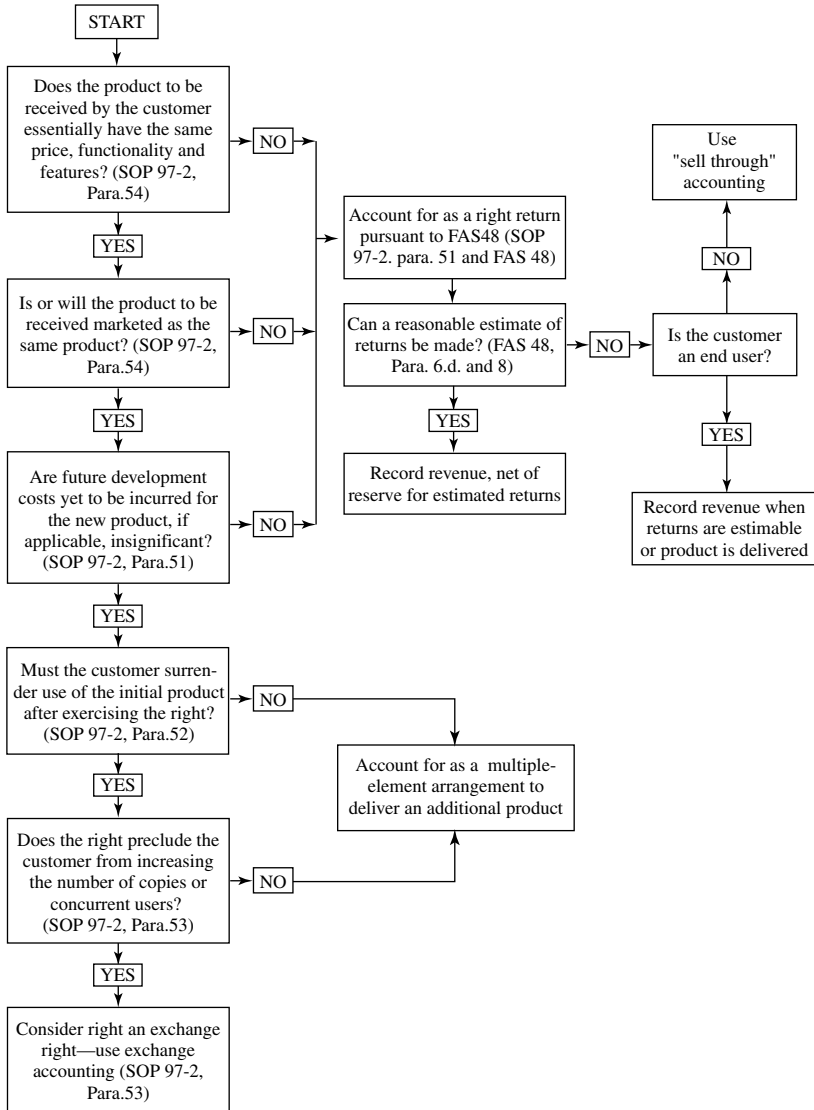
Resellers that present the highest risk of uncertainty as to whether revenue should be recognized upon the delivery of a product are those that are thinly capitalized, are significant customers and/or significantly larger than the vendor, are international, and those for which the reliability of the reseller paying for the software has not been established.

Of additional concern are resellers that act solely for the vendor or for a limited number of vendors and that market the products to specific customers. These resellers generally work under a short lead time commitment to customers. Therefore, they are more likely to accept a delivery of the vendor's products and maintain inventories. As a result, the risk that concessions will be made implicitly or agreed to explicitly is generally higher.

### **(d) Fixed or Determinable Fees and Collectibility**

**(i) Factors to Consider:** The following factors, which are stated in paragraph 30 of SOP 97-2, should be considered in evaluating whether a reseller transaction meets the fixed or determinable fee and collectibility criteria for revenue recognition:

**EXHIBIT 4.1** Accounting for Exchange/Return Rights



- Business practices, the reseller's operating history, competitive pressures, informal communications, or other factors may indicate that payment is substantially contingent on the reseller's success in distributing individual units of the product. (Footnote 7 indicates that contractual arrangements under which the reseller is obligated to pay only as, and if, sales are made to users should be accounted for as consignments on a sell-through basis.)
- Resellers that are new, undercapitalized, or in financial difficulty and may not demonstrate an ability to honor a commitment to make fixed or determinable payments, until they collect cash from their customers.
- Uncertainties about the potential number of copies that will be sold by the reseller may indicate that the amount of future returns cannot be reasonably estimated upon the delivery of the software; such factors include the newness of the product or marketing channel, competitive products, or a dependence on the market potential of another product that is being offered (or it is anticipated will be offered) by the reseller.
- Distribution arrangements with resellers require the vendor to rebate or credit a portion of the original fee if the vendor subsequently reduces its price for a product and the reseller still has rights with respect to that product (sometimes referred to as *price protection*). If a vendor is unable to reasonably estimate future price changes in light of competitive conditions, or, if significant uncertainties exist about the vendor's ability to maintain its price, the arrangement fee is not fixed or determinable. In such circumstances, revenue from the arrangement should be deferred until the vendor is able to reasonably estimate the effects of future price changes and the other conditions of SOP 97-2 have been satisfied.

#### (ii) Minimum License Fees

*General.* A major concern about recognition of reseller software license revenue centers around recognition of revenue as a result of a reseller's contractual obligation to pay a minimum fee. As a practical matter, a reseller's ability or willingness to honor a minimum commitment is often contingent on the reseller's success in marketing the licensed products. Software license revenue from a minimum commitment by a reseller should not be recognized until it is determined that realization is probable. This may sound like a simple determination and may be initially perceived as not being a difficult condition to meet. However, industry practice and application of software revenue recognition principles has made this a difficult condition to meet. Practice has evolved in such a way that it should usually be presumed that minimum commitment by a reseller will not be collected if the reseller is not successful in marketing the licensed products, unless that presumption can be overcome by significant evidence to the contrary. The authors believe that only in very rare circumstances will this presumption be overcome.

*Resellers without Ability to Pay.* Many newly established resellers do not continue in business or become otherwise unable to honor fees or minimum commitments made to their suppliers. If a reseller does not have the economic wherewithal to pay a fee

due under an arrangement without receiving cash receipts from end users, even if it can be determined that the fee is fixed or determinable, the fees would not be considered to meet the collectibility criteria until cash collections are received from the end users. In this situation, revenue should probably be recognized as the cash is received from the reseller or, at the earliest, when the vendor receives notice from the reseller that it has received the cash.

*Resellers with Ability to Pay.* Practice has shown that in many cases even well-established, sometimes big-name companies, simply will not honor minimum fee commitments if they have not been successful in marketing the licensed products. It would seem that a firm commitment of an established and financially sound company would be reliable and point to a conclusion that collection is probable. However, the unwillingness of even well-established resellers to honor minimum commitments after not being successful in marketing the license products is of epidemic proportions in the software industry.

Particular concern should arise when a reseller license provides for payment as the reseller sells licenses to its end user customer, with a guaranteed minimum fee payable at the end of the license period (or using some other back-ended payment schedule) if individual sales have not resulted in payment of at least the stated minimum fee to the software vendor. For example, assume that a software vendor enters into an arrangement with a reseller whereby the reseller can license up to 100,000 copies of a product and that delivery is completed. The reseller guarantees that it will pay a minimum of \$1,500,000 to the software vendor, with a defined amount per copy. If at the end of the term, the software vendor has received less than \$1,500,000 (say the vendor has received \$600,000), the reseller must pay the difference between the guaranteed minimum fee (\$1,500,000) and the amount already paid (\$600,000), for a final payment under the license of \$900,000. The reseller is financially stable and has the economic wherewithal to pay the \$1,500,000 without requiring any cash collections from end users. The vendor has no further services obligation to the reseller or the reseller's customers. Even though there is no question about the ability to pay, the fact that the payment of the fee is tied to subsequent licensing to end users would generally lead to a conclusion that the reseller does not perceive that an obligation exists until such licenses are issued, despite the contractual obligation in the arrangement. In arrangements like this, the software vendor should recognize revenue on a sell-through basis as the reseller licenses the product to the end users.

*How Minimum Fee Commitments Are Dishonored.* Aside from the situation of an unsuccessful reseller going out of business, there are a number of ways that minimum fee commitments may not be met. A reseller, whether with or without the ability to pay, may simply renege on the minimum commitment and attempt to terminate the relationship. Or, the reseller may be unwilling to honor the minimum commitment and the software vendor may compromise by extending the term of the reseller relationship in a new contract, with the reseller essentially being "excused" for any shortfall from the initial term. Sometimes the minimum commitment that was not paid is

completely or partially “rolled over” into the extended term. What has occurred is that the purported minimum for the first term was not really a minimum commitment that would be enforced for that specific period. Frequently, software companies have not enforced dishonored reseller commitments through adversary action in order to preserve the business relationship.

Sometimes software vendors have customary business practices of subsequently providing resellers with concessions or return rights, including platform-transfer rights, which are not specified in the terms of the original arrangement. Evaluating these situations can be particularly difficult when a reseller does a high volume of business with a software vendor, because the tendency to provide concessions to ensure a continued deal flow would generally increase. Arrangements with distributors, particularly those at international locations, that do not require a substantial portion of the fee to be paid upon delivery of a product also causes special concerns, especially if there are extended payment terms, and in some cases, foreign currency risk. Additionally, when the conditions of a prepaid license result in a reseller having a large “inventory” of licenses, the situation should be carefully evaluated, and even approached with skepticism as to revenue recognition. Often, the only appropriate revenue recognition, even when cash has been received, is to defer until there is a “sell-through” by the reseller.

In determining whether the fixed or determinable requirement has been met with respect to a reseller license, in order to be able to recognize license revenue on delivery, a software vendor must be able to demonstrate that none of the concessions referred to above will be extended to the reseller, except to the extent that they meet the requirements of paragraph 8 of FASB Statement No. 48. The evidence on which a particular software vendor bases its conclusion will vary depending on the type of reseller, because depending on the vendor’s product and how it is used, certain resellers may take more responsibility for risk of loss than others.

The views of the SEC staff with respect to return rights, as expressed in the context of SAB 101 are described in Section 4.3(e)(i).

*New Classes of Resellers.* The fact that a software vendor may have a history of collection of minimum fee commitments from certain resellers may not lead to a conclusion that license revenue should be recognized on delivery to a new reseller or a new class of resellers. For example, assume that a software vendor licenses its products exclusively through a reseller network and has no internal end user sales force. The vendor has been licensing its products for three years and has a history of collecting all amounts due from resellers without granting concessions, refunds, or forfeitures. All licensing arrangements to date have been through domestic resellers and during the current year, the software vendor begins licensing to new international resellers, granting extended payment terms. The vendor has not been able to obtain reliable credit information regarding these international resellers, some of whom operate in troubled economic environments. The fact that the vendor has never licensed through this type of reseller indicates that an adequate history of collections and not granting concessions with respect to this category of reseller is not present.

In this cases, the predominant conclusion would be to recognize revenue using a sell-through approach.

*Side Letters.* There is a particularly dangerous dark side of the reseller arrangements area that accountants and auditors should be aware of. A software vendor may enter into a reseller arrangement with a minimum commitment and may also sign a “side letter” or otherwise agree that the reseller will not be required to comply with the minimum commitment required by the primary contract. Side letters can be worked in various ways that effectively result in the reseller being committed to pay for only the products ordered under the agreement. Specific contingencies can be established, such as making the reseller’s obligation to pay contingent on whether the reseller completes an end-user license to a specific customer, sometimes for a specific project or use.

If side letters or similar arrangements exist, very few persons in a software company may know of their existence—generally sales and marketing personnel and others at operating division levels, who may enter into them because of pressures to meet revenue and profit quotas, plans, or forecasted amounts. Only the primary reseller agreement, which may by itself seem to qualify for revenue recognition of the minimum commitment as a fixed fee, may be provided to company accountants and auditors. Although this problem has been seen in practice in a number of cases, it is not widespread. However, it is another taint on the entire idea of recognition of a reseller’s minimum commitment as a fixed fee—particularly if the payment schedule is back-ended.

As discussed in Section 4.3(d)(iii), TPA 5100.66 addresses issues that arise in reseller arrangements that include third-party financing.

### (e) Rights of Return or Exchange and Price Protection

(i) **General:** As a part of license terms or as a matter of practice, software vendors may grant resellers the right to exchange unlicensed software for other software (including software that runs on a different hardware platform or operating system) or the right to simply return the software altogether. Additionally, vendors may induce resellers to license a product by promising to provide rebates for any future decreases in the pricing of affected products, which is sometimes referred to as “price protection.” All of these rights, including exchange rights, return rights, platform-transfer rights, and price protection, should be accounted for in accordance with Statement 48, regardless of whether these rights relate to software products among which there are no more than minimal differences in price, functionality, and features.

(ii) **Exchange and Return Rights:** Exchange accounting can never apply to a right given to a reseller. Paragraph 121 of SOP 97-2 provides guidance on interpreting the difference between exchanges and returns for cases in which resellers are involved. Paragraph 121 states, “Accordingly, AcSEC concluded that the accounting for exchanges of software for products with no more than minimal differences in

price, functionality, and features by users qualify for exchange accounting because, as discussed in footnote 3 to FASB Statement No. 48, (a) users are ‘ultimate consumers’ and (b) exchanges of software with no more than minimal differences in price, functionality, and features represent ‘exchanges . . . of one item for another of the same kind, quality, and price’. AcSEC concluded that because resellers are not ‘ultimate customers’, such exchanges by resellers should be considered returns.”

When a right of return or exchange exists in an agreement with a reseller, the situation must be evaluated according to its specifics. For example, a vendor might enter into an agreement with a reseller that involves stock-balancing or the right to receive unspecified additional software products. If the arrangement involves a specified time period, as well as current and future products, subscription accounting might be appropriate. For example, say a software vendor grants to a reseller the right to duplicate and sublicense any of its current or future products in a particular country for one year, in exchange for a nonrefundable fee of \$1,000,000. The vendor and the reseller sign a binding agreement on the last day of the quarter and on that day, fully functional versions of all the vendor’s current products are delivered to the reseller. Assuming that all other revenue recognition criteria are met, the vendor should recognize the \$1,000,000 fee as a subscription (i.e., ratably over the one-year term of the arrangement) beginning at the time of the delivery of the currently available products.

Conversely, if such an arrangement were to include terms whereby the right to return or exchange a product would expire only upon the reseller’s having licensed the product to end users, sell-through accounting might be appropriate. Finally, with regard to delivered products, some resellers grant the right of return to end users in the form of the right to receive unspecified future products; in turn, the reseller has the right to return such products to the vendor. In this case, the appropriate method of revenue recognition might be to recognize revenue as the return right that is granted to the end user is exercised or expires.

**(iii) Estimating Effects of Exchanges, Returns, and Price Protection:** SOP 97-2 notes that the competitive conditions of the software industry make the process of estimating exchanges, returns, and the level of price protection problematic. For example, the newness of the product, the vendor’s lack of a history of doing business with certain resellers, or the possible introduction of a competing product that has what is perceived as superior functionality and features (or even the same vendor’s introduction of an enhanced version of its product) may result in the vendor’s inability to reasonably estimate returns, especially if the expected period of the sell-through of the “inventory” of licenses that are delivered to the reseller is lengthy. A reseller may allow its customers to return software to it. The reseller may then have the right (either contractually or based on the vendor’s business practice) to return the product to the software vendor. The exposure to returns may not be limited to only the inventory maintained by the reseller.

Situations in which a vendor grants a return or exchange right to a reseller for unspecified undelivered products will present significant difficulties in estimating how much of a delivered product is not subject to return. In these situations, it would



be extremely rare for a vendor to be able to reasonably estimate returns in accordance with Statement 48.

Estimation of the effect of a price protection provision in an arrangement can also be difficult. For example, assume that a software vendor enters into an agreement with a reseller to sublicense 1,000 copies of a new product for \$1,000,000, with the reseller paying the vendor's list price, less 15%. The current master licensing agreement between the vendor and reseller provides that the vendor is obligated to issue a rebate to the reseller for any future price reductions the vendor makes on the software product for copies that remain unlicensed by the reseller at the time of the price reduction.

As such, if the vendor does not have adequate evidence with which to document that a reasonable estimate of the level of exchanges/returns or price protection has been made, revenue recognition would be precluded until such an estimate could be made or until the products are delivered to the end user (often referred to as "sell-through").

**(iv) Upgrade or Rotation Rights:** Sometimes resellers are allowed to "upgrade" or "rotate" their inventory by receiving upgrades and enhancements that are not universally provided under normal PCS arrangements. These situations constitute a return by the reseller of the product originally purchased in exchange for the software on a new platform or the upgraded product. An estimate of such returns must be made at the time that the revenue from the original license is initially recognized and products that are subject to return should not be recorded as revenue upon their initially being delivered. If conditions do not permit a reasonable estimate, revenue recognition must be deferred until a reasonable estimate can be made or until the reseller licenses the product to the end user. Such situations should also be evaluated to determine if an implied PCS arrangement exists.

#### **(f) Implied PCS Arrangements**

**(i) General:** Many software vendors distribute their products through resellers and, in many cases, the reseller sells PCS to its end users and charges them a fee. The PCS arrangement between the reseller and the end user includes both customer support and the right to receive unspecified upgrades, updates, and enhancements on a when-and-if-available basis. Generally, the arrangement between the vendor and the reseller provides that a portion of the PCS fees that are charged by the reseller to its end users will be paid to the vendor. The fees that the reseller pays to the vendor are to compensate the vendor for having provided the reseller with updates, upgrades, and enhancements that the reseller will distribute to the end users. The fees that are paid to the vendor may also compensate the vendor for its having provided a secondary level of technical support to end users that is typically beyond what the reseller can provide. In this situation, the PCS fees that are paid by the end user are frequently allocated between the vendor and the reseller based on the benefits that each party provides to the end user.

Paragraph 62 of SOP 97-2 addresses implied PCS arrangements with resellers as follows: An arrangement in which a vendor grants a reseller the right to provide unspecified upgrades/enhancements to the reseller's customers is an implied PCS arrangement between the vendor and the reseller, even if the vendor does not provide direct telephone support to the reseller's customers. If sufficient vendor-specific objective evidence does not exist to allocate the fee to the software and the PCS, revenue from both the licensing arrangement and the PCS should be recognized ratably over the period during which PCS is expected to be provided. PCS should be recognized ratably over the period during which PCS is expected to be provided.

In arrangements with resellers, as in the case of arrangements with end users, not only the contractual requirements, but the economics of the transaction and the vendor's customary business practices should be evaluated in a determination of whether an implied PCS arrangement exists between the vendor and the reseller. For example, if a software vendor has announced the release of a product upgrade for the next quarter and a reseller is still generating revenue from the previous version of the product, the vendor should evaluate the ramifications for the relationship with the reseller if an upgrade right is not granted. In such a situation, if the vendor intends to grant the reseller the right to offer the upgrade to end users (even if it is not required to do so by the contractual arrangement with the reseller), the appropriate accounting would be that which is applied to an implied PCS arrangement.

**(ii) PCS Provided by Software Vendor:** If a software vendor is providing secondary (or primary) customer support or resellers with upgrades, updates, and enhancements that resellers may then pass on to end users, a PCS arrangement clearly exists between the vendor and reseller. If there is no contract that discusses a PCS-type arrangement, then implied PCS exists. SOP 97-2 indicates that if the reseller is not paying the vendor any fee for these types of services, a portion of the fee related to the license of a product must be considered related to the PCS element and, therefore, accounted for as such.

For example, assume that a software vendor licenses a product to a reseller, giving the reseller the right to distribute the product for one year, for a nonrefundable up-front fee of \$500,000. The fee is paid and the product is delivered. The vendor has no obligations to provide the reseller or the reseller's customers with any further services. It is anticipated that the reseller will account for 25% of its revenue on an ongoing basis. To maintain its amicable relationship with the reseller, the vendor will probably allow the reseller to offer to its end users all upgrades and enhancements that are developed over the next year for no additional charge, despite the fact that it has no obligation to do so. The arrangement would be deemed as having an implied PCS arrangement embedded in it. If VSOE does not exist for the PCS, the entire fee should be recognized ratably over the period in which the PCS is expected to be provided. If VSOE of the PCS does exist, the vendor may be able to defer the VSOE of the PCS and recognize the portion allocated to the license fee upon delivery of the product.

Situations like the example given above should be accounted for with caution. A vendor might establish that the PCS period is one quarter because the upgrade will be

released in the next quarter. However, the granting of such a concession to a reseller with such a significant sales volume would be apt to set a precedent in the mind of the reseller. In this case, it may be more appropriate if the PCS period used is the length of time covered by the reseller arrangement.

If a software vendor has a business practice of allowing resellers that account for specific sales volumes to distribute upgrades and a reseller has previously been granted this right based on its sales volume, it would not be appropriate to take the position that the upgrades would not be granted to the reseller in the future, even if the reseller's sales volume is expected to decline below the level at which upgrade rights are normally granted.

**(iii) PCS Provided by Both the Software Vendor and the Reseller:** Situations in which the software vendor and reseller divide the responsibility for providing PCS can vary from arrangement to arrangement. In some cases, it is the reseller and not the software vendor that is providing customer support during the PCS period. In other cases, the vendor provides second- or third-level customer supports and the reseller provides first-level support. If the vendor does not provide any customer support or the right to upgrades and enhancements, the software vendor would not defer revenue, as no PCS arrangement exists. For situations in which the reseller is providing customer support and the software vendor is contractually obligated to allow the reseller to offer upgrades and enhancements to its end users free of charge, an implied or stated PCS arrangement exists.

**(iv) Updates of Reseller's Unlicensed Products:** Another often seen situation in which a vendor and a reseller may have an implied PCS arrangement is one in which a reseller's unlicensed product is updated by the vendor to include newly released upgrades, updates, and enhancements. This is generally the case when a reseller holds an "inventory" of the vendor's product for license to end users, instead of ordering the product from the vendor only when an end user customer has been identified. Frequently, there is no contractual language that indicates that the reseller's inventory will be updated for new releases and there is no fee being paid by the reseller for this benefit. This situation clearly represents an implied PCS arrangement between the vendor and the reseller that must be accounted for as PCS if revenue is being recorded by the vendor upon the delivery of the product to the reseller.

It is noteworthy that the reseller would not be receiving customer-support services for unlicensed inventory, which has value in any PCS relationship. The only PCS benefits that the vendor is providing are in the form of updates, upgrades, and enhancements. Therefore, it would follow that if this type of situation exists, the fair value of the PCS would be less than the fair value of a complete PCS arrangement with an end user that includes both customer support and the right to updates, upgrades, and enhancements. However, it would be rare for a vendor to be able to demonstrate that this type of PCS should be allocated a lower value than normal PCS for accounting purposes under SOP 97-2, unless there were separate sales for a modified PCS arrangement.

### (g) Nonrefundable Prepaid Royalties

In some situations, a software vendor's customer licenses the software to a reseller pursuant to an agreement that stipulates that the prepayment of the license fee is to be based on minimum royalties. Additional fees would then be payable if the minimum royalty fee is exceeded as a result of the reseller's sales. License fees for software should be evaluated based on the criteria in SOP 97-2, regardless of whether they are based on minimum royalty amounts. If all the requirements of SOP 97-2 are met, including the determination that the fees in the arrangements are fixed or determinable, then the royalty prepayment fee should be recognized upon the delivery of the software. The additional fees that will be payable if the minimum is exceeded are generally based on a price per copy and, therefore, do not impact the revenue recognition with respect to the minimum fee. The requirements of SOP 97-2 should be evaluated at the time that the minimum royalties are exceeded based on the facts and circumstances that exist at that time.

To illustrate, assume that a software vendor enters into an arrangement to license an unlimited number of copies of a product to a reseller. The product has been delivered and the reseller will reproduce all necessary copies. The reseller will pay the vendor \$100,000, which is the value of the license fee. No future deliverables are due under the arrangement. After the reseller licenses 10,000 copies of the product to end users, royalties will be due to the vendor at a rate of \$15 per copy. The \$100,000 license fee should be evaluated based on the criteria in SOP 97-2, regardless of whether it is based on a minimum royalty amount. If all other revenue recognition criteria have been met, the license fee of \$100,000 would be recognized upon delivery of the product to the reseller. If the reseller licenses more than 10,000 copies, the vendor should record additional revenue on a per copy basis when the reseller informs it of sales.

In this illustration, if the \$100,000 license fee is refundable if the reseller is not able to license 10,000 copies within six months, with the royalty reverting to \$20 per copy licensed, the fee is not fixed or determinable at the outset of the arrangement. Revenue should be recognized by the vendor on a sell-through basis at \$20 per copy.

Such arrangements often include other deliverables as well, including additional services and PCS. Therefore, it is important that the arrangement be evaluated for the purpose of ensuring that the fee is allocated to all the elements to which it relates, based on VSOE of fair value. If other deliverables are included in the arrangement, the total fee should be allocated based on the criteria for multiple-element arrangements. Revenue should be recognized when the SOP 97-2 criteria for each element have been met.

## 4.9 FUNDED DEVELOPMENT ARRANGEMENTS

Arrangements in which a third party funds all or part of the development costs of new software are addressed in SOP 97-2. The structure of these arrangements is generally based on the goals of the funding party and the stage of the software's development.

The funding party may provide cash, issue equity instruments, or use a combination of the two, and usually will receive one or more of the following in return:

- Royalties payable to the funding party based solely on the software vendor's future licensing of the product (i.e., reverse royalties)
- Discounts on the funding party's future licenses of products that are developed under the arrangement
- A nonexclusive sublicense granted to the funding party, at no additional charge, for the use of any product that is developed (a prepaid or paid-up nonexclusive sublicense)

Accounting for the proceeds received from these arrangements requires an analysis of the facts and circumstances of each particular case. The accounting for funded software-development arrangements falls under the guidance of either FASB Statement No. 68, *Research and Development Arrangements* (Statement 68), or SOP 97-2, depending on the software's stage of development.

If technological feasibility has not been established prior to the vendor entering into the arrangement, Statement 68 applies. Under Statement 68, proceeds received from the arrangement are considered (1) a liability on the part of the vendor with the vendor repaying to funding parties or (2) an agreement by the vendor to perform contractual services, from which revenue will be derived.

If technological feasibility has been established prior to the vendor entering into the arrangement, Statement 68 does not apply. The applicable accounting is set forth in paragraph 73 of SOP 97-2, which requires that any income from a funding party in a funded software-development arrangement is first credited against any software development costs that were capitalized in accordance with FASB Statement No. 86, *Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed*. If the income exceeds the amount of capitalized development costs, the excess is deferred and credited against amounts that subsequently qualify for capitalization. Any deferred amount remaining after the project is completed is then credited to income.

To illustrate, assume that a software vendor enters into an arrangement with a customer to deliver a product for a fee of \$200,000, which the customer pays upon contract execution. The product has not reached technological feasibility as defined under Statement 86 and the vendor's business practices, and consequently, no software development costs have been capitalized. As part of the arrangement, the customer will receive a royalty based on future sales of the product by the vendor. In the event that no future sales occur (or insufficient sales to generate \$200,000 in royalty payments), the vendor must repay the \$200,000 (or the portion not recovered through royalties on future sales of the product). Since the product has not yet reached technological feasibility, Statement 68 applies.

To further illustrate, assume that a software vendor enters into an arrangement with a customer to deliver a product for a fee of \$75,000, which is paid on the date of contract signing. The product has reached technological feasibility as defined under Statement 86 and the vendor's business practices, but is not yet generally available.

At the date the arrangement is entered into, the vendor has capitalized \$100,000 in software-development costs associated with development of the product. In return for entering into this arrangement, the customer will receive a royalty based on future sales of the product by the vendor. The repayment of the \$75,000 is contingent on the future sales of the product and if no such sales occur, no repayment is required (i.e., the customer is at risk for the recoverability of the \$75,000). Accounting is governed by SOP 97-2, and the vendor should credit the \$75,000 in funding against the amount of capitalized development costs, leaving a \$25,000 balance in capitalized software-development costs. Future development costs should continue to be capitalized until general availability is reached. Amortization of the capitalized costs should commence at the date of general release of the product. If the fee paid by the customer is \$125,000 and the vendor incurs an additional \$15,000 in capitalizable software-development after entering into the arrangement, the vendor should credit \$100,000 of the funding against the amount of development costs previously capitalized at the date of the arrangement. The remaining \$25,000 should be recorded as deferred revenue at that date. The amount of \$15,000 would be credited against the capitalizable software development costs for the product incurred subsequent to entering into the arrangement. When the product is delivered (the date the arrangement is completed), the remaining \$10,000 of deferred revenue should be recognized as income.

## 4.10 ACCOUNTING FOR SERVICES

### (a) General

Some software arrangements include software and services (other than PCS), which can include PCS, training, installation, or consulting. Consulting services often include implementation support, software design, development, customization, or modification of the licensed software. Service revenue from training is usually straightforward in that the related revenue is recognized when the training is performed, provided that VSOE is available. Accounting for consulting and installation services can be more complex because of the high level of judgment involved in determining whether these types of services can be accounted for separately.

The initial and critical consideration in addressing revenue recognition for services is whether the services can be accounted for separately from the other elements in the arrangement. The services (other than PCS) must meet the following criteria in order for the fee that is allocated to services to be accounted for separately from the other elements of the arrangement:

- Sufficient VSOE of fair value exists, enabling allocation of revenue to the various elements.
- The services are not essential to the functionality of any other element of the transaction.
- The services are described in the contract such that the total price of the arrangement would be expected to vary as a result of the inclusion or exclusion of the services.

SOP 97-2 says that services need not be priced separately in order to be accounted for separately. If all of the above criteria are met, revenue should be allocated to the various elements based on VSOE of fair value. Revenue allocated to services should be recognized as the services are performed or, if no pattern of performance is discernible, on a straight-line basis over the period during which the services are performed.

If the criteria listed above are not met, then the services do not qualify for separate accounting. Contract accounting, covered in Chapter 5, would be used to account for the total fees from the software and service elements. An exception to the requirement to use contract accounting would arise when VSOE of fair value does not exist for the service element and the only undelivered element consists of services that do not involve significant production, customization, or modification. In this case, the total revenue from the arrangement should be recognized as the services are performed. If no pattern of performance is discernible, the revenue should be recognized on a straight-line basis over the service period.

### (b) Determining If Services Can Be Accounted for Separately

As the complexity of software product offerings increases, vendors often notice a corresponding increase in the amount of customization and modification that it must provide to meet the customer's functionality requirements. This is particularly the case when a software product is new and unproven in the market. Arrangements involving the use of core software or that have a disproportionate level of service hours or service revenue relative to the vendor's standard business arrangement should be evaluated to determine whether the application of contract accounting is appropriate. A key factor in this analysis is the impact that the customization will have on the functionality of the software and whether the services are essential to the functionality of the software. This analysis should be done from the customer's perspective, not that of the vendor. For example, if (a) customization work is required to ensure that a vendor's software can manipulate and produce data in a certain format, (b) that particular functionality is a key factor in the customer's decision to license the software, and (c) the customization work is significant, contract accounting may be appropriate. This would hold true regardless of the vendor's view of the importance of the customization relative to the software's overall functionality.

Factors that may indicate that the service element is essential to the functionality of the other elements of an arrangement include:

- *The software is not an off-the-shelf product.* If the software is never licensed without services, it may be an indication that it is core software.
- *The vendor always provides the services with the software.* If the vendor always includes the services as part of the licensing arrangement and never offers the software without the services, this may suggest that the service element is essential to the functionality of the software in the view of the customer.
- *The services include significant alterations of the features and functionality of the off-the-shelf software.* The feature and function changes are likely to indicate that the licensed software is not an off-the-shelf product.

- *The timing of payments for the software coincides with the performance of the services.* Extended payments often suggest that the customer is relying on the service element of the arrangement.
- *Milestones or acceptance criteria affect the realizability of the software license fee.* Payment terms that are not fixed or determinable due to customer acceptance clauses would suggest that the service element is essential to the functionality of the software.
- *The customer views the services of the vendor as a key, differentiating factor in selecting the vendor's software.* If a customer believes that the vendor's services provide it with the only means to meeting its objectives, the services may be essential.
- *The final product that is delivered to the customer contains a significant amount of new code.* If the number of lines of code that is added to the core software product is substantial, the service element may be essential.

A critical factor in determining whether services are essential to the functionality of any other element of the software arrangement is whether the software is considered core software or off-the-shelf software. SOP 97-2 define core software as “*an inventory of software that vendors use in creating other software. Core software is not delivered as is, because customers cannot use it unless it is customized to meet system objectives or customer specifications.*” SOP 97-2 defines off-the-shelf software as “*software marketed as a stock item that customers can use with little or no customization.*”

Arrangements involving a core software product generally do not qualify for separate accounting because the services are considered essential to the functionality of the software, consistent with the SOP 97-2 concept of core software. If, to meet the customer's purpose, the arrangement includes significant modifications of or additions to the software, the software should be considered core software. Significant modifications may involve:

- Building complex interfaces that are necessary if the vendor's software is to be functional in the customer's environment
- Rewriting significant portions of the source code

Software that is considered off-the-shelf may be accounted for separately from services. Software may be considered off-the-shelf only if insignificant or no changes are made to the underlying code and the software can be used by the customer for the customer's purposes upon installation. The customer's actual use of the software is not required for it to be determined that the customer could use the software off-the-shelf.

In addition to not being essential to the functionality of any other element in the transaction, services that qualify for separate accounting are always separately described in the contract and have one or more of the following characteristics:

- *The services are available through other vendors.* Services that are available through other vendors indicate that the customer's decision to license the software product did not depend on the vendor's ability to provide the services.



- *The services do not carry a significant degree of risk or unique acceptance criteria.* Services that are not complex and for which there are no customer-specific acceptance or performance criteria indicate that the customer's acceptance of the software product did not depend on the successful completion of the services.
- *The software vendor is an experienced provider of the services.* Services that are performed routinely or that the vendor has performed with ease in the past indicates that the risk that the customer will not accept the product is low.
- *The vendor is primarily providing implementation services.* Such services as implementation planning, loading the software, training customer personnel, data conversion, building simple interfaces, running test data, and assisting in the development and documentation of procedures are generally "value added" services that are not required for the customer to use the product, but rather, enhance the benefits that the software can bring to the customer.
- *Customer personnel are dedicated to participating in the services that are performed.* Customer involvement in the services indicates that the customer is sharing the risk that the services will not meet its needs. Arrangements in which the customer takes primary responsibility for the required services (i.e., the customer controls the performance of the services but turns to vendor personnel for their experience with the product or to augment its staff), suggest that the services provided by the vendor are incidental to the product.

If an arrangement includes services that meet the criteria for separate accounting, revenue should be allocated among the service and software elements of the contracts, based on VSOE of fair value. Revenue allocated to the service element should be recognized as services are performed or, if no pattern of performance is discernible, recognized on a straight-line basis over the period during which the services are performed. If the services do not meet the criteria for separate accounting, contract accounting must be applied to both the software and service elements.

### (c) Impact of PCS and Other Services

SOP 97-2 addresses the accounting for services in arrangements that include both software and services. Such arrangements may also include future PCS that will be supplied following the fulfillment of the terms of the contract for separate accounting and for which there will be no additional charge. If the service element meets the

criteria for separate accounting that are cited in paragraph 65 of SOP 97-2, services may be “carved out” of the contract accounting in certain circumstances (see footnote 4 to paragraph 7 of SOP 97-2). See also the discussion of PCS bundled with a contract accounting arrangement in Section 4.5(j).

#### (d) Accounting for Installation Services

**(i) General:** There are many issues surrounding installation services that may impact revenue recognition for both hardware and software vendors. A vendor must evaluate installation services to determine whether they can be accounted for separately. Under SOP 91-1, many vendors regarded installation as representing an insignificant, post-delivery vendor obligation and, consequently, revenue was recognized upon the delivery of the product. That treatment may not be permissible under SOP 97-2 or SAB 101, as the concept of insignificant, postdelivery vendor obligations no longer exists.

Installation may occur at the time of delivery of a product when an arrangement has payment terms that require that payment be made based on the delivery data. However, in many cases, installation does not occur at the time of delivery and whether or not this impacts the determination of whether the delivery criterion for revenue recognition should be carefully evaluated.

Installation is considered a service and the revenue allocation provisions are applicable regardless of whether the installation is separately priced in the arrangement. In a multiple-element arrangement, installation services must be evaluated in order for a determination to be made of whether VSOE of fair value exists and, thus, whether the vendor should allocate the total fee to the installation element. Because (a) the completion of the installation may require the participation of the vendor and (b) installation often takes place at a time other than when the product is delivered, installation services are permitted to be “sold” only when a product is also licensed; therefore, those services are never sold separately. Accordingly, the VSOE requirements of SOP 97-2 would not be met.

Paragraph 67 of SOP 97-2 states that the “entire arrangement fee” should be recognized as the services are performed. The authors believe that SOP 97-2 did not intend for PCS-related fees to be covered by this guidance. When installation occurs after delivery, the question may arise as to when the fee allocated to the PCS arrangement should be recognized as revenue. The authors believe that revenue recognition for the PCS-related fee should begin upon the delivery of the software, unless the installation services are considered perfunctory or inconsequential. If installation services are considered significant, PCS-related revenue should be deferred until the installation is complete, because the customer cannot use the software until that time.

Note that SAB101 states that no revenue can be recognized for delivered software if any of the fees allocated are subject to refund or forfeiture in the event that the installation is not satisfactorily completed.

**(ii) Installation Occurs Simultaneous with Delivery:** Assume that a vendor sells computer equipment and software that provide “machine” vision in manufacturing processes. The products are sold to end users and the vendor generally installs

the products upon their delivery at the customer's site. Installation is routine and completed within one to two hours after the product has been delivered. Installation is not separately stated in the arrangement with the customer, but is a condition to customer acceptance, for which there is no evidence that any uncertainty exists. The installation of many products may not be significant enough to be separately stated in an arrangement and may be considered perfunctory or inconsequential as defined in the SEC's response to frequently asked question No. 3 to SAB 101. This is generally the case if (a) the product is delivered and installed simultaneously, (b) the installation process is the same for all deliveries of the same product and installation is routine and (c) the revenue from delivered products is not subject to refund or forfeiture in the event the vendor does not complete the installation. In this installation, the authors believe that installation is not a separately offered service element of the transaction and that the revenue allocation provisions of SOP 97-2 do not apply. The total fee for the product should be recognized upon the delivery of the product, assuming that all of the other criteria for revenue recognition have been met.

**(iii) Installation Does Not Occur Simultaneous with Delivery and VSOE Does Not Exist:** Assume that a vendor licenses a software product that enables customers to conduct videoconferences with other sites. Under the terms of the arrangement, the vendor licenses the software, performs the installation, and provides an annual maintenance contract for \$75,000. The vendor delivers the product to the customer and schedules an installation date at the customer's convenience. Installation services are significant, vary from customer to customer because of the complexities associated with phone lines and network infrastructures, and are never sold separately. Therefore, VSOE of fair value does not exist for the installation services. However, VSOE of the software product and the PCS arrangement are \$40,000 and \$10,000, respectively. The vendor has never had a customer not accept a product once it has been delivered. It is not likely that the services in this illustration will involve significant production, modification, or customization of the software. Furthermore, the only undelivered element is the installation service. However, since VSOE does not exist for the installation services, the allocated fees associated with the software product and the installation services should be recognized as revenue as the installation services are performed or, if no pattern of performance is discernible, the fee should be recognized on a straight-line basis over the period during which the installation services are performed.

## 4.11 MISCELLANEOUS REVENUE MATTERS

### (a) Marketing and Promotional

Customers of software vendors have a tendency to view the purchase of software as part of a long-term relationship with or even an investment in the software vendor, rather than the purchase of a discreet product. Consequently, a software vendor's customers often want a relationship that may involve more than a straight-forward pur-

chase of currently available products and services. As part of their marketing efforts, software vendors frequently refer potential customers to previous customers. Consequently, it is critical that prior customers represent a satisfied base to serve as reference accounts for the vendor. Because reference accounts are necessary to aid in current marketing efforts, vendors are sometimes forced to make concessions to ensure continued customer satisfaction.

In addition, a software vendor's plans for future software product releases and strategic direction of software development initiatives are used in marketing activities to influence the customer's decision to select a particular vendor's software over that of another. In such cases, customers may believe that development efforts and strategy are part of what they are buying today, thereby creating expectations for future deliverables. These factors, and others, have caused much discussion about how a vendor's marketing and promotional activities should affect the analysis pursuant to SOP 97-2 for revenue recognition.

Software vendors should review marketing and promotional materials and activities and evaluate whether customers believe that commitments to develop or deliver products outside of a written arrangement are being made, such as when a vendor has announced plans to release its product on a new platform. This announcement may significantly impact a customer's purchasing decision if the customer is in the process of, or plans to, migrate to that platform. Specific platform-transfer right language may not be contained in the written arrangement; but, from the customer's perspective, an implied commitment to deliver the future platform may exist. If marketing and promotional activities are viewed as part of an arrangement by a customer, they increase the likelihood of providing concessions and vendors should consider the need to account for such activities as part of the arrangement.

Legal requirements of an arrangement, while important, are only one factor in the analysis. A vendor's customary business practices is usually the most important factors to consider, particularly if the customer in question is a prestigious "reference" account. It is essential that regardless of what a contract states, the vendor understands what the customer is really buying, whether it is the products being delivered or the products discussed in the vendor's marketing materials. Vendors should also ensure that sales and marketing personnel fully understand the ramifications of verbal commitments to customers with regard to future product development and deliverables if such commitments increase the likelihood that the vendor will make concessions at a future date. Determining the effect of marketing and promotional activities on software revenue recognition is likely to be highly subjective.

### **(b) Barter Transactions**

**(i) General:** TPA Nos. 5100.46 and 5100.47 specifically address the accounting for exchanges of one software product for another or other nonmonetary elements. These transactions are commonly referred to as swaps or barter transactions. The TPAs are based on the framework of APB Opinion No. 29, *Accounting for Nonmonetary Transactions*, which identifies two types of nonmonetary exchange transactions:

(1) an exchange that culminates an earnings process and (2) an exchange that does not culminate the earnings process. APB 29 further says that two types of nonmonetary transactions do not culminate an earnings process: (1) an exchange of a product or property held for sale in the ordinary course of business for a product or property to be sold in the same line of business to facilitate sales to customers other than the parties to the exchange and (2) an exchange of a productive asset held for sale in the ordinary course of business for a similar productive asset or an equivalent interest in the same or similar productive asset.

In accounting for barter transactions, companies need to consider whether there is a business purpose for each party that makes sense, whether fair value is reasonably determinable, and whether the software or other elements are intended for use in the company's operations or for resale to customers. If all these factors are evaluated and it is concluded that an earnings process has been culminated, revenue may be recognized based on the fair value of the transferred software or elements, or the fair value of the assets received, whichever is more clearly evident. When analyzing the business purpose of a transaction, one should consider each party's intention with respect to utilizing the assets or services received. If an enterprise does not immediately intend to use the asset or services received or does not have a need for such benefits in its business that reflects the value assigned to them in the transaction, the earnings process may not have culminated. Another factor that might indicate whether revenue should be recorded is whether PCS is being purchased. If so, this would probably suggest that the earnings process has been completed, because the customer is purchasing support services for property that was received in the exchange. Similarly, if installation has been completed, this may suggest that the earnings process is complete.

If the fair value of the products and other elements exchanged cannot be reasonably determined or the earnings process has not culminated, the exchange should be recorded at the amount at which the vendor's assets were recorded on its books. APB 29 states when "major uncertainties exist about the realizability of the value that would be assigned to an asset received in a nonmonetary transaction accounted for at fair value," fair value should not be regarded as reasonably determinable. Determining fair value is a critical step in selection of the appropriate accounting method and may require investigation and judgment. Software companies should be aware that, under APB 29, they may be required to disclose these transactions in the financial statements, as well as the basis of accounting for the assets transferred and any gains or losses that have been recognized.

The following matrix, which has been excerpted from TPA 5100.47, provides an overview of the guidelines for accounting for barter transactions involving software:

<i>Software Vendor's Technology Exchanged</i>	<i>Software Vendor's Use of Technology Received</i>	<i>Same Line of Business</i>	<i>Accounting Treatment</i>
Software product held for sale in the ordinary course of business (i.e., inventory) <sup>1</sup>	Technology to be held for sale in the ordinary course of business (i.e., inventory) <sup>2</sup>	1. Yes	1. Record at historical cost
		2. No	2. Record at fair value <sup>3</sup>
Software product held for sale in the ordinary course of business (i.e., inventory)	Internal-use software <sup>4</sup>	N/A	Record at fair value <sup>3</sup>

<sup>1</sup>Licenses to software products, source code, and object code that the software vendor sells, licenses, or leases in the ordinary course of business would constitute inventory.

<sup>2</sup>A software vendor that receives any of the following would be receiving inventory:

- (I) a product to resell, sublicense, or sublease,
- (II) a right to embed the technology received into a product, or
- (III) a right to further develop the technology received into a product.

<sup>3</sup>Assumes that vendor-specific objective evidence of fair value exists and the transaction has a business purpose.

<sup>4</sup>A software vendor that receives any of the following would be receiving something other than inventory:

- (I) a product or technology that only can be used internally (e.g., a financial or management application)
- (II) a product or technology that only can be used internally to make a product but which does not become part of the product.



## APPENDIX 4-A

# Comparison of Old and New GAAP

The following table provides a comparison of some of the significant aspects of SOP 97-2 and SOP 91-1.

<i>SOP 91-1</i>	<i>SOP 97-2</i>
<i>Basic Framework</i>	<i>Basic Framework</i>
For software arrangements that require significant production, modification, or customization, use contract accounting (service elements may be separately accounted for in certain circumstances).	Generally the same
Distinguishes arrangements and license fee revenue depending on significance of post-delivery vendor obligations:  If no obligations other than PCS—recognize license fees on delivery  If insignificant obligations—recognize on delivery and accrue remaining costs, or defer pro rata portion of arrangement fees  If significant obligations—consider contract accounting or service transaction accounting; if neither of these is used, defer until:  <ul style="list-style-type: none"><li>• Delivery has occurred</li><li>• Remaining obligations are no longer significant</li><li>• Collectibility is probable</li></ul>	For arrangements that do NOT require significant production, modification, or customization, recognize revenue for each element (product or service) when <i>all</i> of the following criteria are met:  <ul style="list-style-type: none"><li>• Persuasive evidence of an arrangement exists</li><li>• The vendor's fee is fixed or determinable</li><li>• Collectibility is probable</li><li>• Delivery has occurred</li></ul>



<i>SOP 91-1</i>	<i>SOP 97-2</i>
<i>Basic Framework</i>	<i>Basic Framework</i>
Delivery required transfer of the risk of loss to customer. No discussion of electronic delivery	Delivery is not considered to have occurred if undelivered elements are essential to the functionality of delivered elements. Provides guidance on electronic delivery of software
The fixed and determinable requirement existed by reference to SFAS 48 and paragraph 57 of SOP 91-1	
Limited discussion of probability of collection and whether fee must be fixed or determinable had limited discussion	Collectibility is not considered to be probable if fees for delivered elements are subject to forfeiture, refund or other concession if there are undelivered elements. Any extended payment terms in a software licensing arrangement may indicate that the fee is not fixed or determinable. Provides guidance for payments due 12 months after delivery.
Did not specifically require a signed contract	If vendor uses signed contracts in normal course, no revenue may be recognized until the date contract is signed by both parties
<i>Multiple Elements</i>	<i>Multiple Elements</i>
Not addressed explicitly; addressed implicitly via assessment of significance of vendor obligations but no discussion of "when-and-if-available" deliverables	For multiple-element arrangements, revenue is allocable to each element of an arrangement ("unbundling") based ONLY on vendor-specific objective evidence of fair value (VSOE); all revenue is deferred until such evidence exists or until all elements are delivered (a few exceptions; paragraph 12)
	If the SOP is not revised during the one-year deferral period, acceptable vendor-specific objective evidence is limited to: <ul style="list-style-type: none"> <li>• The price charged when sold separately, or</li> <li>• If not yet being sold, the price set by management (must be <i>probable</i>)</li> </ul>
	Contractually stated prices are overridden by VSOE of fair value

<i>SOP 91-1</i>	<i>SOP 97-2</i>
<i>Multiple Elements</i>	<i>Multiple Elements</i>
	<p>Defined to include specified upgrades/enhancements, additional software products, subscriptions, postcontract customer support, service elements, rights to exchange or return software</p> <p>Provides guidance for each element type</p> <p>Defines unspecified “when-and-if-available” upgrades as postcontract customer support</p> <p>Expands circumstances that result in subscription accounting</p> <p>If multiple elements include rights to unspecified products (rather than upgrades/enhancements), use subscription accounting</p>
<i>Postcontract Customer Support (PCS)</i>	<i>Postcontract Customer Support (PCS)</i>
<p>May be recognized with initial licensing fee if certain criteria are met (circumstances are rare)</p> <p>If criteria not met, recognize value attributed to PCS ratably over PCS period if value is objectively determinable and collectibility is probable; if value is not objectively determinable, recognize entire fee over PCS period</p>	<p>Generally the same</p> <p>Generally the same, but stricter standards for determination of value allocable to PCS (unbundled price)</p> <p>PCS does not include specified upgrade rights or rights to additional products</p>

<i>SOP 91-1</i>	<i>SOP 97-2</i>
<i>Service Elements</i>	<i>Service Elements</i>
<p>To account for separately:</p> <ul style="list-style-type: none"> <li>• Cannot be essential to functionality of any other element</li> <li>• Must be separately stated and priced</li> </ul>	<p>Criteria for separate accounting generally the same; price need not be separately stated, but there must be expectation that price would vary without service</p> <p>Allocate fee to each service element (including installation, training, consulting), even if deemed insignificant, based on VSOE of fair value, regardless of whether separate prices are assigned in the arrangement</p>
<p>Recognized as services are performed or ratably over period of services</p>	<p>If vendor-specific evidence of fair value does not exist to allocate the fee for the service element, and the only undelivered element is services that do not involve significant production, modification, or customization of the software (e.g., installation or training), the entire arrangement fee should be recognized as the services are performed</p>
<p>Some services (e.g., installation, training) considered an insignificant obligation, leading to full revenue recognition with estimated costs of services accrued</p>	<p>Recognize as services are performed or ratably over period of services</p> <p>Additional guidance on determining if services are essential to functionality</p>

<i>SOP 91-1</i>	<i>SOP 97-2</i>
<i>Rights to Return or Exchange</i>	<i>Rights to Return or Exchange</i>
Limited guidance; refers to SFAS 48	<p>Clarifies environmental factors affecting the application of SFAS 48 and the different accounting for return rights and exchange rights</p> <p><i>Returns</i></p> <p>Apply SFAS 48; reduce revenue on initial delivery for products expected to be returned</p> <p>Returns must be reasonably estimable to allow recognition of any revenue for products sold with a return right</p> <p><i>Exchanges</i></p> <p>Recognize revenue on initial delivery</p> <p>Subsequent exchanges do not affect revenue recognition; treat as a like-kind exchange</p>
Rights to exchange or return software offered to resellers are always considered returns; like-kind exchange accounting never applies to resellers	Generally the same
Provides guidance for platform transfer rights that are exchanges	Generally the same
<i>Funded Software Development Arrangements</i>	<i>Funded Software Development Arrangements</i>
No guidance	Indicates that proceeds received in funded development arrangements should be applied against any capitalized software development costs under SFAS 86 before revenue is recorded

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<i>SOP 91-1</i>	<i>SOP 97-2</i>
<i>Contract Accounting</i>	<i>Contract Accounting</i>
Provided limited guidance—referred to SOP 81-1 for contract accounting	Basically the same guidance, with additional discussion of the use of input and output measures and the effect of core software

## CHAPTER FIVE

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# Contracts for Software Combined with Hardware or Services or Both

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### 5.1 METHODS OF CONTRACT ACCOUNTING

#### (a) Percentage-of-Completion Method and the Completed-Contract Method

Contracts for software combined with hardware or services or both, which require significant production, modification, or customization of software, should be accounted for by contract accounting, using either the percentage-of-completion method or the completed-contract method. The determination of which method to use should be guided by paragraphs 21 through 33 of Statement of Position (SOP) 81-1. The two methods are not alternatives for the same circumstances, and percentage-of-completion is generally preferable. Guidance for application of the percentage-of-completion method and the completed-contract method is provided in the American Institute of Certified Public Accountants (AICPA) audit and accounting guide *Construction Contractors*.

Within the percentage-of-completion method, revenues and costs of a contract are recognized as progress-to-completion is achieved. Paragraph 25 of SOP 81-1 provides that if a contractor can estimate contract revenues and costs, those amounts should be used in applying percentage-of-completion accounting. If the contractor can estimate contract revenues and costs only within a range and can determine the amounts that are most likely to occur, those amounts should be used. If only ranges can be estimated, but no amounts of revenues and expenses within the ranges are considered most likely, then the lowest probable profit margin should be used in accounting until better estimates can be determined. If the final outcome of a contract cannot be estimated other

than that a loss will not occur, a zero profit margin should be used to account for progress-to-completion by recording equal revenues and costs until better estimates can be determined. If that way of accounting is used, and the contractor changes from the zero-profit-margin approach when a better estimate is available, this constitutes a change in estimate.

Under the completed-contract method, revenues and costs of the contract are recognized only when the contract is completed.

### **(b) Circumstances in Which to Use the Percentage-of-Completion Method**

The percentage-of-completion method is preferable if reasonably dependable estimates can be made and all the following conditions are met.

- Contracts executed by the parties normally include provisions that clearly specify the enforceable rights regarding goods or services to be provided and received by the other parties, the consideration to be exchanged, and the manner and terms of settlement.
- The buyer can be expected to satisfy his obligations under the contract.
- The contractor can be expected to perform his contractual obligations.

—SOP 81-1, paragraph 23

Paragraph 24 of SOP 81-1 indicates that if a company has significant contracting operations, it should be presumed that the company is able to make reliable estimates, and therefore the percentage-of-completion method will generally be required. Two reasons for the presumption are that (1) making reliable estimates is an essential part of the contracting business, and that (2) reliable estimates are needed to comply with the requirement of generally accepted accounting principles to measure and record anticipated losses on uncompleted contracts. Persuasive evidence to the contrary is necessary to overcome the presumption that dependable estimates can be made by a company if contracting represents a significant portion of the company's business. The presence of business risks, hazards, or other uncertainties does not automatically overcome the presumption that reliable estimates can be made. The uncertainty caused by these factors must be so significant that there is specific, persuasive evidence to indicate that using the percentage-of-completion method is not preferable.

### **(c) Circumstances in Which to Use the Completed-Contract Method**

The completed-contract method is preferable for contracts that do not meet the criteria for use of the percentage-of-completion method, such as when dependable estimates cannot be made or when business risks, hazards, or uncertainties are so substantial that the outcome of the contract is uncertain. In addition, the completed-contract

method may be used for contracts of short duration if the results approximate the results achieved by the percentage-of-completion method.

The rest of this chapter deals with application of the percentage-of-completion method to contracts for software combined with hardware or services or both.

## **5.2 APPLICATION OF THE PERCENTAGE-OF-COMPLETION METHOD**

### **(a) Key Aspects of Applying the Percentage-of-Completion Method**

Applying the percentage-of-completion method to contracts for software combined with hardware or services or both involves a certain decision path, as illustrated in Exhibit 5.1.

The following sections discuss each of the aspects of the percentage-of-completion method shown in Exhibit 5.1 and illustrate their application to accounting for contracts for software combined with hardware or services or both.

### **(b) Segmentation**

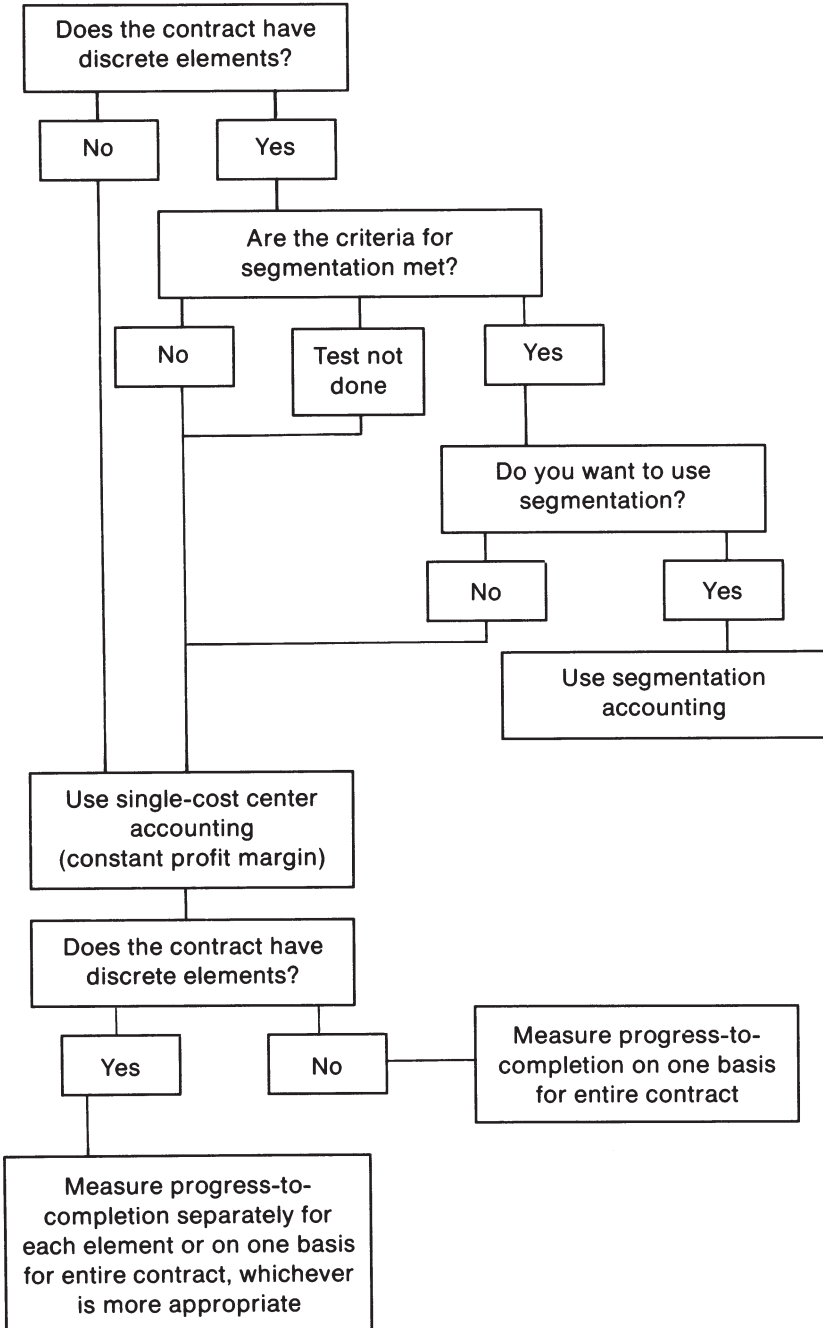
In segmentation, a contract is divided into elements, and revenues and expenses of each element are accounted for discretely by using principles of contract accounting. A gross margin is computed for each element; therefore, over the life of a contract, gross margin percentages will vary depending on the accounting periods in which revenues are recognized for each element.

In the past, some software companies have accounted for contracts for software combined with hardware or services or both, by using an accounting approach that yields a result similar to segmentation, in which they unbundled the contracts for accounting purposes. Revenue for the software element of the contracts was recognized at or near the beginning of the contract as revenue for a software license. Some of these software companies had not considered whether contract accounting applied to these transactions and had, therefore, not considered whether they met the criteria of SOP 81-1 for use of segmentation.

The AICPA Task Force believed that segmentation provided the most representationally faithful accounting for contracts for software combined with hardware or services or both, but concluded that most software companies would not meet the stringent segmentation criteria of SOP 81-1. In the initial proposed draft of SOP 91-1 provided to the Financial Accounting Standards Board (FASB) for review, the AICPA Task Force recommended modification of the segmentation criteria when applied to the software industry to enable more software companies to qualify for segmentation. However, the FASB disagreed, saying that the segmentation criteria of SOP 81-1 should be applied uniformly to all industries. SOP 97-2, paragraph 76, makes clear that for a software company to use segmentation accounting, it must meet the segmentation



**EXHIBIT 5.1** Applying the Percentage-of-Completion Method



criteria of SOP 81-1. Under SOP 81-1, a transaction can qualify for segmentation under two sets of conditions. The first is contained in paragraph 40.

A project may be segmented if all the following steps were taken and are documented and verifiable:

- a. The contractor submitted bona fide proposals on the separate components of the project and on the entire project.
- b. The customer had the right to accept the proposals on either basis.
- c. The aggregate amount of the proposals on the separate components approximated the amount of the proposal on the entire project.

Alternately, segmentation may be used if the criteria in paragraph 41 of SOP 81-1 are met.

- a. The terms and scope of the contract or project clearly call for separable phases or elements.
- b. The separable phases or elements of the project are often bid or negotiated separately.
- c. The market assigns different gross profit rates to the segments because of factors such as different levels of risk or differences in the relationship of the supply and demand for the services provided in different segments.
- d. The contractor has a significant history of providing similar services to other customers under separate contracts for each significant segment to which a profit margin higher than the overall profit margin on the project is ascribed.<sup>1</sup>
- e. The significant history with customers who have contracted for services separately is one that is relatively stable in terms of pricing policy rather than one unduly weighted by erratic pricing decisions (responding, for example, to extraordinary economic circumstances or to unique customer-contractor relationships).
- f. The excess of the sum of the prices of the separate elements over the price of the total project is clearly attributable to costs savings incident to combined performance of the contract obligations (for example, cost savings in supervision, overhead, or equipment mobilization). Unless this condition is met, segmenting a contract with a price substantially less than the sum of the prices of the separate phases or elements would be inappropriate even if the other conditions are met. Acceptable price variations should be allocated to the separate phases or elements in proportion to the prices ascribed to each.

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<sup>1</sup>In applying the criterion in paragraph 419(d), values assignable to the segments should be on the basis of the contractor's normal historical prices and terms of such services to other customers. The division considered but rejected the concept of allowing a contractor to segment on the basis of prices charged by other contractors, since it does not follow that those prices could have been obtained by a contractor who has no history in the market.

- In all other situations a substantial difference in price (whether more or less) between the separate elements and the price of the total project is evidence that the contractor has accepted different profit margins. Accordingly, segmentation is not appropriate, and the contracts should be the profit centers.
- g. The similarity of services and prices in the contract's segments and services and the prices of such services to other customers contracted separately should be documented and verifiable.

—SOP 81-1, paragraph 41

Software companies generally do not do business in the way described in paragraph 40 of SOP 81-1. As to the second set of criteria, in paragraph 41, most software companies would have difficulty in complying with subparagraphs (b), (d), and (e), partly because of the short life of the software industry in comparison with other industries. Their limited existence does not enable many software companies to demonstrate the required significant history of separately bidding, negotiating, and providing the separable phases or elements. Moreover, some software companies are contractually prohibited from selling computer hardware separately by agreements with their computer hardware suppliers, which prevents compliance with the criterion of paragraph 41(b). Most software companies are not in the business of selling hardware separately.

As provided in SOP 81-1, segmenting is an option a contractor may use if a project meets the segmentation criteria.

A project . . . with segments that have different rates of profitability *may* be segmented if it meets the criteria [emphasis added].

—SOP 81-1, paragraph 39

Accordingly, a software company may meet the criteria for segmentation, yet decide to account for its contracts as single-cost-center contracts. That will in some cases defer profitability, because a lower gross margin is recognized in connection with revenue for the software element of the contract. To demonstrate that segmentation criteria have been met may be a difficult task and, in respect to satisfying auditors and possibly the SEC, simply not worth the effort.

Some have confused segmentation with accounting for separate software and service transactions contained in a single agreement. This is evidenced by the presumption that revenue for the software element of a contract accounted for by using segmentation would be recognized as based on the delivery criteria for revenue recognition on a software license. Conceptually, it is important to note that the only distinction between segmentation and single-cost-center contract accounting is the recognition of different gross margins for each element of a contract under segmentation, whereas under single-cost-center contract accounting, a constant gross margin is recognized for all contract revenue.

Segmentation is still contract accounting, and the basis of recognition of contract revenue under segmentation is no different than for revenue of a contract with discrete

elements accounted for as a single cost center using a constant gross margin, based on progress-to-completion. Progress-to-completion is a contract accounting notion, whereas delivery of a software product is a notion related to software licenses as product sales. Although the delivery criterion applicable to software license revenue can be used as the basis for measuring progress-to-completion for the software element of a contract accounted for by segmentation, it is by no means the only basis. For example, as discussed later in this chapter, contract activities sometimes take place at the software vendor’s site rather than at the customer’s site, and progress-to-completion for the software element may occur before delivery to the customer.

Exhibit 5.2 illustrates segmentation accounting for a contract with discrete elements of off-the-shelf software, services, and computer hardware, with typical revenues, costs, and gross margins.

Revenues are recognized for each element in the accounting periods indicated in Exhibit 5.3, using appropriate measures of progress-to-completion. Applications of various measures of progress-to-completion for contract accounting in the software industry are discussed in later sections of this chapter.

(c) Single-Cost-Center Contracts

Most contracts for software combined with hardware or services or both will not meet the segmentation criteria, requiring the use of single-cost-center contract accounting. Under this method of contract accounting, the entire contract is viewed as a single cost center, establishing a link between all contract revenues and all contract costs. When each dollar of revenue is recognized, a proportionate amount of the total contract cost is recognized; therefore, each dollar of revenue recognized on the contract is accounted for at a constant gross margin.

For example, assume the facts in the illustration in Exhibit 5.2, but that the transaction is accounted for as a single-cost-center contract. Even though the revenues, costs, and gross profits attributed to the elements of the contract by the software company in pricing the contract bid yield different gross margins when looked at separately (off-the-shelf software, 90 percent; services, 20 percent; and hardware, 14 percent), all revenue on the contract must be burdened by cost recognition that yields the gross

**EXHIBIT 5.2** Example Contract Revenues and Costs by Element

	<i>Revenues</i>	<i>Cost</i>		<i>Gross Profit</i>	
		<i>Amount</i>	<i>Pct.</i>	<i>Amount</i>	<i>Margin</i>
Off-the-shelf software	\$ 400	\$ 40	10%	\$ 360	90%
Services	250	200	80%	50	20%
Hardware	350	300	86%	50	14%
Contract totals	<u>\$ 1,000</u>	<u>\$ 540</u>	54%	<u>\$ 460</u>	46%

**EXHIBIT 5.3** Illustration of Segmentation Accounting for a Combined Contract for Off-the-Shelf Software, Hardware, and Services

Revenues Element	Total	Accounting Period			
		1	2	3	4
Off-the-shelf software	\$400		\$400		
Hardware	350			350	
Services	250	\$50	100	\$75	\$25
<b>Total revenues</b>	<b>1,000</b>	<b>50</b>	<b>500</b>	<b>425</b>	<b>25</b>
<b>Costs</b>					
Costs incurred and recognized					
Off-the-shelf software	40		40		
Hardware	300			300	
Services	200	40	80	60	20
<b>Costs incurred and recognized</b>	<b>540</b>	<b>40</b>	<b>120</b>	<b>360</b>	<b>20</b>
<b>Gross profit reported</b>	<b>\$460</b>	<b>\$10</b>	<b>\$380</b>	<b>\$65</b>	<b>\$5</b>
<b>Gross profit margin</b>	<b>46%</b>	<b>20%</b>	<b>76%</b>	<b>15%</b>	<b>20%</b>

margin for the entire project (46 percent). Because the timing of costs incurred will not match the timing of costs to be recognized as expenses in the income statement, adjusting cost accruals and reversals must be recognized in order to maintain the constant gross margin.

Those who believe that single-cost-center contract accounting in the software industry does not yield a sensible result view the reporting of gross profits that way as distorted. Significant profits may be reported in periods that include progress-to-completion for the hardware element of the contract. Software companies that are not hardware manufacturers generally contemplate a small gross margin on the hardware element of a contract in relation to other elements of a contract, and higher gross margins on the off-the-shelf software element of a contract.

The elements of contracts in the software industry are different from those of most contracts contemplated when SOP 81-1 was written, in that the software and hardware elements usually contribute vastly different gross margins to the contract. The software gross margins are quite high and the hardware gross margins are comparatively low. The AICPA Task Force believed that these circumstances, which were essentially unique to the software industry, justified fresh consideration of how to approach some aspects of contract accounting for the software industry. The Task Force was concerned about the inability of single-cost-center contract accounting to provide a rational gross profit and representation of the earnings process by accounting period in relation to progress-to-completion on the individual elements. This concern led to the AICPA Task Force recommendation, which was rejected by the FASB, for modification of the segmentation criteria for software companies.

#### **(d) Measuring Progress-to-Completion**

Measures of progress-to-completion can be divided into two major categories: input measures and output measures. Input measures define progress in terms of efforts expended (such as the percentage of total-contract labor hours incurred) or costs incurred within a particular contract. Output measures define progress based on results achieved. Milestones and value-added measures, the two output measures mentioned in SOP 81-1, are the most applicable to the software industry. Input measures have been used predominantly in contract accounting over the years because they are more easily verifiable than output measures. They are suitable for measuring progress-to-completion in the construction industry and other industries in which contract accounting has been most common.

Measuring progress-to-completion solely on an input basis may not be appropriate for some contracts in the software industry, because the earnings process on a contract attributable to preexisting software is not adequately measured by input measures because of the low cost of software charged as expense to a given project. As a result, it is more likely in the software industry that different measures of progress-to-completion should be considered for different elements of a contract. However, it is important that similar methods be used to measure progress-to-completion on similar elements.

The following sections discuss application of various input and output measures to contracts for software combined with hardware or services or both.

#### **(e) Cost-to-Cost Measures of Progress-to-Completion**

Under the cost-to-cost convention of measuring progress-to-completion, contract costs incurred are reported as expenses of the period and used as the basis for computing revenue earned on the contract by adding the constant profit margin to the costs incurred. Revenue to be recognized is computed by multiplying total contract (or element) revenue by the ratio of contract (or element) costs incurred to total estimated contract (or element) costs. The following equation illustrates this computation for the entire contract described in Exhibit 5.3.

$$\frac{\text{Total contract costs (\$540)}}{\text{Total contract cost percentage (.54)}} = \$1,000 \text{ (Total contract revenues)}$$

SOP 81-1 provides a series of guidelines for determining when costs incurred should not be included in the measure of progress-to-completion. In such circumstances, costs should be deferred until the activity or process associated with the cost has progressed sufficiently. Specific instances are cited in SOP 81-1, recommending that costs should not be included when

- The costs incurred are not representative of progress-to-completion because of inefficiencies or other factors.
- Disproportionate costs are incurred in the early stages of a project, such as costs of uninstalled materials not specifically produced or fabricated for the project.
- Payments have been made that are related to subcontracts that have not been performed.

Paragraph 50 of SOP 81-1 gives an example of costs incurred that should be excluded from measuring progress-to-completion: costs of materials not unique to a project, purchased or accumulated at job sites, that have not been physically installed. Although this example, typical of SOP 81-1, generally relates to the construction industry, software companies using cost-to-cost measures should consider comparable situations in determining when to include costs incurred in measuring progress-to-completion.

Exhibit 5.4 is an illustration of how the contract described in Exhibit 5.2 would be accounted for as a single cost center in using cost-to-cost measures for the entire contract.

If cost-to-cost measures are used for the entire contract, \$307 of the total contract gross profit of \$460 is reported in the period in which the cost of the hardware is incurred. As previously discussed, most software companies would attribute a minor portion of the earnings process on a contract to having incurred the hardware cost, making the result of using cost-to-cost measures for an entire contract of this nature not representative of the timing of the earnings process.

#### (f) **Input Hours-to-Hours Measures of Progress-to-Completion**

Under the hours-to-hours convention of measuring progress, the proportion of total contract hours incurred is used to measure progress. The input cost-to-cost convention does not require the use of contract cost accruals and credits to maintain the constant gross margin, because costs incurred drive the revenue amount. Yet, if input hours-to-hours measures are used, such cost accruals and reversals may be necessary to maintain the constant gross margin. Using the illustration in Exhibit 5.2, assume that service hours are incurred on the contract as follows.

**EXHIBIT 5.4** Illustration of Accounting for a Contract as a Single Cost Center  
Measuring Progress-to-Completion on an Input Cost-to-Cost Basis

	Total	Accounting Period			
		1	2	3	4
Total revenues	<u>\$1,000</u>	<u>\$74</u>	<u>\$222</u>	<u>\$667</u>	<u>\$37</u>
Costs incurred and recognized					
Off-the-shelf software	40		40		
Hardware	300			300	
Services	<u>200</u>	<u>40</u>	<u>80</u>	<u>60</u>	<u>20</u>
Total	<u>540</u>	<u>40</u>	<u>120</u>	<u>360</u>	<u>20</u>
Gross profit reported	<u>\$460</u>	<u>\$34</u>	<u>\$102</u>	<u>\$307</u>	<u>\$17</u>
Gross profit margin	<u>46%</u>	<u>46%</u>	<u>46%</u>	<u>46%</u>	<u>46%</u>

Computations of Revenue Amounts

Costs incurred to beginning of period	\$	\$ 40	\$160	\$520
Costs incurred in period	<u>40</u>	<u>120</u>	<u>360</u>	<u>20</u>
Costs incurred to end of period	<u>\$40</u>	<u>\$160</u>	<u>\$520</u>	<u>\$540</u>
Percentage of total contract costs (\$540) incurred	<u>7.41%</u>	<u>29.63%</u>	<u>96.30%</u>	<u>100.00%</u>
Percentage of total contract costs incurred, multiplied by total contract revenue (\$1,000)	\$74	\$296	\$963	\$1,000
Cumulative revenue recognized to beginning of period		74	296	963
Revenue for period	<u>\$74</u>	<u>\$222</u>	<u>\$667</u>	<u>\$37</u>



	Number of Hours Incurred
Period 1	500
Period 2	1,000
Period 3	750
Period 4	250
	<u>2,500</u>

Exhibit 5.5 illustrates how the contract would be accounted for if input hours-to-hours measures were used for the entire contract.

The use of input hours-to-hours measures with a constant gross margin for the entire contract seems to provide a more sensible result than the input cost-to-cost measures illustrated in Exhibit 5.4. This will usually be the case if the expenditure of hours on a project is a reasonable measure of total contract activities. The use of input hours-to-hours is applicable particularly in labor-intensive projects such as the customization of core software. Moreover, input hours-to-hours will be a more sensible measure than input cost-to-cost if a single item, such as hardware, has a high cost in relation to other project costs. The next section discusses and illustrates a somewhat more sophisticated application of measures of progress-to-completion, in which different measures are used for different elements.

### (g) Output Value-Added Measures

In most industries, reasonable contract accounting results can be achieved with traditional input cost-to-cost or hours-to-hours measures of progress-to-completion. In the software industry, however, in many contracts for software combined with hardware or services or both, the software is the most important item being provided, but input measures do not provide a sound basis for measuring progress-to-completion for the software element. If input measures are used, the revenue properly assignable to the software element is essentially spread over the revenue recognition driven entirely by the other elements of the contract, SOP 81-1 provides for the use of output measures of progress-to-completion, which is available to rectify this problem, but there has not been much use of output measures in practice, and little guidance has been provided on the use of output measures.

The software industry is one industry in which output measures have substantial applicability in obtaining sensible measures of progress-to-completion. SOP 97-2 recognizes that output measures provide a better approximation of progress than input measures, but that they may be less reliable because they are more difficult to establish and measure. In order to use output measures for determining progress-to-completion, they must be known or reasonably estimable, and verifiable. Value-added output measures are applied by determining the portion of the revenue of the entire contract that is attributable to software, and by recognizing that revenue when appropriate criteria have been met for measuring progress-to-completion.

**EXHIBIT 5.5** Illustration of Accounting for a Contract as a Single Cost Center  
Measuring Progress-to-Completion on an Input Hours-to-Hours Basis

	Accounting Period				
	Total	1	2	3	4
Total revenues	<u>\$1,000</u>	<u>\$200</u>	<u>\$400</u>	<u>\$300</u>	<u>\$100</u>
Costs incurred					
Off-the-shelf software	40		40		
Hardware	300			300	
Services	<u>200</u>	<u>40</u>	<u>80</u>	<u>60</u>	<u>20</u>
Total	<u>540</u>	<u>40</u>	<u>120</u>	<u>360</u>	<u>20</u>
Contract cost accruals and credits					
Accruals		68	96		34
Credits				(198)	
Costs recognized	<u>540</u>	<u>108</u>	<u>216</u>	<u>162</u>	<u>54</u>
Gross profit reported	<u>\$460</u>	<u>\$92</u>	<u>\$184</u>	<u>\$138</u>	<u>\$46</u>
Gross profit margin	<u>46%</u>	<u>46%</u>	<u>46%</u>	<u>46%</u>	<u>46%</u>

Computations of Revenue Amounts

Hours incurred to beginning of period		500	1,500	2,250
Hours incurred in period	500	<u>1,000</u>	<u>750</u>	<u>250</u>
Hours incurred to end of period	<u>500</u>	<u>1,500</u>	<u>2,250</u>	<u>2,500</u>
Percentage of total contract hours (2,500) incurred	<u>20.00%</u>	<u>60.00%</u>	<u>90.00%</u>	<u>100.00%</u>
Percentage of total contract hours incurred, multiplied by total contract revenue (\$1,000)	\$200	\$600	\$900	\$1,000
Cumulative revenue recognized to beginning of period		200	600	900
Revenue for period		<u>\$200</u>	<u>\$400</u>	<u>\$300</u>

In various paragraphs of SOP 97-2, there are references to measuring progress-to-completion on contracts for the software element upon delivery or installation. Although such events can be used for measuring progress, the place of occurrence need not be the customer's site. Depending on the circumstances, progress may be determined to have occurred at the software company's site. Paragraph 84 makes this clear in the discussion of input measures.

If the measurement of progress-to-completion is based primarily on costs, the contribution to that progress of hardware and software that were produced specifically for the arrangement may be measurable and recognizable before delivery to the user's site. For example, efforts to install, configure, and customize the software may occur at the vendor's site. The costs of such activities are measurable and recognizable at the time the activities are performed.

—SOP 97-2, paragraph 84

This notion is not an invention of SOP 97-2—it goes back to the roots of contract accounting as described in Accounting Research Bulletin (ARB) No. 45, *Long-Term Construction-Type Contracts*.

While such contracts are generally carried on at the job site, the bulletin would also be applicable in appropriate cases to the manufacturing or building of special items on a contract basis in a contractor's own plant.

—ARB No. 45, paragraph 1

Accordingly, the determination of a software company's practices for measuring progress-to-completion should be approached broadly. Instead of a concern with delivery to the customer's site, there should be a perception of achievement of progress on the contract whether it occurs at the software company's site or at the customer's site.

The use of value-added output measures, as described in SOP 97-2, paragraphs 87 and 88, relate to recognition of the value of preexisting software provided to the customer as part of the contract. This approach is considered appropriate only for off-the-shelf software and hardware, which have separate exchange value. Off-the-shelf software is defined in the glossary of SOP 97-2 as follows.

Off-the-shelf software [is] software marketed as a stock item that customers can use with little or no customization.

If off-the-shelf software does not need more than minor modifications and it is usable by the customer for the customer's purpose in the customer's environment, the value added by the software may be included in the measurement of progress-to-completion. If the software requires more than minor modifications or additions, it should be accounted for as core software which is defined in SOP 97-2 as follows.

Core software [is] an inventory of software that vendors use in creating other software. Core software is not delivered as is because customers cannot use it unless it is customized to meet system objectives or customer specification.

—SOP 97-2, *Glossary*

Again referring to the illustrative contract in Exhibit 5.2, the use of output value-added measures would result in revenue reported in the periods indicated in Exhibit 5.6. In the case of single-cost-center contracts, if input measures are used, little or no revenue is effectively derived that could be identified with the off-the-shelf software element. Exhibit 5.6 illustrates how for single-cost-center contracts, output measures provide a more meaningful revenue amount to allocate to the off-the-shelf software element.

The illustration in Exhibit 5.6 yields results that many believe are the most sensible for contracts of this type if segmentation cannot be used. The following discussions should be carefully considered, however, if a software company wishes to apply this contract accounting approach.

Output measures can be applied to elements of a contract other than software. For example, output measures may be used to value revenue for the hardware element, or even for establishing the value of a labor-intensive element of a contract. The use of an output measure for a labor-intensive element would tend to delay revenue recognition, as compared with the timing of revenue recognition when using labor input measures. Therefore, most software companies would probably prefer to limit the use of output measures to software elements and, in some cases, hardware elements.

The approach of using value-added output measures in application of “as is” software to a contract is relevant only to off-the-shelf software, as opposed to core software. A software company should be able to demonstrate that the off-the-shelf software has been and is being licensed separately to customers for their use without modification, in transactions that do not include the services and other elements contained in the contracts for software combined with hardware or services or both.

Another key aspect of applying value-added output measures is the determination of when to recognize progress-to-completion for the software element, which results in recognition of the software revenue. Delivery to the client can be used as the measure of progress. In many of these contracts, however, the software is not delivered to the client, or is not intended for use by the client until the end of the project, because the project services must be performed first. If a copy of the software is delivered to the client but not used by the client, and another copy is retained by the software company for the project work, then in the absence of other compelling circumstances, it is unlikely that progress on the project has been made as a result of the delivery of the copy to the client.

The software is sometimes retained by the software company at its site and used in, or “applied to,” the contract. This represents progress as a result of the value added to the contract. A precise meaning of *application of the software to a contract* is not provided in SOP 97-2. The AICPA Task Force wanted to set the broad principle and

**EXHIBIT 5.6** Illustration of Accounting for a Contract as a Single Cost Center, Using Output Value-Added Measures for Off-the-Shelf Software, Input Cost-to-Cost Measures for Hardware, and Input Hours-to-Hours Measures for Services

Revenues Element	Accounting Period			
	1	2	3	4
<b>Total</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Off-the-shelf software		\$400	\$350	
Hardware		100	75	25
Services	50			
<b>Total revenue</b>	<b>50</b>	<b>500</b>	<b>425</b>	<b>25</b>
<b>Costs</b>				
Costs incurred		40		
Off-the-shelf software			300	
Hardware		80	60	20
Services	40			
<b>Costs incurred</b>	<b>40</b>	<b>120</b>	<b>360</b>	<b>20</b>
<b>Contract cost accruals and credits</b>				
Accruals		216		
Credits	(13)	(66)	(131)	(7)
<b>Costs recognized</b>	<b>540</b>	<b>270</b>	<b>230</b>	<b>14</b>
<b>Gross profit reported</b>	<b>\$460</b>	<b>\$230</b>	<b>\$196</b>	<b>\$12</b>
<b>Gross profit margin</b>	<b>46%</b>	<b>46%</b>	<b>46%</b>	<b>46%</b>

Computations of Revenue Amounts

Off-the-shelf software, based on output value added to the contract on application of the software to the contract							
				\$400			
Hardware, based on input cost-to-cost measures							\$300
Costs incurred to beginning of period				\$ 0	\$300	\$300	
Costs incurred in period				.00%	100.00%	100.00%	
Costs incurred to end of period							
Percentage of total hardware costs (\$300) incurred							
Percentage of total hardware costs incurred, multiplied by total hardware element revenue (\$350)					\$350	\$350	
Cumulative revenue recognized to beginning of period					0	350	
Revenue for period				\$0	\$350	\$0	
Services, based on input hours-to-hours measures							
Hours incurred to beginning of period				500	1,500	2,250	
Hours incurred in period				1,000	750	250	
Hours incurred to end of period				500	2,250	2,500	
Percentage of total contract hours (2,500) incurred				20.00%	90.00%	100.00%	
Percentage of total contract hours incurred, multiplied by total service element revenue (\$250)				\$50	\$225	\$250	
Cumulative revenue recognized to beginning of period					150	225	
Revenue for period				\$50	\$75	\$25	

allow guidelines to develop in practice, based on facts and circumstances. It is clear, however, that it was intended that application of the software to the contract, in order to trigger the recognition of the software revenue, would have to consist of the software being used in a substantive or significant way so that it had clearly become part of the work product of the contract.

Thus, it would not be appropriate to recognize software revenue at the beginning of a project upon producing and giving a copy of the software to the project manager for use on the project, even if the project manager then sets up the software in a separate work space for the client and begins some initial use of the software.

It has been suggested that an appropriate level of use on the project could be established by some quantitative measure of use of the software on the project—for example, a man-week, a man-month, or 5 percent or 10 percent of the project hours. In its initial work with SOP 91-1 in practice, however, the SEC has expressed a preference that the measure of application be event-based—that a software company be able to demonstrate evidence of progress on the project using the software.

#### **(h) Output Value-Added Measures for Core Software**

Paragraph 88 of SOP 97-2 permits the use of output value-added measures for core software, with progress measured on an output value-added basis when the software development work is complete.

Value added by the customization of core software generally should be measured on completion of the customization and installation at the user's site. However, if the installation and customization processes are divided into separate output modules, the value of core software associated with the customization of a module should be included in the measurement of progress-to-completion when that module is completed.

The value to be recognized would consist of the value added to the software by the customization work, as well as a factor for value of the core software prior to the customization work. The value of the core software can be broken down into its constituent modules if there is a basis for such a breakdown.

#### **(i) Separately Enforceable Obligation for Software Accounted for Using Value-Added Output Measures and Other Implementation Questions**

The SEC has required that in order for a software company to use the output value-added accounting, the customer must be separately liable for the software, even if the software company fails to complete the services and other elements of the contract. The view that there should be a separate obligation for the software is partly based on concern that the software company could provide the off-the-shelf software, recognize the related revenue, and then fail to complete the services (or otherwise complete

the contract) and be unable to collect the revenue that was recorded for the software element.

### (j) Income Determination: Revenue Elements

(i) **General.** Determining the amount of contract revenue to use in the percentage-of-completion calculation can sometimes be an involved process. Among the factors that must be considered are the basic contract price, contract options, change orders, claims, penalties, and incentives. All these factors must be continually evaluated during performance of the contract to estimate the total revenue to be used in the calculation.

(ii) **Change Orders.** *Change orders* are modifications of an original contract that effectively change the provisions of the contract without adding new provisions. They generally include such items as changes in specifications or design, method or manner of performance, or period for completion of the work. The change orders may include changes to the contract price, or may specify the changes to the work, with the price change to be determined later. The change order may be initiated by customers, because they have determined that their needs are different than originally thought, or by the software company, because of unanticipated conditions or difficulties in performance.

If a change order has been approved by both parties as to the scope of work and price, contract revenues and costs should be adjusted accordingly. Unpriced change orders on contracts accounted for under the percentage-of-completion method should be accounted for as follows:

1. Costs attributable to unpriced change orders should be included as costs of contract performance in the period in which the costs are incurred if it is not probable that the costs will be recovered through a change in the contract price.
2. If it is probable that the costs will be recovered through a change in the contract price, the costs should be deferred (excluded from the costs of contract performance) until the parties have agreed on the change in contract price; or, alternatively, they should be treated as costs of contract performance in the period in which they are incurred, and contract revenue should be recognized to the extent of the costs incurred.
3. If it is probable that the contract price will be adjusted by an amount that exceeds the costs attributable to the change order and the amount of the excess can be reliably estimated, the original contract price should also be adjusted for that amount when the costs are recognized as costs of contract performance if realization is probable. However, because the substantiation of the amount of future revenue is difficult, revenue in excess of the costs attributable to unpriced change orders should be recorded only when realization is assured beyond a reasonable doubt, such as when an entity's historical experience provides such assurance or when an entity has received a bona fide pricing offer from a customer and records only the amount of the offer as revenue.



If change orders are in dispute or the scope and price have not been approved, they should be evaluated as claims, as discussed in Section 5.2(j)(iv).

**(iii) Contract Options and Additions.** Options and additions to an existing contract may be combined with the original contract, treated as a change order to the original contract, or treated as a separate contract, depending on the circumstances. The option or addition should be treated as a separate contract under the following conditions:

1. The product or service to be provided differs significantly from the product or service provided under the original contract.
2. The price of the new product or service is negotiated without regard to the original contract and involves different economic judgments.
3. The products or services to be provided under the exercised option or amendment are similar to those under the original contract, but the contract price and anticipated contract cost relationship are significantly different.

If an option or addition does not meet any of these conditions, it may be combined with the original contract if the option or addition and the original contract meet the following criteria for combined contracts:

1. They are negotiated as a package in the same economic environment with an overall profit margin objective. Options or additions executed after the original contract may be considered to have been negotiated as a package in the same economic environment only if the time period is reasonably short.
2. They constitute in essence an agreement to do a single project. A *project* for this purpose consists of development of services with different elements, phases, or units of output that are closely interrelated or interdependent in terms of their design, technology, and function or their ultimate purpose or use.
3. They require closely interrelated service activities with substantial common costs that cannot be separately identified with, or reasonably allocated to, the elements, phases, or units of output.
4. They are performed concurrently or in a continuous sequence under the same project management at the same location or at different locations in the same general vicinity.
5. They constitute in substance an agreement with a single customer.

Exercised options or additions that do not meet the criteria for treatment as separate contracts or for combination with the original contracts should be treated as change orders on the original contracts.

**(iv) Claims.** *Claims* are amounts in excess of the agreed-upon contract price (or amounts not included in the original contract price) that a contractor seeks to collect from customers or others for customer-caused delays, errors in specifications and designs, contract terminations, change orders in dispute or unapproved as to both scope

and price, or other causes of unanticipated additional costs. Additional contract revenue related to claims can be recognized only if it is probable that the claim will result in additional contract revenue and if the amount can be reliably estimated. All of the following conditions must exist to meet these requirements:

1. The contract or other evidence provides a legal basis for the claim; or a legal opinion has been obtained stating that, under the circumstances, there is reasonable basis to support the claim.
2. Additional costs are caused by circumstances that were unforeseen at the contract date and are not the result of deficiencies in the contractor's performance.
3. Costs associated with the claim are identifiable or otherwise determinable and are reasonable in view of the work performed.
4. The evidence supporting the claim is objective and verifiable, not based on management's "feel" for the situation or on unsupported representations.

If these requirements have been met, revenue from a claim should be recorded only to the extent that costs relating to the claim have been incurred. Costs attributable to claims should be treated as costs of contract performance as incurred.

Some companies, however, do not record revenues from claims until the amounts have been received or awarded. Such a practice is acceptable, provided that the amounts involved (if material) are disclosed in the financial statements.

If these requirements are not met or if the requirements are met but the claim exceeds the recorded contract costs, that should be treated as a contingent asset in accordance with paragraph 17 of FASB Statement No. 5, *Accounting for Contingencies*.

### (k) Revised Estimates

If revisions to the estimates of costs, profits, or progress-to-completion occur, they should be accounted for in accordance with APB Opinion No. 20, *Accounting Changes*, that is, the effect of the change should be recognized in the period that the change occurs.

## 5.3 PRECONTRACT COSTS

*Precontract costs* are costs incurred in anticipation of future contracts which have not yet been obtained. These costs may consist of the following:

1. Costs of mobilization or other services incurred on the basis of commitments or other indications of interest in negotiating a contract, which are related to a specific contract and will result in no future benefit unless the contract is obtained.
2. Costs of equipment, material, and supplies to be used in connection with specific anticipated contacts.

3. Learning, startup, or mobilization costs incurred for anticipated but unidentified contracts. Such costs may sometimes be incurred in connection with the performance of an existing contract or group of contracts.

Paragraph 75 of SOP 81-1 recommends the following accounting for precontract costs:

1. Costs that are incurred for a specific anticipated contract and that will result in no future benefits unless the contract is obtained should not be included in contract costs or inventory before receipt of the contract. However, such costs may be otherwise deferred, subject to evaluation of their probable recoverability, but only if the costs can be directly associated with a specific anticipated contract and if their recoverability from that contract is probable.
2. Costs incurred for assets (such as for the purchase of materials, production equipment, or supplies) that are expected to be used in connection with anticipated contracts may be deferred outside the contract costs or inventory classification if their recovery from future contract revenue or from other disposition of the assets is probable.
3. Learning or startup costs incurred in connection with existing contracts and in anticipation of follow-on or future contracts for the same goods or services should be charged to existing contracts.
4. Costs appropriately deferred in anticipation of a contract should be included in contract costs upon receipt of the anticipated contract.
5. Costs related to anticipated contracts that are charged to expenses as incurred because their recovery is not considered probable should not be reinstated by a credit to income upon subsequent receipt of the contract.

There are numerous implementation issues in contract accounting within the software industry, some of which have been discussed in this chapter. These will no doubt be resolved as transactions arise and are discussed and debated by software companies, software industry organizations and advocates, standard-setting organizations, auditors, and the SEC.

## CHAPTER SIX

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# Capitalization, Amortization, and Net Realizable Value Testing of Software Costs

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### 6.1 CAPITALIZATION

#### (a) Broad Applicability of FASB Statement No. 86

Financial Accounting Standards Board (FASB) Statement No. 86, *Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed*, applies to the costs of both internally developed and produced software and purchased software to be sold, leased, or otherwise marketed. Section 6.5 discusses AICPA Statement of Position 98-1, *Accounting for the Costs of Computer Software Developed or Obtained for Internal Use*, which is applicable if the software is developed or obtained only for internal purposes.

#### (b) Software Products

Statement No. 86's accounting applies to costs of computer software products to be sold, leased, or otherwise marketed. The software products may be marketed separately or as firmware (as part of a product or process), even if the software is contained in a product having a software component that cannot function or be marketed separately from the overall product. Examples are software included in calculators and products of robotic technologies.

It is sometimes difficult to determine whether Statement No. 86 applies in some situations in which software is used to derive revenue. In particular, it can be difficult to determine whether the applicable document is Statement No. 86 or SOP 91-1. The appendix to SOP 98-1 contains numerous informative illustrations in which software would and would not be considered internal-use software. The “would nots” would be software covered by Statement No. 86. A reasonable benchmark is that software covered by Statement No. 86 is software for which customers acquire or receive the right to use. This can occur either by the customer acquiring the software directly or acquiring the product that contains the software (e.g., computer game cartridge).

Software products covered by Statement No. 86 include enhancements to covered products. Enhancements are defined as

. . . improvements to an existing product that are intended to extend the life or improve significantly the marketability of the original product. Enhancements normally require a product design and may require a redesign of all or part of the existing product.

—*FASB Statement No. 86, paragraph 52*

An issue of *FASB Highlights of Financial Reporting Issues* published in February 1986 contained unofficial FASB staff guidance on the application of FASB Statement No. 86 in a question-and-response format. In that publication, the response to question 1 provides the following additional descriptive notions about software products contemplated by Statement No. 86.

A software product is most easily defined by describing its necessary qualities. As a product, it is complete and has exchange value. As software, it is a set of programs that interact with each other. A program is further defined as a series of instructions or statements that cause a computer to do work.

As the capacity of semiconductor devices expands, it is becoming more common to see software being developed solely to be embedded in a semiconductor device or in hardware as firmware. If software is to be marketed only as firmware or as part of a broader product, all research and development activities related to the broader product must be completed prior to capitalizing any of the related firmware development costs. Paragraph 5 of Statement No. 86 states:

Software production costs for computer software that is to be used as an integral part of a product or process shall not be capitalized until both (a) technological feasibility has been established for the software and (b) all research and development activities for the other components of the product or process have been completed.

Thus, in certain situations, software development costs incurred after technological feasibility of the software has been achieved will, nevertheless, still have to be

expensed as incurred. This would occur if the R&D activities have not yet been completed on the other components of the product (e.g., hardware configuration). This accounting can also result if a software product is purchased for inclusion in a broader product. Question 13 in the February 1986 *FASB Highlights of Financial Reporting Issues*, which included the views of the FASB staff on an array of Statement No. 86 implementation questions, asked, “What factors, if any, may determine whether the cost of purchased software that will be integrated into another software or hardware product will be capitalized?” The FASB staff’s view was that the cost of purchased computer software with no alternative future use should be expensed if technological feasibility of the broader product to be marketed has not yet been established. Accordingly, those wishing to capitalize the cost of internally developed or purchased software to be included in a broader product should, to the extent possible, delay internal software development work or the purchase of software until after technological feasibility of the broader product has been established.

### (c) Computer Software Research and Development Costs

Costs incurred prior to establishing technological feasibility of a software product are research and development costs and should be charged to expense in accordance with FASB Statement No. 2, *Accounting for Research and Development Costs*. These costs include costs of planning, designing, coding, and testing that is necessary to establish that the product can be produced to meet its design specifications, including functions, features, and technical performance requirements.

The FASB used the following definition of development in defining activities that should be considered software research and development.

The translation of research findings or other knowledge into a plan or design for a new product or process or for a significant improvement to an existing product or process whether intended for sale or use. It includes the conceptual formulation, design, and testing of product alternatives, construction of prototypes, and operation of pilot plants. It does not include routine or periodic alterations to existing products, production lines, manufacturing processes, and other ongoing operations even though those alterations may represent improvements, and it does not include market research or market testing activities.

—*FASB Statement No. 2, paragraph 8*

The next paragraph of Statement No. 2 notes additional activities that should be charged to expense as software research and development activities.

Engineering activity required to advance the design of a product to the point that it meets specific functional and economic requirements and is ready for manufacture.

—*FASB Statement No. 2, paragraph 9*

Even though all other criteria for capitalization have been met, if a high-risk development issue remains, all costs incurred with regard to a software product should be charged to research and development expense. If subsequent to the establishment of technological feasibility a high-risk development issue is discovered, any development costs that were capitalized for that product, and future costs incurred until the high-risk development issue is resolved, should be charged to research and development expense. After the high-risk development issue is resolved, and provided all other conditions for capitalization are met, capitalization should resume; previously written off capitalized costs, however, remain expensed as research and development costs.

#### **(d) Determination of Technological Feasibility in General**

The criteria for determination of technological feasibility and commencement of capitalization of software development costs may vary, depending on whether the development process includes or does not include the preparation of a detail program design. The basis for determination of technological feasibility in either case is discussed in the following sections.

The determination of technological feasibility must be made for an entire software product. If a product includes more than one module and the modules are not marketable separately, the determination of technological feasibility must be made for the entire product, including all the modules, and not on a module-by-module basis.

If the criteria for capitalization are met, including technological feasibility and net realizable value, software development costs must be capitalized. A company may not elect to use an accounting policy in which it applies more stringent criteria than those set forth in Statement No. 86. For example, a software company may not elect to use the working model criteria for commencement of capitalization if it meets the detail program design criteria. However, it should be noted that in practice, many software companies do not capitalize costs after technological feasibility because such costs are determined to be immaterial.

#### **(e) Determination of Technological Feasibility If a Detail Program Design Is Used**

If the software development process includes the preparation of a detail program design, technological feasibility is determined and capitalization of software development costs begins when the criteria specified in paragraph 4 of Statement No. 86 are met (see Exhibit 6.1).

A product design is defined in Statement No. 86 as follows:

A logical representation of product functions in sufficient detail to serve as product specifications.

—FASB Statement No. 86, paragraph 52

**EXHIBIT 6.1** Criteria for Establishing Technological Feasibility If the Software Development Process Includes a Detail Program Design

1.	The product design and detail program design have been completed, and the enterprise has established that the necessary skills, hardware, and software technology are available to the enterprise to produce the product.
2.	The completeness of the detail program design and its consistency with the product design have been confirmed by documenting and tracing the detail program design to product specifications.
3.	The detail program design has been reviewed for high-risk development issues (for example, novel, unique, unproven functions and features or technological innovations), and any uncertainties related to identified high-risk development issues have been resolved through coding and testing.

A product design should include a description and objectives of the product, an explanation of how data will be input into the product (such as by on-line input or by batch processing), a description of the data and reports to be generated by the product, the major processing and data transformation definitions, data storage and data structure requirements, and a general description of the data flow and interaction of modules and transforming processes.

Statement No. 86 defines a detail program design as follows:

The detail design of a computer software product that takes product function, feature, and technical requirements to their most detailed, logical form and is ready for coding.

—FASB Statement No. 86, paragraph 52

A detail program design should describe the product function, features, and technical requirements in a detailed, logical way, ready for coding activities. The detail program design should normally include a description of the logic, file layouts, report definitions, field definitions, algorithms, special routines, and specific arrays of data. Ordinarily the combined documentation package of the product design and detail program design should be in the form of outlines, narratives, flow-charts, or a combination. The precise form of the documentation can vary widely from company to company, partly depending on the development process, the individuals involved, the maturity of the company's technology, and other factors. If new products are involved, it is generally



expected that there will be more documentation than, for example, for enhancements to establish products.

An important step in meeting these criteria is ensuring that the information in the product design and the detail program design are consistent and that the technical features and functions described in the detail program design will meet the product specification in the product design.

#### (f) Technological Feasibility If a Detail Program Design Is Not Prepared

If the development process does not include preparation of a detail program design meeting the previously described criteria, then capitalization of software development costs should begin when the criteria specified in paragraph 4 of Statement No. 86 are met (see Exhibit 6.2).

A working model is described in Statement No. 86 as follows.

An operative version of the computer software product that is completed in the same software language as the product to be ultimately marketed, performs all the major functions planned for the product, and is ready for initial customer testing (usually identified as beta testing).

—FASB Statement No. 86, paragraph 52

The term *working model* has sometimes been used to refer to a prototype with the important portions of a product written in pseudocode. Because Statement No. 86 requires that a working model be written in the same computer language as the product to be marketed, such prototypes are not working models for purposes of applying Statement No. 86.

The working model should be compared with the product design for consistency and completeness before capitalization commences.

If the working model is the basis for technological feasibility, the amount capitalized will generally be significantly less than under the detail program design approach. Most significantly, under the working model approach, much of the coding activities in creating the software product will be charged to research and development. Most

#### **EXHIBIT 6.2** Criteria for Establishing Technological Feasibility If the Software Development Process Does Not Include a Detail Program Design

1.	<b>The product design and a working model of the software product have been completed.</b>
2.	<b>The completeness of the working model and its consistency with the product design have been confirmed by testing.</b>

of the costs capitalized under the working model approach will relate to testing, bug fixing, final coding, and preparation of documentation.

### (g) Projects That Do Not Precisely Employ Either a Detail Program Design or a Working Model Approach

Sometimes software companies do not use a software development process that clearly follows a detail program design approach or a working model approach. For example, a software company may not prepare a detail program design prior to starting work on constructing a working model, but a detail program design may emerge as a by-product of the working model development. In such cases, the criteria of a detail program design are met, and capitalization should commence when the detail program design has been completed, rather than waiting to start capitalization until the working model is completed.

Once technological feasibility is established and capitalization commenced, there may be refinements to the detail program design that evolve during the development process—for example, as better ideas are discovered and minor development issues arise and are resolved. Costs of refining the detail program design and related activities not specifically contemplated in the original detail program design should be capitalized. If, however, there are substantial changes to the original detail program design that indicate that the original logic or concept of the technical features of the product was not feasible, consideration should be given to whether technological feasibility had, in fact, existed. If it is ascertained that technological feasibility was not yet established, capitalized costs should be charged to research and development. Additionally, subsequent costs incurred up to the point that the detail program design was consistent with the technical features that will be used in developing the final product also would be charged to research and development expense.

### (h) Determination of Market Feasibility

The term *market feasibility* is not used in Statement No. 86. However, it is sometimes used in practice when considering whether a new software product or an enhancement of an existing product will be accepted in the marketplace so as to generate sufficient revenues to enable the capitalized software costs to pass the net realizable value test of Statement No. 86. Statement No. 86 requires the use of a net realizable value test (discussed in more detail later in this chapter), as of each balance sheet date for all software products for which costs have been capitalized, including new products and enhancements of existing products for which sales have not yet occurred. The notion of market feasibility points out that in order to capitalize software development costs for a product or a product enhancement, in addition to determination of technological feasibility, the software company must also be able to demonstrate that the net realizable value test will be met for the costs of the product or enhancement that will be capitalized.

### (i) Aggregating the Direct Labor Component

Software development is a labor-intensive activity. Accordingly, most software companies base the accumulation of software development costs on hours incurred. Some companies have sophisticated project cost systems that are administered with time-reporting procedures by which employees submit time sheets or time cards with hours charged to individual projects. Separate job codes may be set up for a project after the criteria for capitalization have been met. Sometimes one job code is used to accumulate all the hours on a project, and hours charged to the project after the criteria for capitalization are met are isolated for computation of amounts to be capitalized.

Personnel whose hours are normally capitalized usually include programmers, systems analysts, project managers, and, in some cases, administrative personnel involved in the software development process. Most hours incurred will be directly chargeable; however, there may be some supervisory and management time that is appropriate to include in capitalized amounts. In many software companies, executive personnel are technically oriented and actively involved in the development process. In some cases it is appropriate to include a portion of their hours in software development cost accumulation on a direct charge basis, and sometimes as an overhead factor. For example, in a large software company, there may be an executive who is the company technical director, who is active in software development, managing the projects on a full-time basis. In such a company, all other executive personnel may be performing general management or other management functions, but not be directly involved in the development process. In smaller companies, all executives, including the chief executive officer, may participate in software development activities.

Although costs have been accumulated for software capitalization in diverse ways, most often software development costs are developed using direct labor as the basis. The software company tabulates the number of hours a particular employee has incurred in working on a capitalizable project, then multiplies the hours by the employee's compensation rate. Software developers frequently work more than the standard number of hours because of the time pressures involved in bringing a new product or enhancement to the marketplace. The author believes that if the number of hours worked by the software developer significantly exceeds the standard number of work hours, the hourly rate should be adjusted to the actual rate paid.

Assume that a senior programmer is paid \$62,400 per year, or \$30 per hour based on a work year of 2,080 hours. The programmer is entitled to 120 hours of vacation and 80 hours of holiday time, so that in a standard work year the programmer would work a net of 1,880 hours. The author recommends that the rate of \$30 per hour be used in valuing the hours incurred in capitalization projects. Appropriate recognition of the cost of the vacation and holiday time can be built into the fringe rate included in the overhead factor, as discussed in the following section of this chapter.

Assume, further, that the programmer actually works 2,400 hours during the year instead of 1,880 hours. The result is that essentially there are 2,600 hour attributable to the programmer's salary of \$62,400—the 2,400 hours worked, the 120 hours of vacation time, and the 80 hours of holiday time. The author would base the amount

to be capitalized on \$24 per hour (\$62,400 divided by 2,600). An extreme illustration shows why this is necessary. Assume that all 2,400 hours of the programmer's work time was spent on capitalized projects, and the company's accountants by rote priced out the time at the programmer's standard rate of \$30 per hour. The company would have capitalized a total of \$72,000 (2,400 multiplied by \$30), when it paid only \$62,400. The error would be further compounded by inclusion of a vacation and holiday factor in the fringe rate included in an overhead factor. Obviously, there must be appropriate systems to capture the information and to monitor activities to determine if or when standard rates need to be adjusted.

### (j) Overhead Rates

Overhead rates should be computed using the general approach used in inventory costing or for computing the overhead cost of self-constructed assets. The author has found it effective to develop an overhead rate to apply to capitalized direct labor, which includes the following three factors:

1. Fringe costs
2. Facilities costs (including computer usage)
3. Management and supervision costs

Fringe costs include costs for vacation, holiday time and other compensated absences (see FASB Statement No. 43, *Accounting for Compensated Absences*, for a discussion of these costs), employer payroll taxes, medical insurance, pension and other retirement contributions, and other fringe benefits. Using the example of the senior programmer discussed in the preceding section, and assuming standard hours (1,880 hours) worked, Exhibit 6.3 shows how the fringe rate would be computed, assuming the data included therein.

### (k) Other Direct Costs

The preceding two sections discussed accumulation of direct costs based on labor hours and computation of an overhead rate. In addition, capitalized costs should include other direct costs that are generally not appropriate for inclusion in an overhead rate. Examples are costs of outside consultants, purchased software to be included in the software product being developed, travel expenses, materials and supplies, and other direct costs. As shown above, costs of computer usage in development activities should be capitalized as part of overhead. Sometimes these costs can be determined by multiplying the number of hours of computer usage by the average hourly cost of operating the company's computer facility. Computer hardware depreciation should be included in capitalized costs to the extent that the computers were used in development activities. This depreciation is often included in the hourly cost of computer usage of the company's computer facility. There may also be computers outside a central computer facility that are used, sometimes exclusively, in the development process,

**EXHIBIT 6.3** Overhead Rate Computations

<u>Net Salary for Overhead Rate Computations</u>	<u>Hours</u>	<u>Pct. of Total Hours</u>
Total hours	2,080	1.000
Vacation hours	(120)	
Holiday hours	(80)	
Nonwork hours	(200)	.096
Net hours worked	<u>1,880</u>	<u>.904</u>
Total salaries (assume the company has 50 employees at an average salary of \$62,400)		\$3,120,000
Net hours worked percentage		<u>.904</u>
Net salary for overhead rate computations		<u>\$2,820,480 (A)</u>
<u>Fringe rate</u>		
Vacation and holiday time		
Total salary	\$3,120,000	
Nonwork hours percentage	<u>.096</u>	
Payroll taxes, health and life insurance, pension, and other fringe benefits		\$ 299,520
		<u>600,000</u>
Fringe rate (A)/(B)		<u>\$ 899,520 (B)</u>
		<u>.319 (C)</u>

<u>Facilities rate</u>	
Facilities and computer usage cost	\$ 500,000 (D)
Facilities rate (D)/(A)	.177 (E)

<u>Management and supervision rate</u>	
Total management and supervision salaries	\$ 300,000
Net hours worked percentage	× .904
Percentage related to capitalizable development activities	× .100
Management and supervision net salaries allocable to capitalized development activities	27,120
Fringe rate factor ( $\$27,120 \times .319$ )	8,651
Facilities factor ( $\$27,120 \times .177$ )	4,800
Management and supervision cost to be included in overhead rate	\$ 40,571 (F)

Total direct labor charged to development activities (assume the equivalent of 5 full-time programmers at net salary for overhead rate computations of \$56,400 each)	\$ 282,000 (G)
Management and supervision rate	.144 (H)

<u>Summary of overhead rate</u>	
Fringe rate	.319 (C)
Facilities rate	.177 (E)
Management and supervision rate	.144 (H)
Total overhead rate	.640

for which appropriate amounts of depreciation and other costs should be included in capitalized amounts. The specific procedures for accumulating these costs should be based on the company's internal operations and accounting systems.

Outside consultants may be engaged to perform software development activities at a software company's site. In such cases, it is appropriate to add to the consultant's fee an overhead factor for the consultant's use of the company's facilities. If this is done, however, in computing the company's facilities overhead rate, a factor for the use of facilities by outside consultants should be reflected in the determination of the facilities overhead rate to be used for employees. This can be accomplished by adding a factor for fees paid to consultants using the facilities to the net salaries in the denominator of the computation of the facilities overhead rate. The amount added should generally not be the entire amount of the consulting fees, because such fees are usually higher than net salaries paid to employees on an hourly basis. If outside consultants are engaged to work on software development projects, depending on the circumstances, it may be appropriate to include a management and supervision overhead factor if company executives supervised and participated in the consultants' work.

As for all costs, capitalization of other direct costs should not occur until technological feasibility of the product has been determined. For example, purchased software to be included as part of a product under development (which, therefore, has no alternative future use) which is acquired before technological feasibility of the entire product is determined, should be charged to research and development expense.

### **(l) Capitalization of Interest**

Software development activities are projects for which interest cost must be capitalized in accordance with the provisions of FASB Statement No. 34, *Capitalization of Interest Costs*.

### **(m) Recapitulation of Costs to Be Capitalized**

Example 6.1 illustrates the aggregation of the types of costs to be capitalized discussed in the preceding sections. Example 6.1 is based on data included in previous illustrations as if those items represented the components of capitalized software for the year of the project. Assume that the project required direct labor hours equivalent to those of two full-time programmers at the gross salary rate of \$62,400 (assumed in the illustration of overhead rate computations on Exhibit 6.3). Other assumed amounts are included in Example 6.1 for components of costs that were discussed but not illustrated numerically.

### **(n) Availability for General Market Release-Cessation of Capitalization**

Capitalization of development costs of a software product should cease when the product is available for general market release. See Example 6.1.

**EXAMPLE 6.1** Summary of Capitalized Costs for Project ABC

Direct salaries, based on hours charged (1,880 hours × 2 programmers × \$30 per hour)	\$112,800
Overhead ( $\$112,800 \times$ overhead rate of .640)	72,192
Computer usage (calculated separately from overhead rate) (400 hours at \$50 per hour)	20,000
Outside consulting fees, offsite	8,000
Outside consulting fees, onsite ( $\$10,000$ of fees plus .177 facilities overhead rate and .149 management and supervision overhead rate)	13,260
Purchased software component	10,000
Travel costs and other direct costs	5,000
Total project costs	241,252
Capitalized interest	9,000
Total capitalized costs	<u>\$250,252</u>

**(o) Enhancements**

Product enhancements are defined in Statement No. 86 as follows:

Improvements to an existing product that are intended to extend the life or improve significantly the marketability of the original product. Enhancements normally require a product design and may require a redesign of all or part of the existing product.

—FASB Statement No. 86, Paragraph 52

Bug fixes are included in maintenance costs under Statement No. 86, and should be accounted for as period costs and not capitalizable enhancements. This distinction is sometimes confused in practice.

How to account for product enhancements was one of the first significant issues on implementation of Statement No. 86. In Emerging Issues Task Force (EITF) Issue 85-35, *Transition and Implementation Issues for FASB Statement No. 86*, the EITF considered the question of how Statement No. 86 should be applied to product enhancements. In the Issue, the EITF was not asked to reach a consensus but the FASB staff provided information on how to apply Statement No. 86 to product enhancements. The FASB staff indicated that if an original product is no longer to be marketed, the net book value of the original product should be allocated to the cost of the enhancement (perhaps more appropriately called the enhanced product). The costs of the enhanced product, including costs “allocated up” from the original product are amortized over the life of the enhancement, and all costs are included in net realizable value testing of the enhancement.

If the software company develops an enhanced product and continues to market the original product, then a portion of the net book value of the original product should



be “allocated up” to the enhancement, based on a systematic and rational allocation method. It has been suggested that lines of code could be used in some way to develop a calculation of the allocation. Relative projected revenues could also be used. Various other bases have been used in practice. In certain circumstances, it may be appropriate to allocate to an enhanced product the value of a third-party development license. For example, this may be appropriate if the original product is the basis of the proprietary technology and will continue to have greater integrity and longevity than the enhancement, and if the technology in the original product may be transferred into other enhancements in the future.

Some software companies continually enhance their products to extend their life and to maintain their marketability in light of competition in the marketplace. In such cases it is impractical to “allocate up” the net book value of the product into the costs of the enhanced product and start a new amortization life every time an enhancement is completed. In these circumstances, the author recommends an “allocation down” approach, in which the cost of enhancements is added to the cost of the original product. This approach should not be used, however, if the enhancement is major and results in the release of a product that is marketed as a new product.

#### **(p) Capitalization of Funded Development Costs**

Some software companies develop software for a customer under a contract pursuant to which the customer pays some or all of the cost of development, and the software company retains the right to market the product to others. In the past, if there was a viable market for the product, software companies were able to capitalize the costs of development of the software, provided the criteria for capitalization were met, while recognizing revenue for amounts earned under the contract. The software company would recognize an appropriate amount of amortization of the software being developed as the revenues were recognized. Costs that were not capitalizable should be recognized as contract expenses.

This accounting for funded development contracts increased reported profits of software companies, in that the costs of completing the contract after determination of technological feasibility were capitalized, and yet all the contract revenue was recognized.

More recently, however, AICPA Statement of Position 97-2, *Software Revenue Recognition*, did away with this accounting for funded development arrangements. One might not think to look to a revenue recognition standard for guidance that affects the amount of software development costs that should be capitalized. However, SOP 97-2 does provide guidance on “funded software development arrangements.” SOP 97-2 requires that if software development costs are being capitalized pursuant to Statement No. 86, any income realized from development arrangements must be credited first to the amount of development costs capitalized. Any remaining amounts of income must then be deferred and credited against future amounts that are capitalizable. If any deferred amount remains after the project is completed, it should be

credited to income. In essence, SOP 97-2 specifies that FASB Statement No. 68, *Research and Development Arrangements*, applies to funded development arrangements. In accounting for these arrangements, Statement No. 68 specifies that the entity must determine who is incurring the development risk. If the developer is incurring a significant amount of the development risk (usually indicated by the fact that the customer is not reimbursing the company for substantially all of the development costs) then it is a funded development arrangement. In such an arrangement, the amounts received from the customer are a reduction of the developer's costs (either research and development, if prior to technological feasibility or capitalized software costs if after technological feasibility).

## 6.2 AMORTIZATION

### (a) Amortization in General

Statement No. 86 requires amortization of capitalized software costs for both internally developed and purchased software. Amortization should commence when capitalization ceases upon the availability of the product for general market release. Amortization should begin when a product is available for general market release, even if the software company decides to delay market release because of its competitive situation or other factors.

Amortization must be computed on a product-by-product basis using the greater of straight-line amortization or revenue-based amortization. Because amortization is computed on a product-by-product basis, within a particular period some products may be amortized by using straight-line amortization and others by revenue-based amortization. Straight-line amortization may be used for a particular product in one period, and revenue-based amortization in another, depending on the level of revenue realized in each period.

### (b) Straight-Line Amortization

Straight-line amortization should be computed by dividing the net book value of a product at the beginning of a period by the product's remaining useful life at the beginning of the period. Statement No. 86 does not provide any guidance on lives to be used for straight-line amortization. Based on industry practice and SEC views, however, lives in the range of three to seven years are the norm. The SEC has, in fact, indicated that it may challenge lives longer than five years for personal computer-based software and longer than seven years for other software. If the estimate of useful life of a software product changes from the life originally used in computing further amortization, the new estimated useful life should be used in computing future amortization (a change in estimate). However, the convention of using the most current estimate of useful life should not be employed to unduly extend the amortization period of a software product.

**(c) Revenue-Based Amortization**

The computation of revenue-based amortization is based on the percentage of current-period gross revenues for the product to the total of current period and estimated future gross revenues for the product. Estimated future gross revenue streams should be based on management's most realistic prediction of future revenues for the software product. Each year, actual revenues should be compared with revenues projected in the past, and present predictions should be compared with revenue levels and trends in the past few years to determine whether they are reasonable.

Statement No. 86 does not specify how many years into the future the revenue stream should be projected in computing revenue-based amortization. The author believes that it is appropriate to use projected revenues only for the remaining useful life used for straight-line amortization, even if the software company believes the revenue stream will continue further.

The projected gross revenue stream for revenue-based amortization should be consistent with the projected revenue stream used in the net realizable value test, discussed later in this chapter.

Because in practice many revenue projections for the net realizable value test and amortization take the shape of a bell curve, amortization is typically determined on a straight-line basis, rather than a revenue basis. Projected revenue curves tend to grow from the initial year leading to the straight-line minimum in initial periods, and straight-line and revenue-based amortization are generally similar in later periods.

**(d) Combined Work Sheet for Straight-Line and Revenue-Based Amortization**

Exhibit 6.4 gives an example of a work sheet for computing straight-line and revenue-based amortization on a product-by-product basis, and determining the company's amortization expense for the year.

**(e) Amortization of Enhanced Products**

If a software company has developed an enhanced product, and the net book value of the original product has been fully "allocated up" to the enhancement, the estimated life of the enhancement is used to compute straight-line amortization of the net book value "allocated up," as well as the capitalized cost of the enhancement.

If only a portion of the net book value of an original product was "allocated up," straight-line amortization of the portion of the net book value left with the original product continues to be based on the estimated life of the original product. Straight-line amortization of the portion of the original product's net book value that was "allocated up" to the enhancement and the capitalized cost of the enhancement is computed based on the life of the enhancement.

If a company's software products are continually enhanced, and the company follows the convention of adding the cost of the enhancement to the cost of the original products, the company may continue to use the life of the original product to compute

	<b>EXHIBIT 6.4</b> Amortization			
	<u>Product A</u>	<u>Product B</u>	<u>Product C</u>	<u>Total</u>
Capitalized cost at beginning of Year 1	<u>\$250,000</u>	<u>\$150,000</u>	<u>\$400,000</u>	<u>\$800,000</u>
Remaining useful life (in years) at beginning of Year 1	<u>4</u>	<u>5</u>	<u>3</u>	
Straight-line amortization	<u>\$ 62,500</u>	<u>\$ 30,000</u>	<u>\$133,333</u>	<u>\$225,833</u>
Actual gross revenue Year 1	\$150,000	\$ 40,000	\$200,000	
Projected gross revenue				
Year 2	200,000	65,000	150,000	
Year 3	250,000	85,000	100,000	
Year 4	175,000	110,000		
Year 5		90,000		
Total gross revenue	<u>\$775,000</u>	<u>\$390,000</u>	<u>\$450,000</u>	
Percentage of Year 1 gross revenue to total gross revenue	<u>19.35%</u>	<u>10.26%</u>	<u>44.44%</u>	
Revenue-based amortization	<u>\$ 48,387</u>	<u>\$ 15,385</u>	<u>\$177,778</u>	
Greater of straight-line or revenue-based amortization	<u>\$ 62,500</u>	<u>\$ 30,000</u>	<u>\$177,778</u>	<u>\$270,278</u>

straight-line amortization of both the net book value of the original product and the enhancements. If the enhancements continually extend the useful life of the product, and the costs of the enhancements are sufficiently significant that amortizing them over the life of the original product would distort amortization expense, the author recommends an alternative convention seen in practice. Using this convention, straight-line amortization of the original product continues to be computed over the original product's estimated useful life, and straight-line amortization of the enhancements is computed using the same life as that used for the original product, but starting with the year in which the enhancements were completed. In such situations, the software company might be justified in "allocating up" all net book value each year and starting the original estimated useful life over again each year. By using this "vintage account" approach, the software company does not have to go through the "allocation

up” approach each year, and is, furthermore, probably amortizing its capitalized software somewhat more quickly than if it had selected the “allocation up” approach. Clearly, though, the company must carefully reassess the useful life of the product each period to ensure that the amortization is not being unduly extended.

#### (f) Reporting Amortization in Interim Periods

Some companies allocate amortization to interim periods in a practical way, by computing the estimated total amortization for the year and recognizing the total amount on a straight-line basis throughout the year. However, if revenue levels vary substantially from quarter to quarter and amortization amounts are significant, it may be necessary to allocate more precisely the annual estimated amortization to quarters, based on the amount of revenues for each quarter in relation to estimated annual revenues. In essence, this would mean performing the computation of Exhibit 6.4 on a quarterly basis.

### 6.3 NET REALIZABLE VALUE TESTING

#### (a) Net Realizable Value Testing in General

Paragraph 10 of Statement No. 86 requires an evaluation of net realizable value of capitalized costs of computer software on a product-by-product basis, at each balance sheet date. Net realizable value of a product is defined as

the estimated future gross revenues from that product reduced by the estimated future costs of completing and disposing of that product, including the costs of performing maintenance and customer support to satisfy the enterprise’s responsibility set forth at the time of sale.

*—FASB Statement No. 86, paragraph 10*

A software product should be written down to net realizable value if its net book value exceeds its net realizable value. The net realizable value then becomes the new cost of the software product—the writedown is not reversed even if future net realizable value tests indicate net realizable value in excess of net book value for the software product.

The net realizable value test should be applied to all software products for which costs have been capitalized, including those that are under development.

The net realizable value test of Statement No. 86 is, in substance, an impairment test. To address the broader implications of impairment of long-lived assets, the FASB issued Statement No. 121, *Accounting for the Impairment of Long-lived Assets and for Long-lived Assets to be Disposed of*, in March 1995. That standard does not apply to the capitalized costs of software that is sold, leased, or otherwise marketed, (*i.e.*, costs capitalized pursuant to Statement No. 86). One of Statement No. 86’s prescribed

amortization methodologies—that based on revenue (see Section 6.2(c))—effectively has a built-in impairment provision and because the net realizable value test is an additional test of impairment. Take, for example, a software product that was expected to generate revenue over the next three years. Assume that the market unexpectedly moved totally to a recently introduced competing product. As a result, no future revenues are now expected for the product that had produced revenues of, say \$500,000 early in the current fiscal period. The revenue-based amortization would be computed as being equal to the percentage of current period gross revenue (\$500,000) to the total of current period and estimated future gross revenues (also \$500,000), or 100 percent. Thus, application of this amortization methodology results in fully amortizing the remaining carrying amount for the development costs.

The following sections discuss specific aspects of implementing the net realizable value test.

### **(b) Estimating the Future Revenue Stream**

Estimating the future revenue stream for a software product can be subjective, as can be other aspects of the net realizable value test. The estimate of the future revenue stream should take into consideration the size of the overall market for the product and the share of the market the company expects to realize, pricing, competitive products, effects of expected technological advances, the effects of hardware developments, and any other factors that could have an impact on future revenues. Projected future revenue trends should be viewed in light of historical trends for the product and for similar products.

The period for which future revenues should be projected is not addressed in Statement No. 86. The author believes it is generally appropriate to include in the net realizable value test, projections of revenues for only the period remaining on the straight-line useful life of the software product.

The projected future revenues of a software product for the remaining period of its straight-line useful life could show one of several different patterns of trend lines. In many situations, the trend line might take the shape of a bell curve, with increasing revenues for several years, reaching a peak, followed by declining revenues. A mature product at or near market saturation could show a declining revenue trend line for the entire projection. A product that is not near market saturation could show an increasing revenue trend line for the entire period covered by the projection.

### **(c) Estimating Costs of Disposal and Costs to Complete**

Cost of disposal should include production costs (i.e., duplication and packaging), which are usually minor, and distribution costs. Distribution costs should consist of variable marketing costs, such as advertising and sales commissions, and shipping costs. Of course, with more products distributed by e-mail or downloaded from the Internet, the costs of shipping may be minimal as well. Costs of completing the product should also cover the cost of any postcontract customer support, including

development of enhancements, that the software company is obligated to incur other than those derived from future postcontract customer support contracts.

**(d) Effects of Assuming Enhancement and Not Assuming Enhancements in Revenue and Cost Projections**

The question of whether to assume that a software company will enhance a software product gives rise to an interesting exercise in logic related to the net realizable value test.

Computation of a net realizable value test could assume that a software company continues to market an existing product, without enhancement. A logical implication may be a projected trend that includes at some point declining revenue, because if software products are not enhanced, they often will not continue market penetration or maintain market share. If a software company does not expect to enhance a product, the net realizable value test can be based on a revenue trend projected on the basis of expected market performance of the existing product. This avoids the complexities discussed in the following paragraphs.

The net realizable value test may include projected revenues from enhanced versions of a software product. Indeed, software companies continually enhance their products, and unless a product is at the end of its life cycle, to assume that a product will not be enhanced is often unrealistic. If such an assumption is made, as discussed in the preceding paragraph, a declining revenue curve would be likely—which could create an artificial, unrealistic projection. If for any reason a software company assumes no enhancement costs in costs to complete, projected revenues used in the net realizable value should be consistent with only future revenues that would be expected if the software company were to make no enhancements and to continue to market only the existing product.

At the other end of the spectrum are situations in which software companies continually enhance existing products year after year, and expect to continue to do so, resulting in continually increasing revenue trends. Depending on the circumstances, this could also be a somewhat unrealistic way to approach the net realizable value test. This test is intended to evaluate the recoverability of the net book value of an existing product. At some point in the future, continual year-after-year enhancement, perhaps at aggregate costs far exceeding the current net book value of the product being evaluated, results in attributing revenues to the revenue stream that are too far removed from the current product to be realistically included in the net realizable value test. Furthermore, it seems appropriate to conclude that at some time the future product will be enhanced to the point that it should not be considered an enhanced version of the current product for the net realizable value test.

In such circumstances, a sensible approach is to assume a normal level of enhancement for several years, after which enhancements would cease. Revenues would be projected on the basis of expectations of what would happen should the pattern of enhancement occur. Although such an approach may imply a bell curve revenue

trend, with declining revenue in the later years of the remaining straight-line life, it may be a more appropriate basis for the net realizable value test, rather than assuming an endless stream of enhancements and an ever-growing revenue trend far into the future.

Exhibit 6.5 indicates how a software company might evaluate the implications of enhancements to future revenue streams to be assumed for a net realizable value test.

In Exhibit 6.5 it is assumed that the software company selected the data in column B for use in the net realizable value test. Assume that the software company concluded that it was comfortable in projecting enhancements, its cost, and estimated revenue effects for enhancements for two years into the future, but was not comfortable in projecting enhancements further into the future, which would have the effect of creating the ever-increasing revenue stream. Further, the software company believed that the enhancements in Years 4 and 5 would probably result in a version of the product that would be enhanced so much from the current product that those enhancements and revenue streams should not be included in the net realizable value test for the current product.

The net realizable value test is rather subjective and requires the exercise of judgment. Many business and computational matters may need to be addressed in developing a logical net realizable value test with consistent assumptions and estimations of their implications.

#### **(e) Work Sheet for Net Realizable Value Testing**

Exhibit 6.6 is a suggested work sheet which can be used for a net realizable value test. Because the data used in computing amortization and the net realizable value test are so closely linked, this illustration is based on the same data in the illustration of amortization computations in Exhibit 6.4.

#### **(f) Recording a Net Realizable Value Writedown**

Net realizable value writedowns are generally recorded by increasing amortization for the period, or by a direct reduction of the cost of the software product with a resulting loss reflected in income.

#### **(g) Net Realizable Value Writedown Establishing New Cost Basis**

A writedown of a software product to net realizable value establishes a new cost basis for the product. If, subsequently, market conditions improve and projected revenue increases cause the product to have net realizable value in excess of net book value in future periods, the writedown is not reversed by increasing the net carrying value of the previous writedown that could be said to be no longer needed.



**EXHIBIT 6.5 Projected Enhancement Costs and Future Revenues**

**COLUMN A**

	Existing Product, End of Year 1	Projected Revenue
<b>Projected Total NBV, Enhancement, and Revenue Stream for Years 1 through 5</b>		
Net Book Value	\$120,000	\$ 50,000
Year 1		40,000
Year 2		20,000
Year 3		10,000
Year 4		
Year 5		
	\$120,000	\$120,000

**COLUMN B**

	Existing Product, End of Year 1	Projected Revenue
<b>NBV, Enhancement, and Revenue Stream Used for NRV Test</b>		
Net Book Value	\$120,000	\$ 50,000
Year 1		40,000
Year 2		20,000
Year 3		10,000
Year 4		
Year 5		
	\$120,000	\$120,000

**Year 2 Enhancement**

	Projected Incremental Revenue
<b>Cost of Enhancement</b>	
\$ 65,000	\$ 15,000
	25,000
	50,000
	45,000
\$ 65,000	\$135,000

**Year 2 Enhancement**

	Projected Incremental Revenue
<b>Cost of Enhancement</b>	
\$ 65,000	\$ 15,000
	25,000
	50,000
	45,000
\$ 65,000	\$135,000

Year 1  
Year 2  
Year 3  
Year 4  
Year 5

Year 1  
Year 2  
Year 3  
Year 4  
Year 5

	Year 3 Enhancement		Year 3 Enhancement	
	Cost of Enhancement	Projected Incremental Revenue	Cost of Enhancement	Projected Incremental Revenue
Year 1				
Year 2				
Year 3	\$ 60,000	20,000	\$ 60,000	20,000
Year 4		40,000		40,000
Year 5		35,000		35,000
	\$ 60,000	\$ 95,000	\$ 60,000	\$ 95,000

	Year 4 Enhancement		Year 4 Enhancement	
	Cost of Enhancement	Projected Incremental Revenue	Cost of Enhancement	Projected Incremental Revenue
Year 1				
Year 2				
Year 3				
Year 4	\$ 40,000	25,000	\$	
Year 5		40,000		
	\$ 40,000	\$ 65,000	\$ 0	\$ 0

(continued)



## EXHIBIT 6.6 Net Realizable Value Test

	<u>Product A</u>	<u>Product B</u>	<u>Product C</u>	<u>Total</u>
Net book value at beginning of Year 1	\$ 250,000	\$ 150,000	\$ 400,000	\$ 800,000
Less Year 1 amortization	(62,500)	(30,000)	(177,778)	(270,278)
	<u>\$ 187,500</u>	<u>\$ 120,000</u>	<u>\$ 222,222</u>	<u>\$ 529,722</u>
Remaining useful life (in years) at beginning of Year 1	<u>4</u>	<u>5</u>	<u>3</u>	
<u>Net realizable value</u>				
Actual gross revenue Year 1*	<u>\$ 150,000</u>	<u>\$ 40,000</u>	<u>\$ 200,000</u>	
Projected gross revenue:				
Year 2	200,000	65,000	150,000	
Year 3	250,000	85,000	100,000	
Year 4	175,000	110,000		
Year 5		90,000		
	<u>625,000</u>	<u>350,000</u>	<u>250,000</u>	
Projected distribution cost (20%)	<u>(125,000)</u>	<u>(70,000)</u>	<u>(50,000)</u>	
Projected enhancement costs	<u>(75,000)</u>	<u>(125,000)</u>	<u>—</u>	
Net realizable value	<u>\$ 425,000</u>	<u>\$ 155,000</u>	<u>\$ 180,000</u>	
Net realizable value excess (deficiency)	<u>\$ 237,500</u>	<u>\$ 35,000</u>	<u>\$ (42,222)</u>	
<u>Writedown</u>	<u>None</u>	<u>None</u>	<u>\$ (42,222)</u>	<u>\$ (42,222)</u>

\*Inclusion of actual revenue for 1, 2, or more years along with the projection of future revenue is useful data for considering the reasonableness of the future projections.

### (h) Net Realizable Value Writedowns and Capitalization of Additional Development Costs

If a software product has been subject to a net realizable value writedown, future software development costs for that product should not be capitalized, because they would create additional net book value in excess of net realizable value. If in the future, however, market conditions change and a higher net realizable value results, the software company should capitalize current period qualifying software development costs as long as the net book value of the software product does not exceed the then realizable value.

## 6.4 SOFTWARE ACQUIRED IN A PURCHASE BUSINESS COMBINATION

### (a) General

If software to be sold, leased, or otherwise marketed is acquired in a business combination accounted for by the purchase method, Accounting Principles Board (APB) Opinion No. 16, *Business Combinations*, requires that a portion of the cost of the acquisition be assigned to the software. This is based on the fundamental requirement of Opinion No. 16 that the cost of the acquisition be allocated to the assets acquired and liabilities assumed based on their fair market values.

Fair market value of software for allocating cost of an acquisition is often determined by appraisal techniques based on estimates of discounted future net cash flows expected to be realized from marketing the acquired software. If an appraisal is performed by an independent appraiser with expertise in valuation of software, substantial credibility is usually attributed to the fair market value indicated by the appraisal.

### (b) Discount Rates

Discount rates used should reflect the extent of risk believed to be associated with realization of the projected future net cash flows. Several factors specific to the software industry suggest that risks are higher than in many other industries and, consequently, the discount rates used for these computations in the software industry should be higher than those used for similar computations in many other industries. One key risk factor is that new and enhanced software products regularly provide intense competition and the rapidly increasing processing capabilities of computer hardware can cause software products that were designed for an earlier hardware generation to become obsolete. Therefore, it is sensible to use higher discount rates in computing present value of estimated future net cash flows from periods into the future. However, software might have additional value from the perspective that it will represent the core of future generations of the same product. As such, its value would include something similar to a royalty from the expected sale of incomplete research and development.

If the initial valuation of software at acquisition reflects the discounted future net cash flows, the net realizable value assessment discussed in Section 6.3 would auto-

matically be satisfied as of the acquisition date. The net realizable value amount under Statement No. 86 does not require discounting and would therefore be higher than the present value of the cash flows used in allocating cost.

### **(c) Allocation of Acquisition Cost to Incomplete Research and Development**

Part of the cost of a purchase method acquisition should be allocated to in-process software research and development. Any amounts so allocated are charged to expense by the acquirer as of the acquisition date. This is required by FASB Interpretation No. 4, *Applicability of FASB Statement No. 2 to Business Combinations Accounted for by the Purchase Method*. It is also addressed in EITF Issue No. 86-14, *Purchased Research and Development Projects in a Business Combination*.

In EITF Issue No. 86-14, the EITF focused on “incomplete” (now usually referred to as “in-process”) research and development projects acquired in a purchase method acquisition, asking whether a portion of the purchase price should be allocated to these projects and whether they should be capitalized or written off immediately. It was noted that FASB Interpretation No. 4 covers these questions, requiring an allocation of part of the purchase price to in-process projects that have value and, if there is no alternative future use, requiring immediate writeoff. While the EITF acknowledged this, it questioned the rationale for this accounting and recommended that the FASB reconsider Interpretation No. 4, which could lead to a reconsideration of that Interpretation. The issue was raised in July 1986, and in 1987 the FASB indicated that it did not favor reconsidering Interpretation No. 4 or Statement No. 2 at that time.

Issues abound as to how to value such in-process software technology. The methodology seen most often is expected net cash flows related to the remaining development effort and subsequent sales of the products.

In some acquisitions of software businesses, in-process software technology receives significant and sometimes even the largest allocation of acquisition cost. While this allocation, as all others, should be done based on objective evidence, some acquirers are pleased with an allocation that results in immediate expense for a large portion of the acquisition cost because this has the effect of reducing future amortization expense that would have resulted if more of the acquisition cost had been allocated to a software asset.

Exhibit 6.7 provides excerpts from notes to the financial statements included in SEC filings by several acquirers that have expensed large amounts of acquired incomplete research and development as part of the acquisition cost allocation.

One of the perceived abuses of current business combination accounting rules has been this practice of, when applying purchase accounting, allocating significant amounts of a purchase price to in-process research and development with no alternative future use, resulting in a charge to expense immediately while reducing goodwill and amortization expense in future periods, thereby increasing reported future earnings. There have been cases where more than 50% of a purchase price has been expensed this way. This practice of immediate writeoff has been used often, with many cases seen in the software industry.

**EXHIBIT 6.7** Excerpts from Notes to Financial Statements for Acquisition of Incomplete Research and Development

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LOTUS DEVELOPMENT CORPORATION

NOTE 11. Acquisitions and Dispositions

In December 1990, the Company acquired all outstanding shares of Samna Corporation ("Samna"), developers of word processing application software, for approximately \$65 million. The acquisition was accounted for using the purchase method. A significant portion of the purchase price was allocated to purchased research and development, resulting in a charge to the Company's operations of \$53 million in the fourth quarter of 1990. . . .

SOFTWARE PUBLISHING CORPORATION

NOTE 11. Acquisition and Divestiture:

In July 1991, the Company purchased all of the issued and outstanding shares of Precision Software Ltd. (PSL) . . .

The acquisition was accounted for using the purchase method of accounting . . . \$2,100,000 of the purchase was allocated to purchase software, \$555,000 to other intangibles and \$25,173,000 was allocated to in-process research and development of the acquired company. The amount of the purchase price allocated to purchased research and development was charged to the Company's operations in the fourth quarter of fiscal 1991 . . . .

INTEGRATED SYSTEMS, INC.

NOTE 2. Acquisition of Software Components Group, Inc.

Effective August 20, 1991, the Company acquired Software Components Group, Inc. (SCG) in exchange for . . . \$17,984,000. . . .

The amount of the purchase price allocated to purchased research and development (\$11,840,000) was expensed on the acquisition date in fiscal 1992.

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Not surprisingly, the SEC has expressed concern that many acquirers have been inappropriately allocating increasing amounts of purchase prices to in-process research and development to avoid the charge to future earnings. In a letter dated September 9, 1998 to the AICPA SEC Regulations Committee, the Chief Accountant of the SEC expressed concern about how many of these situations were being treated in practice and urged the committee to develop guidance for practitioners. As part of its "Earnings Management Task Force," the SEC staff has challenged the reporting by many acquirers who have reported large in-process research and development write-offs, arguing that the valuation methodologies and resultant value assigned to core technologies—which should be capitalized and amortized—are undervalued and the in-process research and development component is overvalued.

It is interesting to note that in 1999 as part of the Business Combinations project, the FASB initially decided to eliminate the immediate writeoff of in-process research

and development. However, various industry groups said that it would be difficult to implement, partly because of difficulty in distinguishing between the purchased research and development and their own projects. As a result of comments from constituents and the need for further research, on July 28, 1999, the FASB indicated that it had reversed its decision to propose changes to current accounting rules for purchased in-process research and development at this time. The FASB indicated that this issue would have to be addressed as part of an overall reconsideration of accounting for all research and development costs.

The assignment of part of the purchase price to research and development which is then written off because it has no alternative future use (often referred to as “in-process research and development”) can be viewed as giving rise to a book-tax difference at the moment of allocation and prior to the writeoff. This assumes that the research and development does not have tax basis. EITF Issue No. 96-7, *Accounting for Deferred Taxes on In-Process Research and Development Activities Acquired in a Purchase Business Combination*, indicates that the writeoff of the in-process research and development occurs prior to the determination of deferred taxes. Therefore, there are no deferred taxes established for the book-tax difference and the charge to expense is on a gross basis, without a tax benefit.

## 6.5 COST OF SOFTWARE DEVELOPED OR OBTAINED FOR INTERNAL USE

### (a) General

In March 1998, the Accounting Standards Executive Committee (AcSEC) of the AICPA issued SOP 98-1, *Accounting for the Costs of Computer Software Developed or Obtained for Internal Use*. This culminated a long period of discussion about the need for standards in this area that goes all the way back to the early 1980s.

FASB Statement No. 86 was issued by the FASB in August 1985. While conducting its deliberations on the subject, the FASB was asked by some constituents to expand the scope to include accounting for all computer software costs regardless of whether the software would be marketed externally or used internally. In particular, in March 1985 the Management Accounting Practices Committee of the National Association of Accountants prepared an issues paper, *Accounting for Software Used Internally*, which proposed that the costs of internal-use software should be capitalized in certain situations. In the end, the FASB declined to expand the scope and in paragraph 26 of Statement No. 86, the FASB concluded that

... accounting for the costs of software used internally is not currently a significant problem and, therefore, decided not to broaden the scope of this project nor add a project on internal use software to its present agenda. The Board recognized that the majority of companies expense all costs of developing software for internal use, and the Board was not persuaded that this current predominant practice is improper . . . .



After the issuance of FASB Statement No. 86, there was an increasing level of diversity in accounting for internal-use software. With the ever-increasing level of technology based on computer systems and software, companies have been expending ever-increasing amounts to develop, modify, test, and implement software. In addition to traditional use as, for example, accounting programs such as general ledger and payroll, software is now an integral part of manufacturing, distribution, and sales activities of companies in a wide array of industries. The reality in today's business environment is that many tangible manufacturing and distribution systems would not function without the software needed to operate them. For the tangible assets to be able to create a "future benefit" (one of the key characteristics of an asset in the FASB's Conceptual Framework), the software component is needed.

As a result, there were more and more calls to address the capitalization of development costs of internal-use software. Those in favor viewed the development and implementation of software as not conceptually different from the process of creating a tangible or "hard" asset, although it may be riskier and the outcome less certain. Additionally, it was becoming more common for companies to have well-defined development methodologies and techniques in place to help minimize this development risk and reduce the related uncertainty associated with developing software for internal use.

The lack of authoritative guidance on accounting for internal-use software led to an increasing diversity in practice and, with the massive growth of technology-based functions in all aspects of business, any perception that accounting for the costs of internal-use software was not a significant issue was changed. For example, many prominent constituents of the FASB (such as the Financial Accounting Standards Advisory Council) were including this issue high on their list of areas for the FASB to consider as in need of specific accounting standards, as the costs of internal-use software were continuing to escalate and were being accounted for in many diverse ways. Sometimes the issue of internal-use software was contemplated as part of a broader area in need of accounting standards—that is, how to account for the costs of self-developed assets, sometimes called "soft costs." Internal-use software was often cited as a prime example of this larger area of consideration.

The increased diversity in practice and increased significance of the amounts involved caused much concern, particularly among the SEC staff. As a result, in November 1994, the SEC chief accountant asked the EITF to develop guidance on the accounting for these costs. Subsequently, however, the EITF and AcSEC agreed that an SOP should be developed on the subject. Indeed, as AcSEC began its project, in evaluating then current practices, it observed an array of different accounting practices being used, including:

- Expensing of all costs
- Capitalizing all costs, including internal overhead costs such as computer usage time and allocation of general overhead (rent, utilities, etc.)
- Capitalizing the cost of purchased software and expensing the costs of internally-developed software.

It is interesting to note that while determining whether to undertake the project, AcSEC cited a survey of financial statement disclosures made by registrants in Form 10-K filings. That survey noted that of 31 companies that disclosed an accounting policy for costs of internal-use software, 25 reported policies of capitalization and 6 reported policies of expensing. The survey also identified that companies that made recent changes in their policies (five in total), all had changed from capitalization to expensing.

### **(b) Two Standards for Software Capitalization— Which to Use?**

**(i) General** With completion of the AcSEC project and the issuance of SOP 98-1, there are two standards on software capitalization. Thus, the first issue to face in accounting for software costs is to determine whether SOP 98-1 or FASB Statement No. 86 applies. In many cases, the circumstances will enable a clear and simple conclusion and in a few they may not. In making the determination, the critical issue is whether a company is developing new software with an intent to market it externally or developing new software for its own internal use. The project must be determined to be one or the other; it cannot be both. SOP 98-1 states that internal-use software has the following characteristics:

- The software is acquired, internally developed, or modified solely to meet the entity's internal needs.
- During the software's development or modification, no substantive plan exists or is being developed to market the software externally.

In substance, what this first characteristic requires is that the software be designed with unique applications to the company. In many cases, however, the absence of a substantive marketing plan (the second characteristic) may be the compelling factor in determining that SOP 98-1 applies, rather than FASB Statement No. 86. SOP 98-1 notes that the substantive marketing plan would include activities such as selecting a marketing channel and identifying promotional, delivery, billing, and support activities. If a software company typically markets all software that it develops, it would be presumed that any software developed is not internal-use software.

**(ii) Internal-use Software That Is Later Marketed Externally** Recently, some consulting firms have proposed that, once a software development project is completed for its client, the consulting firm would then try to market the completed software to others and would, if successful, share revenues with the original client. This may be the final outcome, for example, of a funded development arrangement. SOP 98-1 says:

Arrangements for the joint development of software for mutual internal use . . . are not substantive plans to market software . . . Similarly, routine market feasibility studies are not substantive plans to market software.

As such, this type of arrangement would not constitute a marketing plan and the provisions of SOP 98-1 would be applicable. SOP 98-1 recognizes that software developed for internal use might subsequently be sold to others after it has been placed into service. SOP 98-1 requires that any proceeds received from such sales first be applied as a reduction of the capitalized costs (i.e., the cost recovery method). After reduction of the carrying value of the software to zero, the company would recognize its share of any additional sales as revenue when earned.

**(iii) One More Wrinkle—FASB Statement No. 2** Another consideration regarding applicability of the standards is that companies often find that software development is intertwined with research and development projects. FASB Statement No. 2 requires that companies expense research and development costs as well as disclose the amount of research and development expense for the period. It is important to properly classify such software costs as part of research and development to meet the requirements of FASB Statement No. 2. In particular, SOP 98-1 indicates that the following software costs are included in research and development expenditures:

- Software acquired for use in research and development activities if the software has no alternative future use
- Software related to a particular pilot project or used exclusively in a specific research and development

### **(c) Stages of an Internal-Use Software Project**

In SOP 98-1, AcSEC has developed a model fundamentally consistent with the notion that software is an important strategic or economic resource. As a result, SOP 98-1 requires companies to capitalize and amortize many of the costs associated with developing or obtaining software for internal use.

For computer software intended for internal use, SOP 98-1 specifies three stages to software development and use:

- The preliminary project stage
- The application development stage
- The post-implementation/operation stage

### **(d) Preliminary Project Stage**

During the preliminary project stage, the company is in the process of evaluating alternatives regarding the software project. This can include activities such as assembling the evaluation team, evaluating vendors' proposals, and considering other reengineering efforts. During the preliminary project stage, the company has not yet decided on a software development strategy or selected a vendor. Not surprisingly then, all such costs incurred during this stage would be expensed as incurred. Furthermore, there is no requirement to separately classify these costs in the income statement.

Thus, unlike research and development costs which must be disclosed (and, thus, the company must classify costs as research and development), no special classification is needed for costs incurred during the preliminary project stage.

### (e) Application Development Stage

(i) **Characteristics** Once the company has made a determination as to how the software development work will be conducted, it will enter into the application development stage. At this point, the costs incurred to develop or obtain computer software for internal use must be capitalized and accounted for as a long-lived asset. Specifically, capitalization would begin when the following conditions are met:

- The preliminary project stage has been completed, and
- Management with the relevant authority, explicitly or implicitly, authorizes and commits to funding a computer software project and believes it is probable the project will be completed and the software will be used to perform the intended function.

This represents a significant difference from capitalization under Statement No. 86 in that technological feasibility is not required before capitalization begins for internal-use software under SOP 98-1.

Capitalization should cease no later than the point at which the software is substantially complete—including all necessary testing—and ready for use. At this threshold, the costs of testing as well as installing the software should be capitalized.

(ii) **Costs to Be Capitalized** Activities for which costs would be capitalized would include preparing functional specifications and designing and coding the software. The cost to be capitalized once the capitalization period has begun include the following:

- External direct costs (i.e., from third-party transactions) of materials and services consumed in developing or obtaining internal-use software,
- Payroll and payroll-related costs for employees who are directly associated with and devote time to the internal-use software project, and
- Interest costs capitalized in accordance with FASB Statement No. 34, *Capitalization of Interest Cost*.

General and administrative costs, as well as overhead and training costs, are not capitalizable costs of internal-use software. This represents another difference between costs capitalizable under Statement No. 86 and SOP 98-1.

Companies will face additional processing and record-keeping requirements in order to isolate payroll and payroll-related costs that should be capitalized. To measure these costs, it will be necessary for companies to have some measure of the time spent by employees working on software development in the capitalizable stage. These

employees are not restricted to programmers and others directly developing the software. In most significant software development projects, there is a team involved that may include some user representatives whose payroll costs would also be included in the amounts to be capitalized.

Some have stated that they can avoid the need to track employee time by contracting the development of internal-use software to outside consulting firms. Though precise in theory, the reality is that virtually no company is going to give an outside consulting firm *carte blanche* on this. For any large software project it is difficult, if not impossible, to expect that the company would not have some of its own people significantly involved in the project.

The external direct costs may seem to be easier to get a handle on and, in many cases, they will be. However, if a contract with an outside vendor is a bundled arrangement that includes several elements such as software development, installation, training, and maintenance, the company will need to unbundle the contract because some of these elements are capitalizable and some are not.

**(iii) Data Conversion Costs** Paragraph 22 of SOP 98-1 discusses data conversion costs and notes that data conversion costs “. . . except as noted in paragraph 21 . . .” should be expensed as incurred. While this appears to be straightforward, paragraph 21 discusses the capitalization of software development costs. Thus, a reading of those two paragraphs could lead to confusion. The reality is that SOP 98-1 makes a distinction between the writing of software to facilitate data conversion (sometimes referred to as bridging software) and manually converting data for use by a new system. Clearly, it is the intent of SOP 98-1 that manual data conversion efforts do not result in capitalizable costs. Conversely, the costs of developing bridging software are capitalizable under SOP 98-1.

However, an issue that may arise with capitalizing the cost of bridging software is that the software may only be used for one specific data conversion effort, so there is no alternative future use for the bridging software. In that case, while the costs of developing the bridging software are capitalizable, its useful life will be of such short duration as to effectively expense the costs as incurred. In determining the capitalizability of bridging software, it is extremely important that the company assess whether there is an alternative future use to the software.

## **(f) Post-Implementation/Operation Stage**

**(i) Amortization** Once the internal-use software is placed into service, the post-implementation/operation stage begins. The capitalized cost should be amortized over the period of expected benefit in a systematic and rational matter. Amortization would begin when the software is ready for its intended use, whether it is placed in service immediately or later. It can be difficult to accurately estimate the useful life for software, but a company should make an evaluation of the expected life of the software within the context of its own operations. In determining the expected period

of benefit, companies should consider the effects of obsolescence, technology, competition, and other economic factors.

SOP 98-1 and FASB Statement No. 86 are alike in that they both do not give specific guidance on ranges of years that the life of a software product should have. Based on the author's observation of practice, three years is one benchmark, a range of three to five years is another, and five to seven years is starting to possibly overreach for many application software products. Particularly out towards the seven-year life, one could face a challenge from the SEC staff. However, it should also be recognized that many legacy systems have been in use for nearly two decades. Thus, there clearly are exceptions. Nonetheless, companies wishing to amortize software over a longer period bear the burden of proof which can be extremely difficult.

**(ii) Subsequent Costs Related to the Software** Once the software has been placed into service, it can sometimes be difficult to decide whether subsequent costs related to the software should be capitalized. When a company purchases software from a vendor and the purchase price includes training, maintenance fees for routine maintenance, and/or rights to future upgrades and enhancements, SOP 98-1 requires that the total arrangement cost be allocated to these separate elements. From the vendor side, SOP 97-2, which is covered in chapter 4 of this edition of *Software Industry Accounting* requires vendors to use vendor-specific-objective-evidence of fair value (VSOE) as the basis for segregating the bundled arrangement into components. Logic would dictate that the customer should apply a similar approach.

Only upgrades or enhancements that can be demonstrated to have additional functionality beyond that of the original software may be capitalized. In short, the company should ask: Does this software now do something significantly different than it did before the upgrade or enhancement? If the answer is not clearly affirmative, the costs should be expensed as maintenance costs. Notice, the question of functionality is different than the question of useful life. Thus costs that extend the useful life, but do not add functionality should be expensed as maintenance.

SOP 98-1 makes a distinction between increased functionality (an upgrade) and increased efficiency (maintenance). Modifications to software that allow the system to operate more efficiently while still performing the same functions do not result in capitalizable costs. Additionally, under SOP 98-1, the costs of training users to operate the software must be expensed.

**(iii) Impairment** As SOP 98-1 considers internal-use software to be a long-lived asset, it requires that FASB Statement No. 121 be applied when determining if there has been an impairment of the asset. In particular, SOP 98-1 specifies that, when the internal-use software is no longer expected to be completed and placed in service, the asset should be accounted for as if abandoned or held for disposal. Under Statement No. 121, this would result in the entire carrying value being recognized as an impairment loss, since the estimated selling price of an incomplete internal-use software project would typically be zero.

The application of Statement No. 121 to internal-use software already placed into service is unwieldy because the software does not usually generate an identifiable stream of cash flows. As a result, it would seem that the impairment issue for software already in service is operationalized by having companies continue to make periodic assessments of the useful life of the software and make adjustments as necessary. For a measurement based on cash flows identified with assets that include internal-use software, measurement may only be possible at the entity level, as provided for in paragraph 100 of Statement No. 121.

### **(g) Reengineering**

In today's business environment, it is quite common for companies to enter into consulting contracts that combine business practices reengineering and information technology transformation. The consulting services may include software development, software acquisition, software implementation, training, and ongoing support in addition to the business process reengineering. Indeed, the business process reengineering may be either a component of some of the software-related activities or a separate activity.

The EITF addressed the accounting for these situations and reached a consensus in EITF Issue 97-13, *Accounting for Costs Incurred in Connection with a Consulting Contract or an Internal Project that Combines Business Process Reengineering and Information Technology Transformation*. The EITF concluded that the cost of business process reengineering is to be expensed as incurred regardless of whether the business process reengineering is undertaken as a separate project or as part of a larger project that includes software development. In situations where an outside consultant is used to complete a business process reengineering project, the total consulting contract price should be based on the objective evidence of the fair value of the elements in the contract, not necessarily the separate prices stated within the contract for each element.

### **(h) Y2K, ISO 9000, and Similar Costs**

While most of the concern about companies' existing software to process information into the year 2000 (the "Y2K" issue) would seem to be in the past, there could be situations in which a company may still incur some costs in this area. EITF Issue 96-14, *Accounting for the Costs Associated with Modifying Computer Software for the Year 2000*, indicates that costs incurred to make software year 2000 compliant should be expensed as incurred. Some had argued that these costs should be capitalized because the efforts extended the useful life of the software. However, as noted in the discussion about enhancements, the issue of useful life leads to a different accounting than the issue of functionality.

EITF Issue 96-14 is applicable only in the specific situation where a company will modify existing software to make it year 2000 compliant (*i.e.*, software that is identical except in its ability to process a four-digit data field). If the company is going to

obtain or develop new software, whether motivated by year 2000 concerns or not, SOP 98-1 would apply because the company is also acquiring additional functionalities.

The authors have noted that the SEC is no longer reviewing the elaborate disclosures that were required regarding companies' circumstances and planned actions for Y2K. As the Y2K issue is essentially behind us, most companies appear to be including brief discussions of what happened in their implementation, updating information on expenditure, and perhaps a caveat saying that one can't be sure that there couldn't be any more Y2K issues until a complete annual cycle has passed.

While no specific guidance exists with respect to accounting for the costs of complying with ISO 9000, it would seem that parallel logic from EITF 96-14 would apply and that costs to comply with ISO 9000 would be expensed.





## APPENDIX 6-A

# Questionnaire for Compiling Information to Support Capitalization of Software Development Costs

The following questionnaire, or one like it, is a useful tool for gathering information to support capitalization of software development costs. It also assists in determining the timing of technological feasibility and in early consideration of the need to demonstrate recoverability for the net realizable value test.

Many development programs enhance existing software, which may involve an array of major enhancements being made concurrently. The Enhancement Program Supplement to the questionnaire provides a format for summarizing the pertinent considerations for each major enhancement.

The questionnaire has been designed to be user friendly—it can be initially completed by software development personnel and later reviewed by accounting personnel; alternatively, it can be jointly completed by software development and accounting personnel. The approach used should be determined based partly on the extent to which software development personnel are familiar with FASB Statement No. 86.

**ABC Software Company**

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Software Project Information Summary  
Information

(If a project consists of numerous enhancements to an existing product, use the Enhancement Program Supplement to provide information for each enhancement)

1. Name of product or project

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2. If the project is being classified separately in a project cost system, list the project name(s) and project number(s) being used.

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3. At what location(s) is the work being performed? If at more than one location, give a brief description of the work at each location.

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4. Is this a new product or an enhancement of an existing product?

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5. Provide a brief description of the technical features of the product or enhancement.

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6. If this project was in progress at the beginning of the year, describe new information, if any, about the project that has become known since last year's Software Project Information Summary was prepared (e.g., expansion of the project, technical difficulties, new outside funding sources).

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7. When was the idea for the project conceived and over what period of time was the determination of **technological feasibility** (see "Definitions" following these questions) carried out?

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8. On what date was **technological feasibility** determined and what **documentation of technological feasibility** (see "Definitions" following these questions) exists to support that determination?

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**ABC Software Company**

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## Software Project Information Summary

Information (*continued*)

9. Is there any written documentation about **market feasibility** (see “Definitions” following these questions) of the product or enhancement?

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10. When was (will) the product or enhancement (be) available for general release to clients?

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11. Describe the work that was done on the project during the year.

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12. If the project was in progress at the end of the year, describe the remaining work and provide an estimate of the number of work-months required to complete.

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13. If there are any outside funding sources for this project, provide the names of funding parties and the amounts being provided by each.

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## ABC SOFTWARE COMPANY SOFTWARE PROJECT INFORMATION SUMMARY

### Definitions

**Technological feasibility.** Technological feasibility exists when it has been determined that a computer software product can be produced to meet its design specifications, including functions, features, and technological performance requirements. The determination of technological feasibility includes any planning, designing, coding, and testing activities that are necessary to establish technological feasibility. For technological feasibility to exist, the skills, hardware, and software technology necessary for completing the product must be available and there must not be any high-risk development issues. Technological feasibility is not present if there is significant uncertainty about whether sufficient financial resources will be available to complete development.

**Documentation of technological feasibility.** It is essential for capitalization of software development costs that there be adequate *documentation* of technological feasibility. Software development costs may only be capitalized after the date on which technological feasibility has been documented or after a working model has been developed. Costs incurred prior to the documentation of technological feasibility or the development of a working model must be expensed. The form of documentation of technological feasibility, which may vary from situation to situation, should be in the form of outlines, narratives, memoranda, flowcharts, or a combination.

The written documentation of technological feasibility must include a **product design** and a **detailed program design**.

A **product design** provides a description of the product and its objectives, and, if applicable: an explanation of how data will be input into the product (such as by on-line input or by batch processing); a description of the data and reports to be generated by the product; the major processing and data transformation definitions; data storage and data structure requirements; and a general description of the data flow and interaction of modules and transforming processes.

A **detailed program design** provides product function, feature, and technical requirements in detailed, logical form, ready for coding, and should usually include a description of the logic, file layouts, report definitions, field definitions, algorithms, special routines, and specific arrays of data.

The written materials that accomplish the product design and detailed program design functions must be consistent.

In responding to item 8 of this Software Project Information Summary, provide a description of documentation available to support the determination of technological feasibility and the date on which that technological feasibility was determined and documented.

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**Market feasibility.** At each balance sheet date, the recoverability of capitalized software development costs must be evaluated in a net realizable value test in which expected future revenues from sale of the related products are compared to the sum of capitalized costs, future development costs, costs of production, and costs of disposal (selling costs).

In responding to item 9 of this Software Project Information Summary, provide a description of any sales or marketing projections or other information that is available for this product and its enhancements that might be useful in developing assumptions for the net realizable value test.



## APPENDIX 6-B

# Software Release Request

Once a software product is available for general release to customers, the maintenance and customer support costs associated with the software product will be expensed. The costs will be charged to expense when the related revenue is recognized or when the costs are incurred, whichever occurs first. At the point of product availability for release, the accumulation of development costs for capitalization will cease. In project cost accounting systems, this will normally result in assigning a new project number for cost accumulation during the new product phase of post-capitalization.

The objectives of procedures to authorize and document release of software products should include:

1. Proper authorization to release software products to customers; and
2. To ensure software products meet company software development standards.

Division operating personnel should be responsible for completing and submitting a form such as the following entitled “Software Release Request” to the Accounting Department. A project number to expense maintenance and customer support services costs can be assigned with the information contained on the illustrative form. The timely providing of this information to the Accounting Department with appropriate documentation and signatures will ensure software development costs are expensed or capitalized in the appropriate accounting period.

When a software product has been approved for the general release to customers, the following procedures should be followed:

- The Project Manager completes and signs the form entitled “Software Release Request” and supporting documentation is sent to the Division Vice President for approval.
- The Division Vice President reviews and signs the “Software Release Request” form. The form and supporting documentation is sent to the Accounting Department for processing.
- The Accounting Department sets up a new account number in the project cost system.
- The Accounting Department distributes a list of current project codes on a periodic basis.



**Appendix 6-B**

Software Release Request

Name of Software Product:

\_\_\_\_\_

Project Code:

\_\_\_\_\_

1. Have all programs been coded? \_\_\_\_\_ If not, why?

Comments: \_\_\_\_\_

\_\_\_\_\_

2. Have all programs been unit tested? \_\_\_\_\_ If not, why?

Comments: \_\_\_\_\_

\_\_\_\_\_

3. Has the software product successfully passed system testing? \_\_\_\_\_ If not, why?

Comments: \_\_\_\_\_

\_\_\_\_\_

4. Has all program, system and user documentation been completed? \_\_\_\_\_ If not, why?

Comments: \_\_\_\_\_

\_\_\_\_\_

5. Has the product been Beta-tested? \_\_\_\_\_ If not, why?

Comments: \_\_\_\_\_

\_\_\_\_\_

Completed by:

\_\_\_\_\_

Project Manager

\_\_\_\_\_

Date

Approval of Software Release Request:

\_\_\_\_\_

Division Vice President

\_\_\_\_\_

Date

## APPENDIX 6-C

# Statement of Financial Accounting Standards No. 86, Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed

*August 1985*

### SUMMARY

This Statement specifies the accounting for the costs of computer software to be sold, leased, or otherwise marketed as a separate product or as part of a product or process. It applies to computer software developed internally and to purchased software. This FASB project was undertaken in response to an AICPA Issues Paper, "Accounting for Costs of Software for Sale or Lease," and an accounting moratorium imposed by the Securities and Exchange Commission precluding changes in accounting policies related to computer software costs pending FASB action.

This Statement specifies that costs incurred internally in creating a computer software product shall be charged to expense when incurred as research and development until technological feasibility has been established for the product. Technological feasibility is established upon completion of a detail program design or, in its absence, completion of a working model. Thereafter, all software production costs shall be capitalized and subsequently reported at the lower of unamortized cost or net realizable value. Capitalized costs are amortized based on current and future revenue for each product with an annual minimum equal to the straight-line amortization over the remaining estimated economic life of the product.

This Statement is applicable, on a prospective basis, for financial statements for fiscal years beginning after December 15, 1985. The conclusions reached in this Statement change the predominant practice of expensing all costs of developing and producing a computer software product.

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## Statement of Financial Accounting Standards No. 86

### Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed

August 1985

#### INTRODUCTION

1. This project was undertaken in response to requests by the Securities and Exchange Commission (SEC) and the Accounting Standards Executive Committee (AcSEC) of the American Institute of Certified Public Accountants (AICPA) to clarify the accounting for the costs of internally developed and produced computer software to be sold, leased, or otherwise marketed. They indicated that existing accounting pronouncements contain only general guidance that has been interpreted inconsistently.

#### SCOPE

2. This Statement establishes standards of financial accounting and reporting for the costs of computer software to be sold, leased, or otherwise marketed as a separate product or as part of a product or process, whether internally developed and produced or purchased. It identifies the costs incurred in the process of creating a software product that are research and development costs and those that are production costs to be capitalized, and it specifies amortization, disclosure, and other requirements. As used in this Statement, the terms *computer software product*, *software product*, and *product* encompass a computer software program, a group of programs, and a product enhancement. This statement does not address the accounting and reporting of costs incurred for computer software created for internal use or for others under contractual arrangement.

#### STANDARDS OF FINANCIAL ACCOUNTING AND REPORTING

##### Research and Development Costs of Computer Software

3. All costs incurred to establish the technological feasibility of a computer software product to be sold, leased, or otherwise marketed are research and development costs. Those costs shall be charged to expense when incurred as required by FASB Statement No. 2, *Accounting for Research and Development Costs*.

4. For purposes of this Statement, the technological feasibility of a computer software product is established when the enterprise has completed all planning, designing, coding, and testing activities that are necessary to establish that the product can

be produced to meet its design specifications including functions, features, and technical performance requirements. At a minimum, the enterprise shall have performed the activities in either (a) or (b) below as evidence that technological feasibility has been established:

- a. If the process of creating the computer software product includes a detail program design:
  - (1) The product design and the detail program design have been completed, and the enterprise has established that the necessary skills, hardware, and software technology are available to the enterprise to produce the product.
  - (2) The completeness of the detail program design and its consistency with the product design have been confirmed by documenting and tracing the detail program design to product specifications.
  - (3) The detail program design has been reviewed for high-risk development issues (for example, novel, unique, unproven functions and feature or technological innovations), and any uncertainties related to identified high-risk development issues have been resolved through coding and testing.
- b. If the process of creating the computer software product does not include a detail program design with the features identified in (a) above:
  - (1) A product design and a working model of the software product have been completed
  - (2) The completeness of the working model and its consistency with the product design have been confirmed by testing.

### **Production Costs of Computer Software**

**5.** Costs of producing product masters incurred subsequent to establishing technological feasibility shall be capitalized. These costs include coding and testing performed subsequent to establishing technological feasibility. Software production costs for computer software that is to be used as an integral part of a product or process shall not be capitalized until both (a) technological feasibility has been established for the software and (b) all research and development activities for the other components of the product or process have been completed.

**6.** Capitalization of computer software costs shall cease when the product is available for general release to customers. Costs of maintenance and customer support shall be charged to expense when related revenue is recognized or when those costs are incurred, whichever occurs first.

### **Purchased Computer Software**

**7.** The cost of purchased computer software to be sold, leased, or otherwise marketed that has no alternative future use shall be accounted for the same as the costs incurred to develop such software internally, as specified in paragraph 3–6. If that purchased

software has an alternative future use, the cost shall be capitalized when the software is acquired and accounted for in accordance with its use.

### **Amortization of Capitalized Software Costs**

**8.** Capitalized software costs shall be amortized on a product-by-product basis. The annual amortization shall be the greater of the amount computed using (a) the ratio that current gross revenues for a product bear to the total of current and anticipated future gross revenues for that product or (b) the straight-line method over the remaining estimated economic life of the product including the period being reported on. Amortization shall start when the product is available for general release to customers.

### **Inventory Costs**

**9.** The costs incurred for duplicating the computer software, documentation, and training materials from the product masters and for physically packaging the product for distribution shall be capitalized as inventory on a unit-specific basis and charged to cost of sales when revenue from the sale of those units is recognized.

### **Evaluation of Capitalized Software Costs**

**10.** At each balance sheet date, the unamortized capitalized costs of a computer software product shall be compared to the net realizable value of that product. The amount by which the unamortized capitalized costs of a computer software product exceed the net realizable value of that asset shall be written off. The net realizable value is the estimated future gross revenues from that product reduced by the estimated future costs of completing and disposing of that product, including the costs of performing maintenance and customer support required to satisfy the enterprise's responsibility set forth at the time of sale. The reduced amount of capitalized computer software costs that have been written down to net realizable value at the close of an annual fiscal period shall be considered to be the cost for subsequent accounting purposes, and the amount of the write-down shall not be subsequently restored.

### **Disclosures**

**11.** The following shall be disclosed in the financial statements:

- a. Unamortized computer software costs included in each balance sheet presented
- b. The total amount charged to expense in each income statement presented for amortization of capitalized computer software costs and for amounts written down to net realizable value.

**12.** The disclosure requirements for research and development costs in Statement 2 apply to the research and development costs incurred for a computer software product to be sold, leased, or otherwise marketed.

### Amendments to Other Pronouncements

**13.** The following sentence in paragraph 31 of Statement 2 is deleted:

For example, efforts to develop a new or higher level of computer software capability intended for sale (but not under a contractual arrangement) would be a research and development activity encompassed by this Statement.

**14.** The following portions of FASB Interpretations No. 6, *Applicability of FASB Statement No. 2 to Computer Software*, are deleted:

a. The sentence in paragraph 3 that states:

For example, efforts to develop a new or higher level of computer software capability intended for sale (but not under a contractual arrangement) would be a research and development activity encompassed by this Statement.

b. The phrase in the first sentence of paragraph 6 that states:

or as a product or process to be sold, leased, or otherwise marketed to others for their use

c. Paragraphs 7 and 8

d. The two sentences in paragraph 8 that state:

Developing or signifying improving a product or process that is intended to be sold, leased, or otherwise marketed to others is a research and development activity (see paragraph 8 of Statement 2). Similarly, developing or significantly improving a process whose output is a product that is intended to be sold, leased, or otherwise marketed to others is a research and development activity.

**15.** This Statement supersedes FASB Technical Bulletin No. 79-2, *Computer Software Costs*.

### Effective Date and Transition

**16.** This Statement shall be effective for financial statements for fiscal years beginning after December 15, 1985 and shall be applied to costs incurred in those fiscal years for all projects including those in progress upon initial application of this Statement. Earlier application in annual financial statements that have not previously been issued is permitted.

**17.** Costs incurred prior to initial application of this Statement, whether capitalized or not, shall not be adjusted to the amounts that would have been capitalized if this

Statement had been in effect when those costs were incurred. However, the provisions of paragraphs 8 (amortization), 10 (net realizable value test), and 11 (disclosure) of this Statement shall be applied to any unamortized costs capitalized prior to initial application of this Statement that continue to be reported as assets after the effective date.

**The provisions of this Statement need not be applied to immaterial items.**

*This Statement was adopted by the affirmative votes of five members of the Financial Accounting Standards Board. Messrs. Kirk and Mosso dissented.*

Mr. Kirk and Mr. Mosso dissent from this Statement because (a) it unduly restricts capitalization of software costs, (b) it extends the research and development classification of Statement 2 to a major class of routine production activities, and (c) it permits significantly different amounts of capitalization depending upon a company's choice of production methods.

In discussing the first point, the requirement in this Statement that either a detail program design or a working model be completed before capitalization can begin is likely to result in expensing most computer software costs, even though software is a significant, and often the only, revenue-generating asset of many companies. Assessing the probability of future benefits from computer software is difficult in the software industry, but no more difficult than in some tangible output industries such as fashion clothing and oil and gas drilling or even in other creative process industries such as motion pictures. In each of these cases, capitalization of costs is accepted despite the inherent uncertainties.

The second point is related. This Statement sets the stage for extending the reach of Statement 2, with its mandatory expensing requirement, to a broad sweep of routine production activities because it assigns the bulk of computer programming activities (detail program design, coding, and testing) to the classification of research and development. Certainly, much research and development-type activity does take place in the computer software industry. However, most detail program design and coding activities are not discovery- or design-oriented in the sense of Statement 2; they are just the meticulous execution of a plan—skilled craftsmen applying proven methods as in any production process.

The third point is that this Statement makes capitalization dependent upon how the programming process is arranged, that is, the extent to which detail program design is separated from or integrated with coding and testing. The amount capitalized could differ significantly for comparable program outputs and, within the range of permitted capitalization, results would be essentially a matter of choice of approach to the programming process.



Mr. Mosso's dissent is based on the view that computer software is a key element in the ongoing shift of emphasis in the U.S. economy from tangible outputs and physical processes in intangible outputs and creative processes. Changes of that nature are evident in both emerging and old-line industries. In his view, accounting should accommodate this transition by reporting the results of creative processes on the balance sheet when those results comprise reasonably probable future economic benefits. Otherwise, financial statements will lose relevance as creative activities proliferate.

## APPENDIX 6-D

# Q&As on FASB Statement No. 86

## *Computer Software: Guidance on Applying Statement 86*

Anne D. McCallion  
FASB Staff

FASB Statement No. 86, “Accounting for the Costs of Computer Software to be Sold, Leased, or Otherwise Marketed,” was issued in August 1985 and applies to costs incurred in fiscal years beginning after December 15, 1985. The Statement changes the predominant practice of charging all costs of creating a computer software product to expense. Software companies and others involved in the creation of computer software products have raised a number of detailed implementation questions subsequent to the Statement’s issuance.

FASB staff members are frequently asked for their personal views on questions about implementing a new standard. This HIGHLIGHTS summarizes that staff’s responses to the questions received about Statement 86. Those who have not yet had to deal with Statement 86 in financial statements may find these questions and responses useful. An important point is that the responses constitute the views of the author and are not positions of the FASB.

A brief synopsis of the principal provisions of Statement 86 precedes the questions and responses. A more detailed understanding of the Statement’s provisions may be needed as background for some of the more complex questions.

### Overview of Statement 86

Statement 86 specifies the accounting for the costs of computer software to be sold, leased, or otherwise marketed as a separate product or a part of a product or process. In other words, the Statement applies to the costs of (a) a software product, (b) software contained in a product having a software component that cannot function or be

sold separately from the product as a whole, and (c) software used in providing a service from which the company derives revenues and that is dependent upon the software for its timeliness, accuracy, capacity, or other qualities that contribute to its marketability. The Statement applies to computer software developed internally or purchased.

Costs incurred internally in creating a computer software product are to be charged to expense when they are incurred as research and development (R&D) until *technological feasibility* has been established for the product. According to the Statement, technological feasibility is established when either of two sets of criteria is met: (a) the detail program design (defined in Statement 86) has been completed, documented, and traced to product specifications and its high-risk development issues have been resolved or (b) a working model of the product (also defined in the Statement) has been finished and determined to be complete and consistent with the product design.

After establishing technological feasibility, all software production costs are to be capitalized and subsequently reported at the lower of unamortized cost or net realizable value. Capitalized costs are amortized based on current and future revenue with an annual minimum equal to the straight-line amortization over the remaining estimated economic life of the product.

## Questions and Responses

The following questions and responses are organized according to the topical headings presented in the Statement. Questions related to other issues appear after the topical headings. The first group of questions and responses relates to the scope.

### Scope

*Question 1:* Paragraph 2 indicates that the Statement applies to the costs of computer software “*as a separate product.*” What is a software product?

*Response:* A software product is most easily defined by describing its necessary qualities. As a product, it is complete and has exchange value. As software, it is a set of programs that interact with each other. A program is further defined as a series of instructions or statements that cause a computer to do work.

*Question 2:* The costs of software that is marketed “as part of a product or process” are included in the scope of the Statement. What types of software would be included in this description?

*Response:* Software is sometimes embedded in a product and sold as part of the product as a whole. Examples are calculators and robots. This type of software is sometimes known as “firmware.” Also, some services provided to customers would not be possible without software. Time sharing and service bureaus are two straightforward examples. Other situations are not as clear, for example, whether software used to prepare monthly checking account statements is “part of a process” (and therefore

included in the scope of Statement 86) or is for internal use (and therefore not included in the scope of the Statement).

Indications that the software in question falls under the Statement's scope include the dependence of the company on the software to provide the service. In other words, could the company earn revenue from providing the service without the software? Would the service be as timely or accurate without the software? If the answer to any of these questions is no, that may indicate that the software is part of a process and is included in the scope of Statement 86.

*Question 3:* Do the costs of computer software that is created or purchased for internal use and is subsequently offered for sale fall under the scope of the Statement?

*Response:* The company's intentions at the time the software costs are incurred determine the accounting. If the software is intended solely for internal use, the company would follow its current accounting policy on internal use software. If the software is subsequently sold, the revenues would be recognized in income at that time. On the other hand, if the company plans both to use the software internally and to market it, a cost allocation (based on anticipated future use or some other systematic and rational method) would be made. The portion of the total costs attributed to the product offered for sale would be accounted for in accordance with Statement 86.

*Question 4:* Should companies use Statement 86 as a guide in accounting for the costs of software for internal use?

*Response:* Paragraph 2 indicates that the Statement "does not address the accounting and reporting of costs incurred for computer software created for internal use." This topic is discussed, only in general terms, in FASB Interpretation 6, "Applicability of FASB Statement No. 2 to Computer Software." However, many accountants faced with a question that is not specifically addressed in the current accounting literature look for an analogous situation on which specific guidance has been provided. Paragraph 26 of Statement 86 discusses the Board's decision not to address the topic of software created for internal use because the issue is not a significant problem; most companies currently charge all costs of developing software for internal use to expense. Those whose accounting policy is to capitalize some costs of internal use software may want to refer to Statement 86 for determining the point at which capitalization begins. However, one of the Statement's major controls is the net realizable value test (which will be discussed later), and that test cannot be applied easily to software from which revenues will not be realized.

## Research and Development Costs

*Question 5:* What is the relationship of Statement 86 to FASB Statement No. 2, "Accounting for Research and Development Costs"?

*Response:* The FASB undertook the project on computer software largely because persons from the software industry questioned the applicability of Statement 2 (and other FASB standards based on Statement 2) to the software process. Many of them

asserted that, at some point in the creation of a software product, the company had an asset with future economic benefits. The questions were *when* in the process this happened and *how* that point could be objectively identified. Statement 86 indicates which activities in the process of creating a computer software product are R&D activities, the costs of which are charged to expense as incurred, and which activities are production activities, the costs of which are capitalized.

*Question 6:* Can a company defer capitalization until after meeting the “working model” criteria of paragraph 4(b), even though technological feasibility had previously been established by meeting the criteria in paragraph 4(a)?

*Response:* The lead-in phrase of paragraph 4(a) states, “if the process of creating the computer software product includes a detail program design,” and specifies three criteria relating to the detail program design to be satisfied before capitalization begins. Companies whose software product process fits the description in paragraph 2(a) should look to that paragraph for the applicable technological feasibility criteria. However, if the three criteria of paragraph 4(a) are not met until a working model is completed, the Statement requires capitalization to begin upon completion of the working model and satisfaction of the other criteria of paragraph 4(b).

*Question 7:* Can management require stringent criteria than specified in paragraph 4 to begin capitalizing software production costs?

*Response:* No. As discussed in the response to question 5, one of the purposes of Statement 86 is to identify an objective point in the software product process at which research and development activities end and production activities begin. If management were to modify the Statement’s criteria or impose additional criteria of its own, this objective would be thwarted.

*Question 8:* If a company has established technological feasibility by meeting the criteria in either paragraph 4(a) or (b) and a high-risk development issue subsequently arises, what is the proper accounting for the previously capitalized costs and the costs to resolve the high-risk development issue?

*Response:* According to paragraph 13 of APB Opinion No. 20, “Accounting Changes,” a change in accounting estimate results from new information or subsequent developments. The discovery of a high-risk development issue after the company’s personnel thought technological feasibility was established appears to meet this definition. Any previously capitalized costs for that product, as well as any additional costs incurred to establish technological feasibility, should be charged to expense as R&D until the criteria in paragraph 4 are met.

*Question 9:* When a product comprises various modules that are not separately salable, is technological feasibility established for the product as a whole or on a module-by-module basis?

*Response:* Technological feasibility is established for a software product as a whole; that is, the detail program design or the working model of the *entire* product (all modules linked together) must be completed prior to capitalization.

*Question 10:* Some companies in the industry use the term working model to mean a prototype in which critical parts of the product have been coded or written in pseudocode. Is this definition of working model acceptable to meet the criteria in paragraph 4(b)?

*Response:* The glossary of Statement 86 defines a working model as having several key characteristics not found in the above description of a prototypes. To meet the Statement's criteria, the working model must be (a) operative, (b) in the same language as the product that will be marketed, (c) complete with all the major functions that were planned for the product, and (d) ready for initial customer testing.

### Production Costs

*Question 11:* Are indirect costs appropriate for capitalization as part of the production costs of computer software?

*Response:* Current accounting literature does offer precedent for capitalizing an allocated amount of indirect costs, such as overhead related to programmers and the facilities they occupy. However, an allocation of general and administrative expenses would not be appropriate because those costs relate to the period in which they are incurred.

### Maintenance and Customer Support

*Question 12:* How should the costs incurred to keep systems software current with revisions in the hardware be accounted for if this service was promised at the time the software was sold?

*Response:* This activity appears to meet the definition of maintenance because it keeps the product updated with current information. The cost of maintenance is to be charged to expense when related revenue is recognized or when those costs are incurred, whichever occurs first. The distinctions among maintenance, customer support, and product enhancements are sometimes very fine lines; in each case, the particular circumstances and intentions of the company should be evaluated in light of the definitions in the Statement for each activity.

### Purchased Computer Software

*Question 13:* What factors, if any, may determine whether the cost of purchased software that will be integrated into another software or hardware product will be capitalized?

*Response:* Assuming that purchased computer software has no alternative future use, its costs can be capitalized only if the technological feasibility of the product to be ultimately marketed has been established at the time of purchase. Such factors as the timing of receipt or the status of hardware and internal software development may be crucial in determining whether technological feasibility is established at the time of purchase.

*Question 14:* How would a company account for purchased software with a cost of, for example, \$100,000 if technological feasibility was not established at the time of purchase and the software could be resold for \$75,000?

*Response:* The amount of \$25,000 would be charged to R&D; \$75,000 would be capitalized and, if the software product reached technological feasibility, included in the cost of the software product. If the technological feasibility of the software was never established, the \$75,000 would be classified as inventory.

### **Amortization**

*Question 15:* How is straight-line amortization to be computed for a software product?

*Response:* Paragraph 8 indicates that straight-line amortization is computed over the remaining estimated economic life of the product. As such, the unamortized cost of the product should be divided by its remaining life, including the current year.

*Question 16:* Is it possible that estimates of future revenues or the remaining economic life for a product will change over the period in which the software product is being amortized?

*Response:* Yes. Amortization for any asset is based upon estimates of future events, and software is no exception. The most recent information should be used to determine if changes to a previously adopted amortization policy should be made.

*Question 17:* How should amortization expense of capitalized software costs be classified in a company's income statement?

*Response:* Since the amortization relates to a software product that is marketed to others, the expense would be charged to cost of sales or a similar expense category.

### **Disclosure**

*Question 18:* Paragraph 11(b) indicates that companies must disclose the total amount charged to expense for amortization and amounts written down to net realizable value. Should this disclosure be one combined amount or two separate amounts?

*Response:* The amortization and write-down amounts may be combined with only the total of the two expenses being disclosed.

### **Effective Date and Transition**

*Question 19:* How should companies implement the transition provision of paragraph 16 for "earlier application in annual financial statements that have not previously been issued" when interim periods in the year of initial application have previously been reported on?

*Response:* Apply the guidance set forth in paragraph 14 of FASB Statement No. 16, "Prior Period Adjustments." On financial reports for the interim period in which initial application occurs, disclose the effect of applying the standard on income and the related per share amounts for each prior interim period of the current fiscal year.

The next time the financial information of the prior interim periods is presented, the restated amounts, not the originally reported amounts, should be shown.

*Question 20:* If a company cannot have the systems in place to capture all of the data necessary to implement the Statement in the first quarter after the effective date, how does the company present that quarter's results? Does the Statement permit a company to implement the standard sometime before the end of the initial year of application?

*Response:* Paragraph 16 indicates that the Statement is to be applied to costs incurred after the effective date for *all* projects. Quarterly reports for periods in fiscal years beginning after December 15, 1985 must, therefore, present software costs incurred during that quarter in conformity with the Statement. Quarterly financial statements for a fiscal year beginning after the effective date that do not present software costs accounted for according to the Statement would not be in conformity with Statement 86.

## Other Issues

### *Balance Sheet Presentation*

*Question 21:* Where should capitalized software costs be presented in the balance sheet?

*Response:* Software costs having a life of more than one year or one operating cycle should be presented as an "other asset" because the costs are an amortizable intangible asset.

### *Modifications to the Product*

*Question 22:* What happens if the completed product does not include all features that had originally been planned?

*Response:* If the product is saleable without the features that were dropped, no specific accounting is required. The net realizable value test controls the amount of capitalized costs. If the product is not saleable without the dropped features, the technological feasibility of the product is not established (question 8). Further, application of the net realizable value test may result in a write-off of some or all of the product's capitalized costs.

### *Product Enhancements*

*Question 23:* How is the Statement applied to costs incurred for product enhancements?

*Response:* Costs incurred for product enhancements are charged to expense as research and development until the technological feasibility of the enhancement has been established. If the original product should be included with the cost of the enhancement for purposes of applying the net realizable value test and amortization provisions. If the original product will remain on the market along with the enhancement, an allocation of the unamortized cost of the original product between the original product and the enhancement will be necessary.



*Question 24:* Is the estimated useful life of a product enhancement equal to (a) the remaining life of the original product (b) the estimated life of the enhancement, or (c) the remaining life of the original product for any costs of the original product included in the enhancement and the estimated life of the enhancement for all other costs?

*Response:* The estimated life of the enhancement. All costs of a product enhancement, including any costs carried over from the original product, should be amortized over the enhancement's estimated useful life.

*Question 25:* Must the technological feasibility criteria (paragraph 4) be met for a product enhancement if the criteria has been met for the original?

*Response:* Yes. Product enhancements are specifically included in the scope of the Statement and, as such, are subject to the same requirements as any other software product. However, technological feasibility may be more easily established for a product enhancement than for a new product, and capitalization of costs may, therefore, begin relatively earlier in the software process. For example, an enhancement that adds on function to an already successful product may require only minor modifications to the original product's detail program design to establish technological feasibility. Similarly, in some cases, software that is ported (made available for a different piece of hardware) may not require a new detail program design, and capitalization of the enhancement costs may begin once any high-risk development issues have been resolved.

## CHAPTER SEVEN

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# Auditing Financial Statements of Software Companies

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### 7.1 GENERAL CONSIDERATIONS: CHARACTERISTICS OF THE INDUSTRY

The unique characteristics of the software industry and its specialized accounting must be considered by auditors in planning and carrying out audit procedures and in assessing risk.

The Securities Exchange Commission (SEC) as well as various professional organizations have identified the software industry as a high-risk business in comparison with other industries. This is a comparatively young industry, and many software companies do not have long operating histories. Many new software companies are started every year that require audits: a large number of those companies initially or soon after formation seek equity financing in the public capital markets.

For some software companies that are in the start-up phase, questions will be raised about accounting recognition of both software revenue and capitalized software development costs. Uncertainty about a young software company's ability to finance the completion of software development projects and to successfully bring the products to market may create a concern about the propriety of capitalizing software development costs.

The auditor may face more going concern issues and more rapid obsolescence of products in the software industry than in other industries.

Appendix 7–A is an illustrative audit program for reference in planning the nature and extent of audit procedures and preparing an audit program for an audit of a software company. This should be used as a tool and does not contain all audit procedures that should be carried out in the specific circumstances of a particular audit.

## 7.2 AUDITING CAPITALIZED SOFTWARE DEVELOPMENT COSTS

### (a) Nature of Assets

Financial Accounting Standards Board (FASB) Statement No. 86 (discussed in Chapter 6) established standards for accounting for computer software costs, including costs to be capitalized. Capitalized software development costs are different from most assets in traditional industries. Software is intangible, intellectual property, and its existence cannot be determined by physical examination as can inventory, fixed assets, or other tangible assets. Moreover, most assets are acquired from third parties, and their cost is evidenced by third-party payments and other documentation of third-party transactions, making auditing much easier than for self-constructed assets such as software. See Chapter 6 for a detailed discussion of capitalization of software development costs. Auditing self-constructed assets entails the need to audit cost accumulation systems or work papers designed to capture capitalized costs. In addition, the auditor must be satisfied as to the technical aspects and marketability of the software for which costs are capitalized, requiring procedures not normally necessary for auditing traditional tangible assets. Auditing the technical aspects of capitalized software may require the assistance of a software technical specialist. The need for a specialist depends on the specifics of the client's situation, including the complexity of the software, the extent to which the client has reliable control procedures, and the extent to which the auditor is familiar with the client through previous audits.

### (b) Assessing Significance of Capitalized Software Development Costs

The nature and extent of procedures for auditing capitalized software development costs should be determined after assessing the significance of capitalized costs to both the balance sheet and income statement. It may also be appropriate to compare the percentage of capitalized software development costs with industry averages. Generally, software companies seem to capitalize relatively small percentages of total software expenditures—perhaps in the range of 15 to 25 percent of total software expenditures. There are exceptions, varying from some companies that capitalize minimal or no costs to those that capitalize significant percentages of total software expenditures.

The auditor should carefully evaluate the business reasons why a particular software company capitalizes significantly more or less than the range of total software expenditures capitalized by the rest of the industry. For example, a particular software company might capitalize a small amount or no software expenditures, claiming that because of the nature of its products or the markets it serves, it cannot determine technological feasibility or recoverability until the product is substantially completed or on the market. For these companies, any amount of software development costs that are capitalized would be immaterial. Others may capitalize significant percentages of

total software expenditures—these are often applications software companies with proven products and an established market share.

The auditor should expect higher amounts to be capitalized if the client uses the detail program design approach, and lesser amounts if the client uses the working model approach.

### (c) General Approach to Auditing

A sound approach to auditing capitalized software development costs involves two parallel sets of procedures: (1) auditing cost accumulation, and (2) auditing the status of the product. The first emphasizes the accumulation of capitalized amounts through a cost system or worksheet approach, or a combination of both, the amortization of capitalized software development costs, and a net realizable value test. The second, which may require the use of a specialist, emphasizes the investigation of the technical aspects of the software products and development projects, including an evaluation of whether technological feasibility was properly determined and when a software product became or will become available for general market release.

### (d) Auditing Determination of Technological Feasibility

In certain cases, the auditor is able to achieve satisfaction as to the technological feasibility of a software product through available documentation. At other times, participation by a technical specialist is advisable.

In auditing technological feasibility, the auditor should initially determine what approach the client used in developing the particular software product. For purposes of applying audit procedures, software development approaches can generally be divided into two categories—the detail program design approach and the working model approach. The detail program design approach follows a traditional methodology of preparation of a detail program design. The working model approach bypasses the detail program design and demonstrates the resolution of all key technical questions through the development of a working model.

When a detail program design is used, the auditor should determine that as of the date of technological feasibility, the client had the necessary skills, hardware, and software technology to complete the development of the product. The auditor should examine the product design and detail program designs and obtain evidence that they have been completed and are consistent with each other. All high-risk development issues should be identified, such as novel, unique, and unproven functions and features or technological innovations. The auditor should obtain documentation of how, when, and by whom all high-risk issues were resolved, and should also obtain evidence that product testing confirmed the resolution of these issues prior to the capitalization of costs.

If the client used a working model approach, the auditor should, through inquiry, observation, and obtaining evidential matter, determine when the product design and

working model were completed. The auditor should also obtain evidence that the working model was tested in conformity to the product design.

When auditing the determination of technological feasibility of enhancements of existing products, the auditor should obtain evidence that the enhancements will extend the original product's life or significantly improve its marketability. The auditor should also follow the procedures described above, as appropriate, depending on whether a detail program design or working model approach was used.

If purchased software is incorporated into a computer software product developed by the client, the auditor should ascertain the technological feasibility of the acquired software if its cost is to be capitalized as part of the cost of the software product.

Appendix 7-B contains a checklist which may be used by the auditor in documenting the establishment of technological feasibility of software products and enhancements.

#### **(e) Auditing Determination of Availability for General Market Release**

Both the auditor and the technical specialist can contribute to auditing the determination of completion of the software development project and availability of the product for general market release. The auditor should review documentation supporting the client's conclusions about marketability of the product, which generally includes a market study of some sort, prepared either internally or by a third party. Generally, a study prepared by a third party is more reliable, but often the only studies and market projections available are those prepared internally by the software company.

The auditor should also consider the past success of the company in bringing software to the marketplace. The auditor should determine availability for general market release by reviewing evidence of completed sales transactions if revenues from the product have been realized. The realization of some revenues, however, does not necessarily mean that a product is available for general market release. For example, revenues may be recognized from a customer who uses a software product for beta testing. The auditor should corroborate the availability for general market release by noting the cessation of capitalization of development costs for the project.

The technical specialist may be helpful in verifying completion of beta testing and customer program documentation, and in evaluating whether those events indicate availability for general market release in the specific circumstances.

#### **(f) Auditing Accumulation of Capitalized Hours, Direct Costs, and Overhead Rates**

Audit procedures for the accumulation of costs to be capitalized should be essentially the same as for client-constructed fixed assets.

Because hours incurred are generally the basis for cost accumulation in software development, a key audit procedure is to substantiate the capitalizable hours incurred on each project. This can usually be done by auditing the accumulation of hours

charged on time sheets or other evidence of work performed on a project. Sometimes software companies do not have time accountability or cost systems that accumulate time incurred by individual-to-project summaries. In such cases, the software company may identify personnel who worked on a capitalizable project for specified blocks of time. The auditor should be able to corroborate this information by reviewing project files, discussing the project work with client management and project personnel, and corroborating the findings of the technical specialist. Costs accumulated should be compared to budgets for the project.

Direct charges to projects, such as for outside consultants, materials, and other costs, can be audited through the normal examination of third-party invoices, payments, and other documentation.

Overhead rates can account for a substantial portion of capitalized software development costs. The auditor should review the mathematical logic and accuracy of the overhead computation and the types of costs for consistency and conformity with generally accepted accounting principles for inventory costing, which usually apply. The auditor should also consider the discussions of computing overhead to be capitalized that appear in an *FASB Highlights* published in February, 1986.

**(g) Auditing Amortization and Net Realizable Value**

In auditing amortization and net realizable value, the auditor’s primary focus will be reviewing the client’s projected revenue trends, including comparisons of actual results to prior projections. See the discussion about projected revenue trends in Chapter 6.

**(h) Representation Letter**

In addition to other audit procedures, it is advisable for the auditor to obtain specific written representations from appropriate client personnel as to capitalized software development costs. Following is suggested language for inclusion in the representation letter requested for a software client.

We specifically confirm the following facts as they relate to software capitalization:

Software Product	Date of Technological Feasibility	Date of Availability for General Market Release	Capitalized Cost
ABC	mm/dd/yy	mm/dd/yy	\$ XXX,XXX
DEF	mm/dd/yy	mm/dd/yy	XXX,XXX
GHI	mm/dd/yy	mm/dd/yy	XXX,XXX
			<u><u>\$X,XXX,XXX</u></u>

We also confirm that management believes such costs are recoverable.

**(i) Use of a Technical Specialist**

The technical specialist usually reads design and detail program technical documents, reviews high-risk technical issues, and/or observes a completed working model of the software product. The technical specialist's procedures may also include interviews with the company's software developers and technical staff. Generally, the work of the technical specialist does not include direct analysis of program source code.

Guidance for auditors using the work of an outside specialist is provided in Statement on Auditing Standards (SAS) No. 73. In selecting a specialist, an auditor should consider the following:

- The professional certification, license, or other recognition of the competence of the specialist in his field, as appropriate
- The reputation and standing of the specialist in the views of his peers and others familiar with his capability or performance
- The relationship, if any, of the specialist to the client

—SAS 73

The auditor should understand the methods or assumptions used by the specialist and, as appropriate, review the data provided to the specialist by the client. This data consists of technical documentation, which should be compared with other information obtained by the auditor for consistency and reasonableness. If an outside technical specialist is used, the following aspects of the specialist's work should be documented.

- The objectives and scope of the specialist's work
- The specialist's representations as to his relationship, if any, to the client
- The method or assumptions to be used
- A comparison of the methods or assumptions to be used with those used in the preceding period.
- The specialist's understanding of the auditor's corroborative use of the specialist's findings in relation to the representations in the financial statements
- The form and content of the specialist's report that would enable the auditor to make the evaluation described in [a subsequent paragraph .08 entitled "Using the Findings of the Specialist"]

—SAS 73

**7.3 AUDITING SOFTWARE REVENUE****(a) Unique Aspects of Auditing Software Revenue**

Auditing software revenues presents a challenge because of the intangible nature of the product sold and the complex accounting rules. The auditor should be aware of continuing changes to Statement of Position (SOP) 97-2, as well as SEC interpretations.

Moreover, auditing software revenue continues to be unique because software contracts and transactions are structured in many different ways, making it difficult at times to determine what kind of transaction has occurred. These situations often arise when software products and services are included in the same agreements.

### **(b) Auditing Software License Revenue**

Primary audit procedures for software license revenue are reading and understanding the contract or software license agreement and determining the date of delivery of the software. In audits of software companies with many transactions of small amounts, this should be done on a test basis, relying as far as possible on the uniformity of transactions and client control procedures. In audits of software companies with fewer transactions of larger amounts, it may be necessary to audit most or all transactions, especially if the terms of the contracts or license agreements vary from transaction to transaction.

In assessing whether there are other significant vendor obligations that preclude revenue recognition on delivery, the auditor should review the history of the client in successfully completing installations of its software products and obtaining customer acceptance as expected. The auditor should consider the nature of the services and their magnitude in determining whether the obligations are significant enough to require delay in recognition of revenue. If the software company is engaged in its initial marketing of a new product, the auditor should consider whether there is a basis for assuming that the company is engaged in initial marketing of a new product.

The auditor should be especially alert for provisions in software contracts that give the customer the right to cancel the transaction. If returns are a consideration, the auditor should ensure that the client has complied with accounting procedures required by FASB Statement No. 48. In doing so, the auditor should test client estimates of returns to be provided for.

For material year-end transactions, the auditor should consider requesting that customers confirm not only balances due, but also payment terms, right-of-return privileges, continuing obligations of the client, or other significant risks retained by the client. Confirmations can also be used to inquire about the existence of any oral modifications or side-agreements to the original contract.

The auditor should consider obtaining written management representations regarding revenue recognition issues. These representations may include the terms and conditions of complex or unusual sales arrangements, contingencies regarding the customer's payment obligations, and the existence of side letters. Inquiries of sales personnel and review of correspondence files may also be useful in gaining a more complete understanding of complex or unusual transactions.

### **(c) Auditing Contract Accounting Revenues and Costs**

The auditor should be satisfied that the client has selected the appropriate alternative method—either the completed contract method or the percentage-of-completion method of accounting for contracts. As discussed in Chapter 5, there is a presumption that



companies engaging in contracting activities are able to make the estimates of project revenues and costs that would require the use of the percentage-of-completion method.

If a company accounts for percentage-of-completion contracts for software combined with hardware or services or both, using input cost-to-cost or hours-to-hours measures of progress, the auditor's considerations are comparable to those in auditing contracts in other industries. If the client uses different measures of progress-to-completion for elements of a contract, such as output value-added measures of progress for software and input hours-to-hours measures for services, the auditor will face additional issues. These include identifying and valuing of the contract elements, determining that the software company has had sufficient separate transactions with off-the-shelf software (if the accounting treatment is dependent on the software being off-the-shelf software), timing of the measure of progress on the output value-added element, and other issues that may surface as more of these transactions are addressed and interpreted in practice.

The auditor should consider the nature of the service being performed in a contract if this is a factor in the accounting treatment. The auditor should read the contractual descriptions of services to be performed and may need the assistance of a technical specialist to determine whether a project is a software development project. The nature of the services may determine what measures of progress-to-completion may be used and when progress can be determined to have occurred.

As in all audits involving contract accounting, the auditor should review the client's estimates of remaining revenues and costs-to-complete to assess whether a contract loss reserve is needed.

If a software company has used segmentation in accounting for contracts for software combined with hardware or services or both, the auditor will need to determine that the transactions meet the segmentation criteria of SOP 81-1. For contracts accounted for by segmentation, the auditor should be satisfied as to the costs identified with each element. If a contract is accounted for as a single cost center, the auditor should ensure that a constant profit margin has been reported in each period of the contract.

#### **(d) Auditing Postcontract Customer Support Revenue**

Audit procedures should include substantiation that, where required, all postcontract customer-support arrangements have been identified and unbundled from license transactions that include postcontract customer support and that the appropriate vendor specific of fair value (VSOE) has been obtained. The auditor should determine that the amortization schedules used by the software company appropriately allocate postcontract customer support revenue over the period of the contract.

### **7.4 GOING CONCERN CONSIDERATIONS**

#### **(a) Industry and Company Characteristics**

In the software industry, a relatively few individuals with technological capability are able to conceive an idea for one or more software products and start a company. Gen-

erally, initial development work on such products can be financed to some extent through “sweat equity,” with the principals doing much of the development and programming themselves. As the project takes shape, other investors may provide financing. At this stage, however, the financing is rarely sufficient to complete development, bring the product to market, and make the company a self-sustaining entity. Conventional financing, such as bank financing, is more difficult to obtain in the software industry than in other industries, because the primary assets of a software company are not tangible resources, such as inventory and fixed assets, and are generally not given the same consideration as collateral.

Software companies often face critical times in their development when survival is uncertain and the ability to continue in business depends on incurring additional debt or obtaining equity financing, or achieving profitable operations and cash flow, or both. The auditor is required to express opinions on the financial statements of developing software companies during these times. Moreover, some of the same issues arise from time to time in audits of established software companies.

### (b) Going Concern Audit Procedures

The software industry includes many new, developing companies, some of which are development stage enterprises as defined in FASB Statement 7, *Accounting and Reporting by Development Stage Enterprises*. The auditor will therefore be faced with going concern issues in the software industry more often than in other industries. Essentially, a going concern issue exists if there is information indicating that the entity may be unable to continue to meet its obligations as they become due, without substantial disposition of assets outside the ordinary course of business, restructuring of debt, externally forced revisions of its operations, or similar actions. The auditor is responsible for determining whether there is any doubt about the entity’s ability to continue as a going concern for 1 year after the date of the financial statements being audited.

AU Section 341.03 provides the following guidelines for determining whether there is substantial doubt about an entity’s ability to continue as a going concern.

- The audit considers whether the results of his procedures performed in planning, gathering evidential matter relative to the various audit objectives, and completing the audit identify conditions and events that, when considered in the aggregate, indicate there could be substantial doubt about the entity’s ability to continue as a going concern for a reasonable period of time. It may be necessary to obtain additional information about such conditions and events, as well as the appropriate evidential matter to support information that mitigates the auditor’s doubts.
- If the auditor believes there is substantial doubt about the entity’s ability to continue as a going concern for a reasonable period of time, he should (1) obtain information about management’s plans that are intended to mitigate the effect of such conditions or events, and (2) assess the likelihood that such plans can be effectively implemented.

- After the auditor has evaluated management's plans, he concludes whether he has substantial doubt about the entity's ability to continue as a going concern for the reasonable period of time. If the auditor concludes that there is substantial doubt, he should (1) consider the adequacy of disclosure about the entity's possible inability to continue as a going concern for a reasonable period of time, and (2) include an explanatory paragraph (following the opinion paragraph) in his audit report to reflect his conclusion. If the auditor concludes that substantial doubt does not exist, he should consider the need for disclosure.

Audit procedures that generally provide information relevant to the evaluation of an entity as a going concern are identified in AU Section 341.05, including analytical procedures, review of subsequent events, review of compliance with the terms of debt and loan agreements, reading of minutes, inquiry of legal counsel, and confirmation with related and third parties of the details of arrangements to provide or maintain financial support.

AU Section 341.06 describes conditions or events that may indicate doubt about an entity's ability to continue as a going concern. Generally, they include such factors as cash flow difficulties, defaults on loans or similar agreements, denial of credit, need to seek new financing or to dispose of assets, substantial revisions of operations, and losses of key customers or suppliers.

If a going concern issue is present, the auditor's evaluation of management's plans is a key procedure. AU Sections 341.07 to 341.09 describe how an auditor should evaluate management's plans. As many going concern issues involve the question of cash flow, the auditor should request a cash flow projection for at least 1 year after the date of the financial statements being audited, and should carefully evaluate the assumptions used.

If the auditor concludes that there is substantial doubt about an entity's ability to continue as a going concern, the auditor should consider the possible effects on the financial statements and the adequacy of disclosures. AU Section 341.10 suggests that the following information might be disclosed in the financial statements: the conditions and events giving rise to the going concern issue, the possible effects, management's evaluation of their significance and mitigating factors, possible discontinuance of operations, management's plans, and information about the recoverability of recorded asset amounts or classification of liabilities. The auditor's report should include an explanatory paragraph, following the opinion paragraph, such as the following.

The accompanying financial statements have been prepared on the assumption that the Company will continue as a going concern. As discussed in Note 1 to the financial statements, the Company has a net working capital deficiency that raises substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Following is another example of a going concern qualification paragraph that could have relevance to software companies.

The accompanying financial statements have been prepared on the assumption that the Company will continue as a going concern. As discussed in Note 1 to the financial statements, the Company presently anticipates that it has working capital to meet its needs through at least June 20, 19X3. Commercial product sales or software licenses are not expected to produce positive cash flow until at least the first quarter of 19X4. Therefore, the company must raise additional equity or debt capital in order to fund its operations. There is no assurance that sufficient equity or debt capital can be raised. Those circumstances raise substantial doubt about the Company's ability to continue as a going concern. The financial statements for the year ended December 31, 19X2, do not include any adjustments that might result from the outcome of this uncertainty.

If a going concern issue is present, but it is determined that management's plans are adequate to remove doubt about the entity's ability to continue as a going concern for one year after the date of the financial statements, it may still be necessary to disclose the conditions that gave rise to the going concern question, along with the mitigating factors, such as management's plans, that alleviated the question.

## 7.5 AUDIT RISK ALERTS

The AICPA issues annual Audit Risk Alerts for the High-Technology Industry. These Audit Risk Alerts address many of the areas discussed in *Software Industry Accounting*. It contains points that are essential for auditors to focus on when auditing software companies. The 2000/01 Audit Risk Alert is included as Appendix 7-B.

## 7.6 AICPA "AUDIT ISSUES IN REVENUE RECOGNITION"

In 1999, the AICPA issued a "white paper" publication entitled *Audit Issues in Revenue Recognition*. This publication discusses the conceptual framework for revenue recognition and provides specific guidance for certain troublesome areas, such as software sales. The white paper is included as Appendix 7-C.

## 7.7 CONCLUSION: A CHALLENGING INDUSTRY FOR AUDITORS

The software industry continues to be one of the fastest-growing industries. The business issues characterizing this industry—continued dependence on research and

development owing to short product life cycles, the intellectual component of the products, complex and unusual transactions, and high gross margins connected with incremental revenues, to name a few—lead to unique issues in both accounting and auditing.

Specific guidance on software capitalization is provided by FASB Statement No. 86. In addition, the auditor must have knowledge of the software industry and a specific understanding of the client's business to conclude as to the appropriateness of software capitalization, which includes determining the point at which technological feasibility of the product is established. That determination is subjective, based on the software developer's approach and interpretation of information about the development project. Once technological feasibility is determined and capitalization begins, the capitalized costs must be evaluated for recoverability based on estimated future revenue streams. That estimate is also subjective and can be uncertain for new companies lacking preestablished markets.

Specific guidance on revenue recognition is provided in SOP 97-2. The AICPA has also released two sets of technical questions and answers on financial accounting and reporting issues related to SOP 97-2. Additional Q&As and other interpretations will likely be issued in the future as related implementation issues are encountered and resolved.

In summary, the software industry provides unique opportunities and challenges for auditors. Auditors must be technically proficient in the application of the specific industry accounting pronouncements and have an in-depth understanding of the industry and the client. The merging of these two knowledge bases is essential in carrying out the auditor's responsibility.

As the business community continues to evolve into an increasingly information-based infrastructure, further opportunities for audit practice development will arise in the software industry.

## APPENDIX 7-A

# Audit Program for Audits of Software Companies

### GENERAL

The following sample audit program suggests various procedures to consider including in an audit program prepared for an audit of a software company. It does not address all areas discussed in Chapter 7. The sample audit program addresses only areas that are generally unique to software companies.

The sample audit program should not be considered to be an all-inclusive audit program for any audit. The nature and scope of audit procedures must be planned in light of the specific circumstances of each particular audit engagement.

### SOFTWARE RESEARCH AND DEVELOPMENT COSTS

#### **1. Obtain and document an understanding of the client's process.**

- Obtain and document an understanding of the client's process for designing software products, including the steps they go through such as users' needs analysis, systems analysis, initial project approvals, preparation of functional design specifications, coding, alpha and beta testing of programs, and final approvals for release to customers.
- Obtain and document an understanding of the client's process for tracking and accounting for the internal costs of developing software products to be marketed, including direct labor, indirect labor, and other direct overhead such as depreciation, utilities, etc.

#### **2. Obtain comparative summary; test balances for reasonableness, fluctuations and omissions.**

Obtain or prepare a schedule of capitalized software development costs. Review the balances for reasonableness, expected or unexpected fluctuations between years and obvious omissions. The schedule should include the following:

- Description of product, product version, date of technological feasibility determination, and, if applicable, date of general release
- Unamortized cost balance at the beginning of the period
- Current period additions
- Amounts amortized or written off during the period
- Unamortized balance at the end of the period

Agree the beginning balance to prior year's workpapers and agree the ending balance to the general ledger.

### **3. Perform analytical procedures on capitalized software development costs.**

Obtain or prepare a schedule showing capitalized software development costs as a percentage of revenues and as a percentage of total software development costs. Compare these amount to prior year(s) and industry averages, and inquire as to any significant differences. Assess and document the reasonableness of management's responses.

### **4. Review documentation of technological feasibility determination.**

For costs capitalized in the current year, review supporting documentation for the relevant projects to determine that technological feasibility of the project was established prior to capitalization of costs, pursuant to SFAS 86, paragraph 4. This step should be performed by engagement personnel with the requisite knowledge and experience to understand the client's technical documentation and to evaluate the adequacy of the client's procedures for determining technological feasibility.

### **5. Test labor costs capitalized.**

Obtain a schedule of labor costs capitalized and, on a test basis, agree the costs to supporting payroll records or other documentation.

### **6. Test other direct overhead costs.**

- Assess the reasonableness of other direct overhead costs that are capitalized. Determine that the method of allocating such costs to a project are consistent with methods used in prior years and with those prescribed in SFAS No. 86.
- Based upon the understanding of the development process obtained in step 1, determine that all appropriate overhead costs are included in the pool allocated to software development activities.

### **7. Recompute or apply analytics to test amortization and writeoffs.**

By recomputation or the application of analytical procedures, test amounts amortized during the period and judge the appropriateness of methods and periods used in accordance with the prescribed methods under SFAS No. 86. Note whether such methods are consistent with those used in the prior year. Apply analytical pro-

cedures or other tests as considered necessary to determine the validity of the assumptions in the underlying computations (i.e., sales forecasts, selling expenses, etc.).

#### **8. Compare amounts with income statement accounts.**

- Compare amounts amortized or written off with income statement accounts. Investigate significant differences.
- Determine that amortization is appropriately classified in the income statement. Such costs should not be classified as part of research and development costs.

#### **9. Evaluate carrying basis and possible write-offs.**

Obtain an analysis of the carrying basis of capitalized software development costs and determine whether additional write-offs are required to account for unrecoverable amounts. Items to consider are sales forecasts/useful life, changes in the particular technology/market size relevant to the products, and the current stage of the products' life cycles, uncertainties regarding customer acceptance of software products for which revenue has been recognized at the financial statement date.

### REVENUE

#### **1. Obtain listing of significant contracts.**

Obtain a listing of significant license contracts entered into during the year, including those entered into at or close to year end.

#### **2. Review significant contracts.**

From the listing obtained in step 1, select a sample of contracts for testing, and obtain and review the related contracts. Determine if revenue has been properly recognized or deferred, giving consideration to key contract terms, and document if there are any issues affecting revenue recognition due to:

- Delivery terms and payment terms
- Remaining significant vendor obligations
- Contract cancellation or termination clauses
- Contract execution date
- Collectibility
- Customer acceptance issues

#### **3. For material year end transactions, perform with the customer the significant contract terms, as well as the balance due as of year end. Obtain evidence of delivery prior to year end.**



**4. Test accounting for multiple elements.**

For contracts selected for testing, determine that PCS and services revenues have been appropriately accounted for, including the unbundling of undelivered elements where appropriate. Review evidence of the fair value of each element for compliance with SOP 97-2.

**5. Review accounts receivable aging for indication of collectibility issues.**

Review the aging of accounts receivable as of year end for significant receivables which have been outstanding for a significant period of time in relation to the usual payment terms (e.g., 120 days). Calculate the average day's sales outstanding as of the end of the year and compare to prior year(s). Inquire of the client as to whether there are issues related to customer acceptance, delivery, remaining vendor obligations, etc. which would indicate the revenues from older outstanding receivables should be deferred.

**6. Perform analytics on revenues by product.**

Obtain a comparative schedule of revenues by year for major products or product lines. Consideration should be given to obtaining the same information in the most recent year on a monthly or quarterly basis. Review this information for significant changes in trends and obtain and document explanations for significant variations. Consider if the information obtained is consistent with information obtained from performance of other audit procedures.

**7. Review sales returns and related reserves.**

Obtain an analysis of actual sales returns trends for recent years, including the amount of actual sales returns and returns as a percentage of sales. Agree the balances to the general ledger. Obtain and document explanations for any significant variances between years. Determine the adequacy and accuracy of the allowance for sales returns at year end based upon comparison to actual returns and prior year(s) trends.

**8. Perform detailed testing of contracts.**

For contracts which include services that are accounted for separately, or for contracts accounted for using a contract accounting method:

- Obtain an understanding of the client's policies and procedures for estimating the amount of progress on contracts. Such documentation should consider controls over estimation and bidding, project evaluation and administration, billing procedures, contract costs and revenues, changes in contract terms or scope, and claims.
- Obtain a listing of significant contracts which are billed on a time and materials (cost-plus) basis. Test the billings for selected contracts to determine the costs

are accumulated on a timely basis, conclude on the properly billable costs, and the revenues are billed on a timely basis.

- For fixed contracts, obtain a schedule of significant contracts which lists the contract names and amounts, costs incurred to date, estimated costs to complete, total estimated contract costs, total estimated contract revenues, and the amount of revenues and gross profit recognized to date. Perform the following:
  - (i) Agree the amount of costs and revenues recognized to date to the general ledger or subsidiary ledgers.
  - (ii) Review the client's estimates of progress and percentage of completion on the contract with project personnel, considering such factors as:
    - (1) The client's historical ability to make reasonable estimates.
    - (2) Costs incurred to date and the extent of completion compared to remaining costs to be incurred and tasks to be completed, including internal reports on contract progress, status and correspondence with customers and other documentation in contract files, and information in contract files or from attorneys regarding potential claims, disputes, and contingencies.
  - (iii) Inquire of the client and document if there are any technological feasibility issues that could affect the estimates made for the contracts.
  - (iv) Evaluate if the client's revenue recognition methods, including those for segmentation of contracts, is in accordance with SOP's 97-3 and 81-1.

## **9. Perform analytical procedures on gross margins.**

Analyze gross margins for significant product lines (i.e., product licenses, PCS, and other services, and consulting) for the current and prior year(s). Obtain and document explanations for significant changes in amounts, trends, etc.

## **10. Obtain written representation from management.**

Obtain written representation from management that the estimates of revenues recognized on contracts accounted for using a contract accounting method are reasonable and the revenues have been properly recorded.

## **OTHER INCOME STATEMENT PROCEDURES**

### **1. Identify accounts that require further audit assurance.**

Identify income statement accounts that require further audit assurances by considering:

- Audit tests of related asset and liability accounts
- The results of analytical procedures (e.g., fluctuation analysis)

- The reasonableness of income statement accounts based on knowledge of the client and its business

## **2. Perform analytical procedures.**

For those accounts requiring further assurance, perform analytical procedures combined, where appropriate, with analysis and tests of items in the account balance. The procedures should be limited to those necessary to provide the particular audit assurance sought.

## **3. Analyze research and development expense.**

Obtain a schedule comparing research and development expenses for the current and prior year(s), including calculation of such costs as a percentage of revenues. Obtain and document explanations for significant changes in amounts, trends, etc. between years. Inquire of the client as to whether their policy for classification of research and development costs has been consistent from year to year.

## APPENDIX 7-B

# Checklist for Documentation of Technological Feasibility

(If a project consists of a program including numerous enhancements to an existing product, use the Enhancement Program Supplement to answer applicable questions for each enhancement)

1. Name of product or project.

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2. If the project is being classified separately in a project cost system, list the project name(s) and project number(s) being used in the project cost summaries.

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3. At what office(s) is the work being performed? If at more than one office, give a brief description of the work at each office.

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4. Is this a new product or enhancement of an existing product?

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5. Provide a brief description of the technical features of the product or enhancement.

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6. If this project was in progress at the beginning of the year, describe new information, if any, about the project that has become known since last year's Project Information Summary was prepared (e.g., expansion of the project, technical difficulties, new outside funding sources).

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7. When was the idea for the project conceived and over what period of time was the determination of technological feasibility (see definition on page XX) carried out?

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8. On what date was technological feasibility determined and what documentation of technological feasibility (see definition on page XXX) exists to support that determination?

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9. Is there any written documentation about market feasibility (see definition on page XXX) of the product or enhancement?

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10. When was (will) the product of enhancement (be) available for general release to clients?

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11. Describe the work that was done on the project during the year.

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12. If the project was in progress at the end of the year, describe the remaining work and provide an estimate of the number of man-months of work required to complete.

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13. If there are any outside funding sources for this projects, provide the names of the funding parties and the amounts being provided by each.

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## DEFINITIONS

### Technological Feasibility

Technological feasibility means establishing that a computer software product can be produced to meet its design specifications, including functions, features, and technological performance requirements. The determination of technological feasibility includes any planning, designing, coding, and testing activities that are necessary to establish technological feasibility. The necessary skills, hardware, and software technology must be available and there must not be any high-risk development issues.

If the technology and existing software are mature, determination of technological feasibility for enhancements and other product development generally requires planning and designing, but may not require coding and testing.

### Documentation of Technological Feasibility

It is important for software capitalization that adequate *documentation* of technological feasibility exists. Software development costs may only be capitalized after the date on which it has been documented that technological feasibility exists. Costs incurred prior to the preparation of this documentation must be expensed. The form of documentation, which may vary from situation to situation, should be in the form of outlines, narratives, memoranda, flowcharts, or a combination.

It is required that the written documentation essentially accomplish a “product design,” which includes description and objectives of the product, and if applicable, an explanation of how data will be input into the product (such as by on-line input or by batch processing), a description of the data and reports to be generated by the product, the major processing and data transformation definitions, data storage and data structure requirements, and a general description of the data flow and interaction of modules and transforming processes.

Even more importantly, the written documentation must also essentially accomplish a “detail program design,” which takes product function, feature, and technical requirements to their most detailed, logical form, ready for coding. This should normally include a description of the logic, file layouts, report definitions, field definitions, algorithms, special routines, and specific arrays of data.

The materials that accomplish the product design and detail program design functions must be consistent.

For purposes of this questionnaire, we are asking for a description of documentation available in the division files to support the technological feasibility and the date on which that technological feasibility was determined and documented.

### Market Feasibility

General accepted accounting principles require that each balance sheet date, all capitalized software development costs pass a net realizable value test to determine that

expected future revenues from sale of the related products exceeds the sum of capitalized costs, future development costs, and costs of disposal (selling costs).

If development activities are enhancements of mature products, which improve the marketability and extend the life of the products, revenues expected to be realized from the individual enhancements are generally not identified separately.

However, please provide indication of any market information that is available for this product and its enhancements, as this could be useful in developing assumptions for the net realizable value test.

Software Development Costs Capitalization Procedure Document Enhancement Program Supplement					
<i>Name of Enhancement</i>	<i>Technical Features of Enhancement</i>	<i>Date Technological Feasibility Determined</i>	<i>Documentation Available to Support Technological Feasibility</i>	<i>Description of Work Done This Year and Remaining Work, if Any</i>	<i>General Release Date</i>





## APPENDIX 7-C

# High-Technology Industry Developments—2000/01

### ECONOMIC AND INDUSTRY DEVELOPMENTS

*What significant industry and economic events and conditions have occurred recently that are relevant to the audits of high-technology entities?*

The economy and the stock market have been dominated by the high-technology industry in the past several years. The desire to enter this industry does not seem to be affected by strong competition and the tragic experience of some of the new high-tech companies that ended up filing for bankruptcy. In 2000 we did not see any slowdown in the rush of new start-ups, especially in the Internet sector.

The pervasive impact of high technology on our overall economy has been dramatic. It is hard to pick up a newspaper these days without reading something about the so-called new economy, which is made up of all high-tech sectors. Discussions about the Internet, Web sites, portals, electronic commerce (e-commerce), electronic business (e-business), dot-com companies, and the like, abound. Analysts estimate that over the past several years technology spending accounted for about 30 percent of the growth in the gross domestic product (GDP). In addition to that, technology has helped to increase productivity, which in turn has allowed our economy to grow at such a fast pace for so long without sparking inflation.

Up until the beginning of this year, the market experienced one of its longest expansions and record-setting price levels. It was mostly due to the high-tech sector. However, during the past six months, stock prices of most of the high-tech companies declined, bringing the whole market down with them.

It is difficult to find common ground on the precise definition of what constitutes a high-technology entity. According to the American Electronics Association, the high-technology industry includes nine subgroups of manufacturing: computers, consumer electronics, communications equipment, electrical components, semiconductors, defense electronics, industrial electronics, electromedical equipment, and photonics, and two subgroups of services—telecommunications services and software and

computer services. For the purposes of this Alert, we will use this definition. It is important to note the great diversity that exists within the high-technology industry. These industry segments may be affected differently by the same economic conditions, as discussed in the following sections.

### Computers and Peripherals

This year the demand for computers and computer parts remained very strong. Personal computer (PC) analysts estimate a 17 percent growth in unit sales in 2000. This year's growth rate is a little bit lower than the 22 percent increase in unit sales experienced by the industry in 1999. The year 1999 was an outstanding one for the computer sector of the high-tech industry due largely to sales that were fueled by Internet service rebates—buyers willing to sign up for long-term Internet service were offered significant discounts on computers—and by the rush to upgrade equipment in anticipation of the year 2000 crisis. However, this year was favorable to computer makers with respect to prices—they finally got a break from steep, 30-percent-a-year price declines. Computer manufacturers were unwilling to lower prices because they had higher costs resulting from component shortages, there was strong demand for computers, and they just could not allow profit margins to shrink any further. Also, this year manufacturers moved away from lower end products and instead focused on more profitable midtier and higher-end computers. This shift resulted in a slight increase in average computer prices. Most computer makers experienced double-digit growth in revenues in the first two quarters. However, the third quarter was not as strong due to lower-than-expected sales in Europe. Demand for computers in Europe was softened by a combination of the following factors: the strong dollar, a weak euro, and a general economic slowdown. Should the European economic decline continue, fourth-quarter sales are expected to grow at a slower rate than at the beginning of the year and to be more in line with the third-quarter results.

Short product life cycles are a fundamental characteristic of this sector of the industry. For example, the life cycle of a desktop PC is thought to be two years or less, and it is estimated that up to 50 percent of profits for PCs and related products are now generated in the first three to six months of sales. As a result, computer makers face the risk of inventory obsolescence. See the "Inventory Valuation" section of this Alert for discussion of this issue.

Computer manufacturers may enter into hedging transactions to protect themselves against fluctuating prices of the components used in the production of computers. As a result, computer manufacturers may be affected by Financial Accounting Standards Board (FASB) Statement of Financial Accounting Standards No. 133, *Accounting for Derivative Instruments and Hedging Activities*, because they might have financial instruments that now should be accounted for as derivatives. See the "Auditing Derivatives" section of this Alert for more information on this topic.

### Semiconductors

Despite concerns by analysts and the press about a downturn in the chip business, this sector of high-tech industry has performed well in 2000. In August of this year, North

American-based manufacturers of semiconductor equipment posted for the first time average monthly bookings of more than \$3 billion with a resulting book-to-bill ratio of 1.24. This ratio indicates that orders exceeded shipments for that month by 24 percent, proving once again that the market is still expanding. Analysts expect that revenues in the aggregate will grow by 35 percent this year and 19 percent next year for semiconductor companies. Manufacturers of semiconductors are currently experiencing such a severe capacity shortage that it is expected that the industry will spend at least \$50 billion on new manufacturing capacity this year. Intel alone will spend \$6 billion to add new equipment and plants. There are two primary reasons behind the capacity shortage. First, up until last year the semiconductor sector was in a slump. Companies using chips exerted pressure to obtain ever lower prices from chip suppliers, who in turn had to reduce their capital investment to stay afloat. Second, demand for chips has exploded in the past year due to strong computer sales and development of new products requiring chips. Computer sales are on the upswing and chip manufacturers servicing traditional PC businesses are experiencing a healthy growth rate of 8 percent. At the same time, chip makers are expanding their business to service such areas as telecommunications, data networking, consumer electronics, and Internet access appliances. One of the most promising products is the flash memory chip, which retains data even when the power is switched off. These chips are used in cell phones, digital cameras, MP3 players, and personal digital assistants (PDAs). Their sales are expected to increase by at least 110 percent this year. A number of chip manufacturers are boosting their capacity for flash memory by converting plants that produced dynamic random access memory chips (DRAMs), which are still experiencing declining prices. To be able to produce new products, chip makers are acquiring new equipment and discarding the old. Rapid replacement of capital assets may trigger the need for reassessment of depreciation lives of all assets. In addition, auditors of semiconductor entities may need to ensure that their clients have appropriately considered the provisions of FASB Statement No. 121, *Accounting for the Impairment Of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of*. See the "Impairment of Long-Lived Assets" section of this Alert for further discussion of this topic.

Another implication of the shifting needs of product manufacturers and end users is the potential for rapid inventory obsolescence. New types of chips are continuously developed and older ones quickly become obsolete. Product life cycles continue to decrease and communications protocols constantly change. As a result, auditors may need to consider an increased level of risk associated with inventory valuations. For a further discussion, see the section titled "Inventory Valuation" in this Audit Risk Alert.

The semiconductor sector has great potential in the upcoming years. Both the U.S. House and Senate passed a bill this year granting permanent normal trade relations to China. The bill is expected to take effect early next year. The semiconductor industry stands to benefit from this bill immensely. Currently, the semiconductor market in China is estimated at \$8 billion a year and it is still growing. As a result of this bill, tariffs on U.S. high-tech imports will be eliminated and the current import duties ranging from 10 percent to 15 percent will be reduced to zero over the next three years.

## Electronic Products and Components

The electronics industry is having an explosive year, so much so that it can not keep up with the faster-than-expected demand. Electronics are the driving force in many consumer devices. Two basic components of most electronic devices are capacitors and resistors. Both, costing just pennies, are in great demand. Many consumer electronics hungry for such components are going to be difficult to locate this holiday season. The industry's policy of just-in-time manufacturing, as well as the accelerated pace of new product introduction, may have contributed to the current shortages. The high-risk nature of manufacturing has also halted the investment in new production capacity. In the last downturn of 1996 to 1998, overinvestment led to overproduction, which in turn resulted in falling prices and lower returns on new plants and equipment. As a result, manufacturers were cautious to invest in new capacities this time around. The worldwide shortage of electronic parts may result in a loss of sales opportunities now and well into the year 2001. The production lag could translate into unprecedented market opportunities for some, while it may be a serious threat for the others, particularly those who lose significant market share due to inability to fulfill sales orders. See the "GoingConcern Issue" section of this Alert for a discussion of the audit implications of this topic.

As the trend of technical innovation advances, many new applications are coming to fruition. For example, auto manufacturers have replaced mechanical complexities with such electronics as antilock brakes, traction control, Internet gadgetry, and previously unimaginable entertainment and navigation gear. This could not have happened without research and development (R&D), which is a major expense for the electronics industry. There is continuous pressure to develop and produce new products to maintain market share in an environment where technology changes at a rapid pace. As an auditor you should ensure that your client properly accounts for and discloses R&D costs in accordance with FASB Statement No. 2, *Accounting for Research and Development Costs*.

Consolidations in the electronics sector are on the rise, with a number of major deals taking place during the year. The prediction is for more mergers to occur. As an auditor, you need to ensure that your client's financial statements properly reflect these complex transactions. This issue is further discussed in the "Business Combinations" section of this Alert.

## Computer Software and Services

This year can be characterized by strong demand for software products. There are several reasons behind this trend.

First, more and more tasks are being computerized. Computerization has moved beyond the accounting and human resources functions. Now almost all business activity is being performed with the help of computers. Certain functions that just several years ago were considered to be too personal to be computerized are now being delegated to machines. The software sector has developed several revolutionary products in the past couple of years that changed our view on computerization. For example,

supplychain software made it possible to computerize the inventory management process. Software for customer relationship management has enabled companies to automate various types of customer outreach programs. And today's competitive environment, together with high expectations of investors work for the software industry by making it a necessity rather than an option for businesses to acquire and use the most novice applications. Businesses that are not using technology to its full extent are not going to be as efficient as their technologically advanced competitors and may not be successful in cutting cost.

Second, the Internet has created an unprecedented demand for new computer applications. In 2000, the fear of year 2000 problems among the heads of technology departments was replaced by a desire to bring their companies to the Internet. Businesses are using the Web to provide information and sell their products to customers, to purchase supplies from their vendors, and to communicate with their employees. To do all of that, they need to have proper applications and databases that can support those Web sites. This trend resulted in rapid growth of a number of software companies.

Finally, shortage of qualified information technology personnel made some companies outsource their computing to application service providers (ASP). So far ASPs have been targeting midsize businesses but eventually they are hoping to win over the top corporations.

It is impossible not to mention the Microsoft antitrust case when discussing developments in the software sector. In twenty-five years, Microsoft had become the world's most valuable corporation and the most powerful high-tech company. On June 8, 2000, in a landmark court case, U.S. District Judge Thomas Penfield Jackson ordered the breakup of Microsoft Corporation and mandated broad restrictions on its conduct until appeals ran their course.

If the breakup is upheld on appeal, it will most likely result in greater competition and more innovation, leading to a rise in the number of new enterprises formed and capitalized. The new enterprises, in turn, may fuel competition in the software sector. However, there could be a downside to a breakup if a proliferation of operating systems and greater diversity in applications result in increased incompatibility, complexity, and instability. These results, in turn, may reduce efficiency and make it harder for businesses to control transactions.

The software sector will benefit greatly in the coming years from the bill passed this year granting permanent normal trade relations to China (this bill is discussed in further detail in the "Semiconductors" section of this Alert). It is estimated that 90 percent of the software used in China comes from the United States. Most of it was pirated because tariffs made prices of U.S. software much higher than what was offered by most competitors. Once tariffs ranging from 6 percent to 35 percent are eliminated, U.S. software makers will be able to sell their products to China at competitive prices.

## Internet Services

At first, most businesspeople, including accountants, thought the only business use of the Internet was for e-commerce, which is generally understood to mean online retail

sales to consumers over the Internet, for example, Amazon.com selling books online. But some companies quickly realized that the greatest opportunities on the Internet were for business rather than consumer transactions. Before established stock brokerage houses had realized it, Charles Schwab, E\*trade, and other online brokerage houses had taken significant market share from them by offering online stock trading. The same phenomenon occurred for airline tickets, as online travel Web sites made major inroads into business travel sales by travel agencies, online classified employment advertising stole market share from newspapers, and industrial purchasing and sales quickly moved to electronic marketplaces, to name just a few. Companies that make it all possible by providing various services over the Internet make up the Internet sector of high-tech industry. Those companies operate in an electronic world environment which is unique and challenging, and poses a number of new demands on auditors. See the “Auditing in an Electronic Business Environment” section of this Alert for a discussion of e-business and its implications on the audit process.

On March 10, 2000, the Nasdaq and most Internet companies reached their all-time high market values. Up until that date, Internet companies focused on growing the number of site visitors and increasing their customer base and sales revenues. The ultimate goal was to become the Internet market share leader in their respective industries. Prompting such lofty goals was the idea that if a company could become the market share front-runner, then it could raise as much money as it needed from “angel” investors, venture capitalists, and the public stock market itself. Many indeed did do this with record-breaking initial public offerings (IPOs). Later in the spring of 2000, the market for dot-coms took an enormous downturn for a variety of reasons. For example, auditors of two Internet companies, DrKoop.com and CDNow, qualified their audit reports questioning the ability of these entities to meet their obligations as they came due and, therefore, to be able to continue as going concerns. On April 14, 2000, the Wall Street Journal published an article by Burton G. Malkiel entitled “Nasdaq: What Goes Up . . .” bringing out into the open what all professional investors learned in business school but chose to ignore for Internet stocks, that “eventually every stock can only be worth the value of the cash flow it is able to earn for the benefit of investors.” By this point in time, many Internet sector analysts were saying that most of the dot-coms couldn’t survive. Audited financial statements of many Internet companies filed with the Securities and Exchange Commission (SEC) indicated a history of continuously increasing losses with no positive cash flow in sight. The steep plunge in market value of 25 percent to 50 percent for Internet market leaders and as much as 90 percent or more for the rest of the dot-coms during the spring of 2000 is compelling evidence that the efficient market hypothesis is still valid in its main premises, that investors are rational, markets are efficient, and price changes only reflect new information. As a result of these developments, companies are likely to have difficulty raising cash as investors are now taking a closer look at return on investment (ROI) and cost savings. In the meantime, increasing sales, low operating margins, and excessive operating losses cannot fund continuing operations. Auditors should consider whether clients that require additional equity investments in the next twelve months to maintain operations have the ability to continue as a going concern.

See the “Going-Concern Issue” section of this Alert for further discussion of the going-concern issue. In addition, purchase business combinations financed by equity securities before the spring market plunge may result in assets recorded at values that, based on the current market’s assessment of expected cash flows, may be impaired. See the “Impairment of Long-Lived Assets” section of this Alert for further discussion.

In today’s tight labor market, many Internet companies are in the position of being unable to increase monetary compensation of their employees and having to resort to other methods to retain existing employees and to attract new ones. As a result, they often use stock options as a part of their compensation package. Due to declining stock prices Internet companies are more frequently being confronted with stock compensation issues such as repricing (that is, reducing the exercise price of fixed stock option awards). As an auditor of an Internet company, you should be aware that accounting for various changes to stock option plans has changed as a result of FASB Interpretation No. 44, *Accounting for Certain Transactions Involving Stock Compensation*—an interpretation of Accounting Principles Board (APB) Opinion No. 25, *Accounting for Stock Issued to Employees*. We will discuss this issue in further detail in the “Repricing of Employee Stock Options” section of this Alert.

Auditors should also consider the variety of unique accounting issues that may confront dot-com companies. The “Improper Revenue Recognition” and “Revenue Recognition in Financial Statements—SEC Staff Accounting Bulletin” sections of this Alert discuss some of the issues that are relevant to high-tech companies.

Another important development in the Internet industry this year is the judgment against MP3.com and the ongoing case against Napster. Those Web sites allowed customers to download and exchange copyrighted compact disks (CDs) for free. The record companies represented by the Recording Industry Association of America sued those companies to protect their intellectual property. The significance of the ruling against MP3 is that it indicates that the Wild West days of the Internet may be ending. According to the presiding judge in the case, U.S. District Judge Jed Rakoff:

Some of the evidence in the case strongly suggests that some companies operating in the area of the Internet may have a misconception that, because their technology is somewhat novel, they are somehow immune from the ordinary applications of laws of the United States, including copyright law. They need to understand that the law’s domain knows no such limit.

Although users, for now, can still obtain music for free, someone is paying for it—MP3. The MP3 case sets a precedent that businesses that participate in the distribution of copyrighted material are liable to the owners of that material for compensation. Auditors should consider whether clients that are engaged in similar e-business activities have sufficient contingent loss reserves and disclosures in the event they are found liable for copyright infringement as MP3.com was.

Napster also represents an important case for auditors. Regardless of whether Napster or the record industry prevails in court, emerging technology calls into question the continued viability of businesses involved in the sale and distribution of



CDs, digital video disks (DVDs), or e-books, whether through traditional stores or over the Internet. Auditors should question whether there's a threat to a client's ability to continue as a going concern because of market penetration and growth of emerging technologies that affect the recoverability of capitalized assets.

Among the prominent events in the Internet sector was the proposed merger between America Online (AOL) and Time Warner. For more than twenty years, business analysts have predicted the convergence of television, communications, and computers. When AOL, the largest and most profitable Internet company, announced its merger with Time Warner, the world's largest media company, that prediction came closer to realization. One of the major reasons AOL proposed to acquire Time Warner was to gain access to Time Warner's cable network after being denied access to AT&T's cable network, the largest cable system operator. In addition to the 13 million cable subscribers Time Warner would bring to AOL are the 57 million other subscribers from magazine subscriptions and Home Box Office. Not only would AOL acquire a huge customer base, but it would also acquire established quality brands built over decades, such as Time, Fortune, CNN, and Warner Brothers Pictures and Music. Currently, no other Internet or media company would have as large an Internet and cable subscriber base with the quality and depth of content that the new AOL Time Warner company will control.

The AOL-Time Warner merger is about competition and control of access to the Internet. When competition and access are controlled by few companies, the business models and viability of smaller and medium-sized Internet audit clients may be threatened.

### **Telecommunications**

This year the telecom market underwent many changes. Last December the Federal Communications Commission (FCC) granted Bell Atlantic permission to enter the long-distance market in New York state. In June of 2000, SBC Communications won the approval of the FCC to offer long-distance service to customers in Texas. Analysts expect all the Bells to obtain a few state approvals to provide long-distance service by the end of this year. With the Regional Bell Operating Companies (RBOC) entering the long-distance market and with long-distance providers offering local services, competition in the voice market is as strong as it has ever been. Phone companies have been forced to lower their rates to retain and attract customers. The Internet is also becoming an increased source of concern for the telephony sector because it represents an alternative means of delivering voice services to customers. Voice over Internet Protocol (VoIP) allows consumers to avoid charges of long-distance phone companies by breaking down sound into data packets and transmitting it over the Internet. Some Internet companies are offering this service for free, hoping to earn revenue through advertising. As a result of those developments, phone companies are looking into expanding their operations into other sectors. The long-distance sector appears to be in more trouble than the local voice sector. The long-distance sales grew in low single digits for the past year, while local sales experienced a more rapid growth,

in high single to low double digits. AT&T, for example, will be spinning off its consumer long-distance business. Some analysts believe that in several years long-distance will cease to exist as a separate industry.

Unlike telephony, the data and Internet services sector provides unlimited opportunity for growth. Analysts predict that this year the volume of data traffic in the U.S. will surpass that of traditional voice traffic and by 2001 it will be two and one-half times the volume of voice. Telecommunication companies are entering such new areas as consulting, Web hosting, and media. They are building new networks and upgrading the old ones to prepare themselves to compete in those new fields. Some companies saw mergers and acquisitions as the easiest way to obtain access to the needed technology. This year we saw a lot of merger action in the telecom market. The AOL-Time Warner merger tops the list. AT&T completed its purchase of MediaOne, and GTE finally merged with Bell Atlantic, forming Verizon Communications, which recently announced its plans to acquire OnePoint Communications Corp. Auditors of telecom companies involved in mergers and acquisitions should ensure that their clients properly account for these complex transactions. See the "Business Combinations" section of this Alert for further discussion of this topic.

Another important development in the telecom sector is so called "m-commerce" or mobile commerce. Sometimes it is also referred to as "wireless networking." The basic premise behind it is the ability of customers to access the Internet through their mobile phones. Analysts believe that in several years the number of mobile phones with Web-browsing capability worldwide will exceed the number of PCs connected to the Internet. Europe seems to be ahead of the United States in exploring the seemingly unlimited possibilities offered by this technology. European customers are using their mobile phones to access e-mail, check travel information, buy and sell securities, access local movie listings, obtain restaurant information, maps, news, and weather reports, and so on. Shopping with the help of mobile phones is considered to be the ultimate application for m-commerce. Unfortunately, at this point U.S. customers can do only very few things with their wireless phones because m-commerce is still in an early stage of development. Web content needs to be adjusted to fit small screens and graphics, which take a lot of memory, need to be modified or replaced with something else. Hi-tech companies are working on technology that will allow the United States to catch up with Europe and tap into the unlimited potential of m-commerce.

## Cable

The buzzword of the year in this telecom sector is broadband. Broadband is a means of transferring huge volumes of data almost instantly to Internet users via cable pipe. The possibilities for new broadband cable services are enormous. By the end of the year analysts estimate that about 3 million cable modems will be in use in North America, up from just a few hundred thousand a few months ago. Broadband technology offers Internet access that is more than 100 times faster than typical modems wired through cable or digital subscriber line (DSL). Such high-speed access can cut the wait time for pages to load so that, in most cases, the down load seems to be instantaneous.

Over the next several years as broadband use accelerates numerous new applications are expected to become available. Live full-screen video with higher resolution than conventional television will allow video conferencing and collaboration. Video on demand will also become a reality as viewers will be able to select any television show or movie at any time. This feature will pose a threat to conventional broadcasters, cable operators, and any business involved in the manufacture, distribution, and sale or rental of physical DVDs and video cassettes.

However, opportunities offered to the cable sector by broadband may be hindered by new governmental regulations. While the world awaits a decision on the merger between America Online and Time Warner, the degree of likelihood that Congress will regulate high-speed Internet access over cable wire escalates. Cable companies have been successful at warding off attempts by Congress and the FCC to mandate sharing their lines with competing Internet service providers. The merger approval may be dependent on consenting to line sharing. This will increase the need for a national policy applicable to all cable operators.

The FCC is contemplating to what extent its involvement should be in requiring cable companies to open up their networks to Internet service providers. It is reasonable to say that whatever the commissioners decide, action will be taken in court by the unhappy party. Three decisions were made during the past year by federal courts. In June, the Ninth Circuit Court of Appeals ruled that cable Internet service should be viewed as a telecommunications service. The Fourth Circuit Court of Appeals ruled it should be treated as a cable service. The Eleventh Circuit disagreed with both rulings. The only thing clear to promoters of open access was that if it were to be imposed by regulators, it would have to come from the FCC.

Currently, the cable sector is dominated by five large companies that account for 80 percent of the U.S. market. This represents a major barrier for competition. In addition to that, before the FCC took action in October 2000, telecommunication carriers routinely entered into exclusive contracts with building owners, thereby precluding other service providers from accessing the building. Emerging carriers complained that this practice stifled competition because building owners often preferred established providers to new and unknown ones. The FCC has taken several actions to encourage competition and promote consumer choice. One of these actions is to prohibit telecommunication carriers in the commercial environment from entering into exclusive contracts with building owners, including contracts restricting premises owners or their agents from permitting access to other telecommunications service providers. Real estate groups are strongly opposed to this regulation, calling it “forced access” to buildings. Major players in the cable sector are not going to benefit from this ruling either because it fosters the growth and development of competition. However, it is welcomed by small to medium-sized carriers. As an auditor of a cable company, you may wish to consider the effect this regulation will have on your client.

The look of the cable industry is changing. Larger companies continue to expand their territories at the expense of smaller competitors through mergers and acquisitions. The “Business Combinations” section of this Alert discusses points you need to consider as an auditor of a company that is involved in these complex transactions.

### Executive Summary—Economic and Industry Developments

- The high-technology industry continues to have a significant impact on the U.S. economy.
- Rapid changes in technology continue to be a significant factor affecting inventory valuations, a continuing area of concern for auditors of high-technology entities.
- Demand for PCs remained strong this year and was accompanied by an increase in prices due to a shift to more expensive models. Computer makers may be affected by FASB Statement No. 133.
- Manufacturers of semiconductors are expanding their capacity due to very strong demand. Chip makers are constantly upgrading or replacing their equipment to be able to manufacture new products, which triggers such accounting issues as the need to reassess depreciation lives.
- To keep up with the competition, companies in the electronics industry need to spend heavily on research and development. They are also faced with a capacity shortage, which may result in the inability to fulfill sales orders.
- The final decision in the Microsoft antitrust case will have a significant effect on the software sector. Demand for software products and services remained strong.
- Internet companies had a difficult year and many of them may end up with a “going concern” paragraph in the audit opinion.
- There were a number of mergers in the telecommunications and cable sectors. This poses a threat for small companies, which might not be able to survive the competition against the industry giants.

## AUDIT ISSUES AND DEVELOPMENTS

### Going-Concern Issue

*Why is the going-concern issue important for the high-tech industry?  
What is the auditor’s responsibility in addressing it?*

A number of high-tech industry sectors have experienced intense competition, recurring operating losses, negative cash flows, and the inability to obtain debt or equity financing. These circumstances have resulted in a high rate of business failure. And, despite the current favorable economic environment, the Internet sector experienced a disproportionately high rate of bankruptcies this year. Accordingly, auditors may identify conditions and events that, when considered in the aggregate, indicate that there could be substantial doubt about a high-tech entity’s ability to continue as a going concern. For example, such conditions and events could include (1) negative trends such as recurring operating losses or working capital deficiencies, (2) financial difficulties such as loan defaults or denial of trade credit from suppliers, (3) internal matters such as

substantial dependence on the success of a particular line of product, or (4) external matters such as legal proceedings or loss of a principal supplier. In such circumstances auditors will have to consider whether, based on such conditions and events, there is substantial doubt about the company's ability to continue as a going concern.

Auditors should be aware of their responsibilities pursuant to Statement on Auditing Standards (SAS) No. 59, *The Auditor's Consideration of an Entity's Ability to Continue as a Going Concern* (AICPA, *Professional Standards*, vol. 1, AU sec. 341). SAS No. 59 provides guidance to auditors in conducting an audit of financial statements in accordance with generally accepted auditing standards (GAAS) for evaluating whether there is substantial doubt about a client's ability to continue as a going concern for a period not to exceed one year from the date of the financial statements being audited.

Continuation of an entity as a going concern is generally assumed in the absence of significant information to the contrary. Information that significantly contradicts the going-concern assumption relates to the entity's inability to continue to meet its obligations as they become due without substantial disposition of assets outside the ordinary course of business, restructuring of debt, externally forced revisions of its operations, or similar actions. SAS No. 59 does not require the auditor to design audit procedures solely to identify conditions and events that, when considered in the aggregate, indicate there could be substantial doubt about the entity's ability to continue as a going concern. The results of auditing procedures designed and performed to achieve other audit objectives should be sufficient for that purpose.

If the auditor believes there is substantial doubt about the entity's ability to continue as a going concern, the auditor should consider whether it is likely that the adverse effects of the existing conditions and events can be mitigated by management plans for a reasonable period of time and that those plans can be effectively implemented. If the auditor obtains sufficient competent evidential matter to alleviate doubts about going-concern issues for a reasonable period of time, then consideration should be given to the possible effects on the financial statements and the adequacy of the related disclosures. If, however, after considering identified conditions and events, along with management's plans, the auditor concludes that substantial doubt about the entity's ability to continue as a going concern remains, the audit report should include an explanatory paragraph to reflect that conclusion. In these circumstances, auditors should refer to the specific guidance set forth under SAS No. 59.

For those high-tech entities that are under bankruptcy reorganization pursuant to chapter 11 of the Bankruptcy Code or emerging from it, the auditor should consider whether the company is following the accounting guidance of Statement of Position (SOP) 90-7, *Financial Reporting by Entities in Reorganization Under the Bankruptcy Code*. High-tech entities that filed for bankruptcy may have impairments that need to be recorded prior to fresh-start accounting under SOP 90-7. The auditor should be aware that in November 1999 the SEC staff released Staff Accounting Bulletin (SAB) No. 100, *Restructuring and Impairment Charges*, which affects accounting for impairments. SAB No. 100 can be found on the SEC Web site at [www.sec.gov/rules/acctreps/sab100.htm](http://www.sec.gov/rules/acctreps/sab100.htm).

## Inventory Valuation

*How does the issue of inventory valuation affect auditors of high-technology clients?*

The primary literature on inventory accounting is Accounting Research Bulletin (ARB) No. 43, *Restatement and Revision of Accounting Research Bulletins*, chapters 3A and 4, which provide the following summary:

Inventory shall be stated at the lower of cost or market except in certain exceptional cases when it may be stated above cost. Cost is defined as the sum of the applicable expenditures and charges directly or indirectly incurred in bringing inventories to their existing condition and location. Cost for inventory purposes may be determined under any one of several assumptions as to the flow of cost factors (such as first-in, first-out; average; and last-in, first-out).

Whether inventory is properly stated at lower of cost or market can be a very significant issue for high-technology audit clients because of rapid changes that can occur in many areas, and the need for entities to keep up with the newest technology. Examples of factors that may affect inventory pricing include the following:

- Changes in a product's design may have an adverse impact on the entity's older products, with older products not as salable as the newer versions.
- A competitor's introduction of a technologically advanced version of the product may decrease salability of a client's products.
- Changes in the products promoted by the industry as a whole, such as a shift from analog to digital technology, may affect salability.
- Changes in foreign economies may result in such situations as slowdown of sales to that region or lower-priced imports from that region.
- Changes in the technology to produce high-technology products can give competitors a selling-price advantage.
- Changes in regulations could affect the competitive environment.
- The entity's own product changes may not be well researched due to the pressure to introduce new products quickly, resulting in poor sales or high returns.

The highly competitive environment and the rapid advancement of technological factors contribute to the common problem of rapid inventory obsolescence in the high-technology industry. As such, auditors should consider whether the value at which inventories are carried is appropriate.

The auditor may look at many factors in determining the proper valuation of inventories. A few examples of those factors that may be useful include the following:

- Product sales trends and expected future demand
- Sales forecasts prepared by management as compared with industry statistics
- Anticipated technological advancements that could render existing inventories obsolete or that could significantly reduce their value

- Inventory valuation ratios, such as gross profit ratios, inventory turnover, obsolescence reserves as a percentage of inventory, and days' sales in inventory
- New product lines planned by management and their effects on current inventory
- New product announcements by competitors
- Economic conditions in markets where the product is sold
- Economic conditions in areas where competitive products are produced
- Changes in the regulatory environment
- Unusual or unexpected movements, or lack thereof, of certain raw materials for use in work-in-process inventory
- Levels of product returns
- Pricing trends for the type of products sold by the client
- Changes in standards used by the industry

Also, the auditor may need to address many other issues, including the taking of physical inventories in high-technology entities. The auditor should consider the guidance set forth in SAS No. 1, *Codification of Auditing Standards and Procedures* (AICPA, *Professional Standards*, vol. 1, AU sec. 331, "Inventories"). Among the issues for the auditor's consideration are the following:

- When dealing with some difficult types of inventory, such as chemicals used in processing, the auditor may need to take samples for outside analysis. The work of a specialist may also be needed, and the auditor should follow the guidance set forth in SAS No. 73, *Using the Work of a Specialist* (AICPA, *Professional Standards*, vol. 1, AU sec. 336).
- The extent to which raw materials have been converted to work-in-process will need to be determined to assess the value of the work-in-process.
- Indications of old or neglected materials or finished goods need to be considered in the valuation of the inventory.
- The client's inventory held by others will need to be considered, as well as field service inventories for use in servicing the client's products.

#### Executive Summary-Inventory Valuation

- Inventory valuation may be a significant issue for auditors of high-technology entities, primarily due to the rapid rate of inventory obsolescence in this industry.
- Auditors need to be alert to potential threats to the salability of inventory, such as changes in technology or new competitors in the field with more advanced products.
- Observing the physical inventory process may require use of specialists.

## Improper Revenue Recognition

*What factors might indicate a misstatement of revenues and why are these issues of particular concern to auditors of high-technology entities?*

Business practices in the high-technology industry continue to evolve. Many transactions are customized based on specific customer needs, and contracts may contain unusual or complex terms (for example, multi-element transactions and nonmonetary exchanges). Because a type of technology can often be used in many ways in different types of products without incurring significant additional costs, a vendor may fashion individual products and services for different clients. They can provide for extended payment terms, the right to receive future products or services, cancellation options, rights of returns, rights of exchange, acceptance clauses, free services, price protection, and so forth. In addition, even the standard sales contract may have features that make revenue recognition less than straightforward, such as requiring substantial continuing vendor involvement after delivery of merchandise (for example, software or hardware sales requiring installation, debugging, extensive modifications, or other significant support commitments). These types of issues make the determination of proper revenue recognition more difficult in the high-technology industry than in many other industries.

Additionally, technology is a high-profile industry, and a significant amount of business news coverage is devoted to this industry. Changes in the share prices of the technology group of stocks are often a matter of general business interest. The continuous scrutiny and the pressure to meet market expectations are factors that may lead to additional concerns on the part of the auditor that there has been no material misstatement of earnings. Also, failing to meet market expectations can have a significant effect on the value of the company's stock and the value of employee stock options, which are often a significant portion of total management compensation in high-technology entities.

Auditors of high-tech entities should be alert to the significant risks that may be associated with this area. Auditors should of course consider whether routine revenue transactions have been properly accounted for. However, greater levels of audit risk may more likely be associated with unusual, complex, or nonroutine revenue transactions, especially those that occur at or near the end of a reporting period. Therefore, auditors should have a sufficient understanding of the nature of the entity's business to be able to distinguish routine transactions from those that are unusual or complex.

The high-tech industry is extremely competitive. Industry players are using a variety of pricing mechanisms and other product offerings in order to attract new customers and satisfy the existing ones in an attempt to increase their market share. Therefore, it is not uncommon for high-tech entities to offer their customers such terms and conditions that would be considered more than generous by the standards of any other industry. The following is a brief discussion of some of the circumstances likely to exist in the high-tech industry that might affect revenue recognition.



### Side Agreements

Side agreements may be used to entice customers to accept delivery of goods and services. They often remain either undocumented or documented in agreements separate from the main contract. When side agreements exist, there is a greater risk that accounting personnel will not be aware of all of the terms of the transaction, which may result in improper revenue recognition. In addition to that, side agreements may create obligations or contingencies relating to financing arrangements or to product installation or customization that may relieve the customer of some of the risks and rewards of ownership, thus affecting the timing of revenue recognition.

Typically, very few individuals within an entity are aware of the use of side agreements. Although side agreements may be difficult to discover, auditors should consider their possible existence. SAS No. 82, *Consideration of Fraud in a Financial Statement Audit* (AICPA, *Professional Standards*, vol. 1, AU sec. 316), states that “if there is a risk of material misstatement due to fraud that may involve or result in improper revenue recognition, it may be appropriate to confirm with customers certain relevant contract terms and the absence of side agreements—inasmuch as the appropriate accounting is often influenced by such terms or agreements. For example, acceptance criteria, delivery and payment terms and the absence of future or continuing vendor obligations, the right to return the product, guaranteed resale amounts, and cancellation or refund provisions often are relevant in the circumstances.”

### Price Protection Agreements

A price protection clause requires the seller to rebate or credit a portion of the sales price if the seller subsequently reduces its price for a product and the purchaser still has rights with respect to that product. The seller guarantees sales price by agreeing to (1) reacquire the equipment at a guaranteed price at specified time periods as a means to facilitate its resale or (2) pay the purchaser for the deficiency, if any, between the sales proceeds received for the equipment and guaranteed minimum resale value.

FASB’s Emerging Issues Task Force (EITF) Issue No. 95-1, *Revenue Recognition on Sales with a Guaranteed Minimum Resale Value*, provides guidance on accounting for price protection agreements. According to this consensus position, the manufacturer (seller) is precluded from recognizing a sale of equipment if the manufacturer guarantees the resale value of the equipment to the purchaser. Rather, the manufacturer should account for the transaction as a lease, using the principles of lease accounting described in FASB Statement No. 13, *Accounting for Leases*.

### Bill and Hold Sales

It is not uncommon for high-technology companies to enter into bill and hold transactions. In a bill and hold transaction, a customer agrees to purchase the goods but the seller retains physical possession until the customer requests shipment to designated locations. Normally, such an arrangement does not qualify as a sale because delivery has not occurred. Under certain conditions, however, when a buyer has made an absolute purchase commitment and has assumed the risks and rewards of the purchased

product but is unable to accept delivery because of a compelling business reason, bill and hold sales may qualify for revenue recognition.

SAB No. 101, *Revenue Recognition in Financial Statements*, provides guidance for determining if a bill and hold transaction can be recognized as a sale. Although SAB No. 101 is not binding on nonpublic companies, management and auditors of those companies may find it useful in analyzing bill and hold transactions. See the “Revenue Recognition in Financial Statements—SEC Staff Accounting Bulletin” section of this Alert for further discussion of SAB No. 101.

### **Rights of Return**

It is common for high-technology manufacturers to provide their customers with rights of return. FASB Statement No. 48, *Revenue Recognition When Right of Return Exists*, specifies how an entity should account for sales of its products in which the buyer has a right to return the product. The Statement provides a list of conditions, all of which must be met to recognize revenue from the transaction at the time of sale. One of these conditions is that the amount of future returns can be reasonably estimated.

Paragraph 8 of FASB Statement No. 48 describes a number of factors that may impair (but not necessarily preclude) the ability to make a reasonable estimate of the amount of future returns. Among the factors that are most prevalent in the high-technology industry are the following:

- The susceptibility of the product to significant external factors, such as technological obsolescence or changes in demand
- Absence of historical experience with similar types of sales of similar products, or inability to apply such experience because of changing circumstances, for example, changes in the selling enterprise’s marketing policies or relationships with its customers

When an entity is unable to reasonably estimate the amount of future returns, revenue recognition should be postponed until the return privilege has substantially expired or until such time when the returns can be reasonably estimated and all the other conditions listed in FASB Statement No. 48 have been met.

Auditors of SEC registrants should also be familiar with guidance provided in SAB No. 101. The SAB lists a number of factors, in addition to those provided in FASB Statement No. 48, that may affect or preclude the ability to make reasonable and reliable estimates of product returns. See the “Revenue Recognition in Financial Statements—SEC Staff Accounting Bulletin” section of this Alert for further discussion of SAB No. 101.

### **“Solution Selling” and Bundled Sales**

Companies in some sectors of the high-tech industry are migrating toward providing total, customized solutions and other bundled sales to their customers. Computer hardware manufacturers may provide their customers with hardware and some or all of the following: software, peripherals, installation, customization, and other services.

Computer software companies may also provide their customers with additional services such as consulting, system integration, and ongoing support. When transactions contain multiple elements, it may be difficult to determine the amount and timing of the related revenue recognition.

When a revenue transaction involves both products and services, the individual elements of the transaction should be separated and accounted for separately. According to SAB No. 101, if an arrangement (i.e., outside the scope of SOP 81-1, *Accounting for Performance of Construction-Type and Certain Production-Type Contracts*) requires the delivery or performance of multiple deliverables, or “elements,” the delivery of an individual element is considered not to have occurred if there are undelivered elements that are essential to the functionality of the delivered element because the customer does not have the full use of the delivered element. Services that are essential to the functionality of the product and/or involve significant production, customization, or modification should be accounted for in conformity with ARB No. 45, *Long-Term Construction-Type Contracts*, using the relevant guidance in SOP 81-1. For services that do not qualify for contract accounting, revenue generally is recognized ratably over the contractual period or as the services are performed.

Software vendors that bundle their products with additional software and services should follow guidance provided in SOP 97-2, *Software Revenue Recognition*. The SOP refers to these arrangements as “multiple element arrangements” and requires software companies to allocate fees to each element of the arrangement. The portion of the fee allocated to an element should be recognized as revenue when all the revenue recognition criteria specified in this SOP have been met related to that element. The SOP requires the use of vendor-specific objective evidence (VSOE) of fair value when allocating the fee to various elements in a multiple element arrangement. When sufficient VSOE does not exist, then generally all revenue from the arrangement should be deferred until the earlier of the point at which (1) such VSOE does exist, or (2) all elements of the arrangement have been delivered. Auditors of software companies should also be aware of a number of Technical Practice Aids issued by the AICPA providing guidance on the application of SOP 97-2.

EITF Issue No. 00-21, *Accounting, for Multiple-Element Revenue Arrangements*, focuses on when and how an arrangement should be divided into separate units of accounting. Auditors of high-tech companies should pay close attention to EITF developments because the consensus on this issue is expected to be reached soon.

### **Barter Transactions and Nonmonetary Exchanges**

Barter transactions and nonmonetary exchanges also may occur in the high-tech industry. For example, Internet companies may exchange rights to place advertisements on each other’s Web sites or a software company may accept shares of its customer’s stock as payment for its products or services. Auditors should be aware that transactions that do not involve an exchange of monetary consideration have an increased risk of not being captured by the accounting system. In addition, the accounting for barter transactions and nonmonetary exchanges may require the use of significant accounting estimates.

APB No. 29, *Accounting for Nonmonetary Transactions*, provides guidance on the accounting for nonmonetary exchanges. According to the APB, in general accounting for nonmonetary transactions should be based on the fair values of the assets (or services) involved. In the circumstances where there is not sufficient evidence of fair value, which is common for newer companies, the transaction should be recorded at the book value of the asset transferred from the enterprise.

The auditors of high-tech companies should also be aware of guidance provided in EITF Issue No. 99-17, *Accounting for Advertising Barter Transactions*. According to the EITF revenue and expense should be recognized at fair value from an advertising barter transaction only if the fair value of the advertising surrendered in the transaction is determinable based on the entity's own historical practice of receiving cash, marketable securities, or other consideration that is readily convertible to a known amount of cash for similar advertising from buyers unrelated to the counterparty on the barter transaction. If fair value of the advertising surrendered cannot be determined, the barter transaction should be recorded based on the carrying amount of the advertising surrendered, which likely will be zero.

### Classification of Revenues and Costs

Given the lack of profitability for certain high-technology entities, particularly Internet companies, analysts and prospective investors may evaluate their performance based on revenues or gross margins. In fact, for some of these companies, the amount of the operating loss may not be a consideration at all. Accordingly, the classification of items within the income statement may take on greater significance than might otherwise be the case. In such circumstances, auditors may need to place heightened scrutiny on classification issues. SAB No. 101 and a number of recent EITF statements address the issues of income statement classification. See the "Revenue Recognition in Financial Statements-SEC Staff Accounting Bulletin" and "Recent EITF Issues Relevant to HighTechnology Industry" sections of this Alert for further discussion of this topic.

### Other Circumstances of Concern

Also suspect are high volumes of revenues recognized in the last few weeks—or days—of a reporting period. The following are examples of additional circumstances of concern to auditors regarding the issue of recognition of revenue:

- Partial shipments if the portion not shipped is a critical component of the product
- Revenue transactions with related parties
- Lack of involvement by the accounting or finance department in unusual or complex sales transactions
- Sales in which evidence indicates the customer's obligation to pay for the merchandise depends on the following:
  - Receipt of financing from another party
  - Resale to another party (such as sale to distributor or a consignment sale)
  - Fulfillment by the seller of material unsatisfied conditions
  - Final acceptance by the customer following an evaluation period
- Existence of longer-than-usual payment terms or installment receivables

- Sales terms that do not comply with the company's normal policies
- Sales that require substantial continuing vendor involvement after delivery of merchandise (for example, software sales requiring installation, debugging, extensive modifications, or other significant support commitments)
- Shipments of merchandise to customers without proper authorization from the customer
- Shipments of merchandise to company-owned warehouses
- Pre-invoicing of goods in process or being assembled or invoicing before or in the absence of actual shipment

### **Auditing Procedures**

In auditing revenues, the auditor should design procedures to reduce the risk of misstatement of revenues in the financial statements. The following are examples of such procedures.

*Obtaining an Understanding of the Business.* As mentioned earlier, it is important for the auditor to understand the client's industry and business. This is of critical importance in the high-tech industry where rapidly changing events may make obtaining this understanding a challenge. The understanding would include the kinds of products and services sold and the client's and industry's customary terms over sales. The auditor also obtains an understanding of the controls surrounding the shipment of goods and the recognition of revenue.

*Assignment of Personnel.* Unusual or complex sales contracts may call for consideration by more experienced audit personnel.

*Physical Observation.* In connection with the observation of inventories at the end of a reporting period, auditors frequently obtain information pertaining to the final shipments of goods made during the period. This information later is compared to the client's sales records to determine whether a proper cutoff of sales occurred. Additional procedures include inspecting the shipping areas at the observation site and making inquiries about whether goods in the shipping area will be included in inventory. If they are not to be included in inventory, the auditor may need to obtain information about the nature of the goods and the quantities and make additional inquiries of management. Auditors also might inspect the site to determine whether any other inventory has been segregated.

*Inquiry of Relevant Personnel.* In many instances, particularly those involving unusual or complex transactions, the auditor should consider making inquiries of marketing, inventory control personnel, and other client personnel familiar with the transactions to gain an understanding of the nature of the transactions and any special terms that may be associated with them. Inquiries of legal staff also may be appropriate. In some circumstances, the auditor may wish to obtain written representations from such personnel.

*Analytical Procedures.* Well-planned and detailed analytical procedures used in planning the audit and as substantive tests can identify situations that warrant additional

consideration. Examples of these procedures include monthly or weekly analyses of sales volume, comparison of sales volume to prior periods, ratio of sales in the last month or week to total sales for the quarter or year, and the client's record of making or exceeding budgeted sales amounts.

*Confirmations.* Standard confirmation requests (confirming only the outstanding balance) alone do not always provide sufficient evidence that only appropriate revenue transactions have been recorded. Auditors should consider the need to confirm significant terms of contracts and whether to inquire about the existence of oral or written contract modifications (side agreements).

*Reading and Understanding the Contracts.* In many entities, the majority of sales are made pursuant to standard terms and are not evidenced by other than the normal purchase orders and shipping documentation. In addition to understanding the client's normal terms of sale, the auditor should read and understand contracts related to those significant transactions that are unusual or complex. Auditors need to be careful not to assume that all contracts are alike, and they need to consider the substance and form of an arrangement. In some entities, the majority of revenues are comprised of complex transactions evidenced by individual contracts. In these circumstances, the need for the auditor to read and understand individual contract terms may be increased. Auditors may wish to consider whether contracts that include only "as of" dating presumptively provide evidence of the date on which such contracts were executed.

Auditors of high-tech companies may find helpful the Audit Guide *Auditing Revenue*, which will contain chapters titled "Auditing Revenue Transactions in the High Technology Manufacturing Industry" and "Auditing Revenue Transactions in the Computer Software Industry." This Guide will be published in 2001.

#### Executive Summary-Improper Revenue Recognition

- Auditors are reminded of the significant risks that may be associated with revenue recognition in the high-tech industry.
- Auditors should be alert for significant unusual or complex transactions, especially those that occur at or near the end of a reporting period, along with a variety of other circumstances that may raise concerns about improper revenue recognition.
- Auditors should be alert to the possible existence of side agreements and price protection agreements. They should also pay close attention to accounting treatment of bill and hold sales, rights of returns, bundled sales, and barter transactions.
- Auditors should consider the issue of revenue recognition with regard to its impact on engagement planning, assignment of personnel, physical observation, inquiry of relevant personnel, analytical procedures, confirmations, and reading and understanding contractual arrangements.

## Auditing in an Electronic Business Environment

*How will the increased use of e-business affect auditors of high-tech entities?*

Before discussing the effect of e-business on the auditor, it may be helpful to provide a definition: The term *e-business* means the transformations of key business processes through the use of Internet technologies. E-business has a number of significant audit and accounting implications, including the following:

- In the not-too-distant past, investors demonstrated a great tolerance for dot-coms with limited revenues and a lack of profitability. There seemed to be few misgivings on their part about providing additional cash infusions to keep these entities solvent. The focus of the investment community was on the future potential for earnings. In those circumstances it was appropriate for auditors to conclude that the going-concern assumption was valid. However, the collapse of some prominent Internet companies earlier in the year has ushered in greater skepticism on the part of investors. Given this change in circumstances, auditors may have to reassess the going-concern assumption for some of their dot-com clients in accordance with SAS No. 59. See the “Going-Concern Issue” section of this Alert for further discussion.
- In addition to performing the audit, some CPA firms may provide nonattest services to a high-tech client involved in Internet transactions that will require consideration of independence issues. For example, designing, implementing, or integrating information systems for your audit client may impair independence. In such circumstances, the auditor should consider Rule 101, *Independence* (AICPA, *Professional Standards*, vol. 2, ET sec. 101). Auditors of publicly held entities should of course also consider SEC and, where applicable, Independence Standards Board (ISB) independence standards.
- The technological skills required to fully understand the operations of an e-business and the manner in which business is transacted may be highly specialized. Having a sound understanding of these matters may therefore present a formidable challenge to the uninitiated. This is further complicated by the rapid change in technology, which may mean that you’re chasing a moving target. Even though auditors are likely to have the requisite skill set to address many of the issues that arise in an e-business environment, some additional training may be required. In some cases, the use of a technology specialist may be advisable. If the auditor decides to use the specialist, he or she should consider SAS No. 73.
- E-business will result in the increased use of electronic data to transact business, and to record, update, and maintain records. As a result, auditors of high-tech companies conducting business over the Internet will be confronted with evaluating evidential matter that may exist only in electronic format. SAS No. 31, *Evidential Matter* (AICPA, *Professional Standards*, vol. 1, AU sec. 326), as amended by SAS No. 80, points out, among other matters, that certain electronic evidence may exist at a certain point in time but may not be retrievable after a specified period of time if files are changed and if backup files do not exist. Therefore, the auditor should

consider the time during which information exists or is available in determining the nature, timing, and extent of his or her substantive tests and, if applicable, tests of controls.

- The auditor also may be more likely to see prepackaged or customized computer systems used by Internet companies. In such circumstances, the auditor should evaluate management's consideration of SOP 98-1, *Accounting for the Costs of Computer Software Developed or Obtained for Internal Use*.
- The cost of developing a Web site is one of the key issues identified by the SEC staff. It is often one of the largest costs for a company conducting business over the Internet. The SEC staff believes that a large portion of these costs should be accounted for according to SOP 98-1. This year, FASB issued EITF Issue No. 00-2, *Accounting for Web Site Development Costs*. The auditor should ensure that management accounted for the costs of developing a Web site in accordance with the above-mentioned guidance.
- Accounts receivable are a hot topic for the Internet sector because of the high incidence of fraud on the Internet. Auditors should evaluate the collectibility of accounts receivable and the adequacy of bad debt reserve.
- Factors such as lack of a paper trail, possible poor controls, and unauthorized persons initiating transactions may increase the potential for disputes. These in turn may lead to legal action for which accrual and/or disclosure is required pursuant to FASB Statement No. 5, *Accounting for Contingencies*. SAS No. 12, *Inquiry of a Client's Lawyer Concerning Litigation, Claims, and Assessments* (AICPA, *Professional Standards*, vol. 1, AU sec. 337), provides guidance on the procedures an independent auditor should consider for identifying litigation, claims, and assessments and for satisfying himself or herself as to the financial accounting and reporting for such matters when performing an audit in accordance with GAAS.
- Changes in the way the client does business in the Internet environment of course need to be considered by the auditor when planning the engagement. SAS No. 22, *Planning and Supervision* (AICPA, *Professional Standards*, vol. 1, AU sec. 311), points out some of the important considerations that should be addressed in the planning phase of the audit. Among those matters are the need for the auditor to obtain knowledge about the entity's business, its operating characteristics, types of products and services, production, distribution, and compensation methods, matters affecting the industry in which the client operates, changes in technology, and other matters. Given the unique characteristics of e-business entities, a sound understanding of these matters at the planning stage will be especially critical. Attention should also be given to the planning considerations discussed in SAS No. 48, *The Effects of Computer Processing on the Audit of Financial Statements* (AICPA, *Professional Standards*, vol. 1, AU sec. 311).

E-business may result in rapid changes in the way transactions are processed, possibly without adequate consideration of the effect on internal control. SAS No. 55, *Consideration of Internal Control in a Financial Statement Audit* (AICPA, *Professional Standards*, vol. 1, AU sec. 319), as amended by SAS No. 78, *Consideration*



of *Internal Control in a Financial Statement Audit: An Amendment to SAS No. 55* (AICPA, *Professional Standards*, vol. 1, AU sec. 319), provides guidance on the auditor's consideration of an entity's internal control in an audit of financial statements in accordance with GAAS.

SAS No. 82, *Consideration of Fraud in a Financial Statement Audit* (AICPA, *Professional Standards*, vol. 1, AU sec. 316), suggests, among other matters, a number of fraud risk factors relating to misstatements arising from fraudulent financial reporting. Some of these factors may be particularly relevant to e-business entities. These fraud risk factors may include rapid changes in the industry, high vulnerability to rapidly changing technology, significant pressure to obtain additional capital necessary to stay competitive, a significant portion of management's compensation represented by stock options, an inability to generate cash flows from operations, a high degree of competition, management continuing to employ ineffective information technology staff, the threat of imminent bankruptcy, and an excessive interest by management in maintaining or increasing the entity's stock price.

E-business is a new realm. Accordingly, accounting issues that arise are likely to be more problematic when compared with "old economy" entities. Auditors should be particularly alert to the manner in which management applies existing standards, and those recently developed, to this new business model. Given that divergent practices may exist where generally accepted accounting principles (GAAP) is unclear or nonexistent, careful consideration should be given to whether the accounting methods employed accurately reflect the substance of the underlying transaction.

**Help Desk**—Look for the newly introduced Audit Risk Alert *E-Business Industry Developments—2000/01* for comprehensive discussions of the considerations unique to the e-business environment. See "Resource Central" later in this Alert for further information.

#### Executive Summary—Auditing in an Electronic Business Environment

- Increasingly, auditors are faced with auditing in an environment where a significant amount of business is transacted electronically.
- E-business environments may have a significant impact on the audit process, including such matters as internal control, audit evidence, using the work of a specialist, and independence.
- The newly introduced Audit Risk Alert *E-Business Industry Developments 2000/01* takes a close look at the e-world and its implications to auditors.

#### Business Combinations

*How does the trend toward merger and consolidation in the high-technology industry affect auditors of high-technology entities?*

There has been significant merger activity in the high-technology industry recently, as entities attempt to increase market share, gain access to new markets, or acquire the knowledge or the infrastructure to keep competitive. As a result, auditors of high-technology entities face a greater likelihood of dealing with clients that were involved in a business combination in the last year and with clients facing an upcoming business combination. The following is a discussion of some of the issues relating to business combinations that the auditor may be facing.

A business combination, according to APB Opinion 16, *Business Combinations*, occurs when a corporation and one or more incorporated or unincorporated businesses are brought together into one accounting entity. The single entity that results carries on the activities of the previously separate, independent enterprises. The auditing and accounting issues that arise out of corporate consolidations are numerous and varied. Auditors should carefully consider the individual circumstances of the client to identify those issues and to then develop an appropriate audit strategy. Some of the issues that should be considered by auditors include the following.

- Careful consideration should be given to management's accounting for the business combination to ensure that all relevant generally accepted accounting principles have been considered, and for publicly-held entities, all relevant SEC rules and regulations should be considered also. For example, if the pooling-of-interests method has been used, have the specific criteria of APB Opinion 16 been met?<sup>1</sup> If not, has the purchase price been allocated to the assets (including identifiable intangibles) and liabilities acquired with good will properly calculated in accordance with the purchase method of accounting?<sup>2</sup>
- If specialists have been used in asset or liability valuation, auditors relying on such information should understand their responsibilities when using the work of a specialist, as set forth under SAS No. 73.
- The question of the valuation and subsequent write-off of in-process research and development has been an area of particular concern for the SEC, especially with respect to high-technology companies. Accordingly, audit risk in this area may be especially acute for publicly held high-technology entities. Auditors should be

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<sup>1</sup>Auditors should be aware that currently the Financial Accounting Standards Board (FASB) is debating whether to eliminate pooling as a method of accounting for mergers and acquisitions. If a final proposal passes by the end of 2000, it could take effect on January 1, 2001. All U.S. companies initiating business combinations after that date would have to use the purchase method to account for the transaction.

<sup>2</sup>Accountants, other than the continuing accountant, who, among other things, have been requested to provide advice on the application of accounting principles to specified transactions, such as whether a proposed business combination is in compliance with the pooling requirements of Accounting Principles Board (APB) Opinion No. 16, *Business Combinations*, and other related generally accepted accounting principles (GAAP), should refer to the guidance set forth under Statement on Auditing Standards (SAS) No. 50, *Reports on the Application of Accounting Principles* (AICPA, *Professional Standards*, vol. 1, AU sec. 625).

aware that in 2001, the AICPA is planning to publish the Practice Aid titled *Assets Acquired in a Purchase Business Combination to Be Used in Research and Development Activities*.

- With consolidation comes dramatic change in the structure of an entity. In an effort to create greater cost efficiencies in the consolidated entity, departments may be combined and duplicative functions eliminated. Auditors should consider the impact of such changes on their client's internal control when making the assessment of control risk. SAS No. 55, as amended by SAS No. 78, provides guidance on the auditor's consideration of an entity's internal control in an audit of financial statements in accordance with generally accepted auditing standards (GAAS).
- Business combinations often result in the gain of a client for one auditor and a loss of a client for another. Thus, in the current environment, auditors may be more likely to find themselves in the role of either a predecessor or successor auditor. SAS No. 84, *Communications Between Predecessor and Successor Auditors* (AICPA, *Professional Standards*, vol. 1, AU sec. 315), provides guidance on communications between predecessor and successor auditors when a change of auditors is in process or has taken place.
- Mergers and acquisitions may be effected in part through the use of debt financing. Auditors should carefully evaluate the terms of the debt agreement to identify, among other things, whether there are any loan covenants, and if so, the terms. Auditors should evaluate compliance with restrictive covenants and the implications of any loan covenant violations.
- The acquisition of an entity by one party may mean that another party has disposed of a business segment. Accordingly, auditors of the selling party should consider whether management has followed the accounting and disclosure requirements of APB Opinion 30, *Reporting the Results of Operations—Reporting the Effects of Disposal of a Segment of a Business, and Extraordinary, Unusual and Infrequently Occurring Events and Transactions*. Audit risk may be significant for discontinued operations involving an extended phase-out period. Auditors should give careful consideration to management's estimates when the disposal date of the segment occurs after year end. SAS No. 57, *Auditing Accounting Estimates* (AICPA, *Professional Standards*, vol. 1, sec. 342), provides guidance on obtaining and evaluating sufficient competent evidential matter to support significant accounting estimates.
- Subsequent to the business combination, auditors should consider whether management has prepared the financial statements of the combined entity in accordance with appropriate accounting standards) including FASB Statement No. 94, *Consolidation of All Majority-Owned Subsidiaries*, and ARB No. 51, *Consolidated Financial Statements*.
- A business combination involving a public business enterprise may result in an operating segment subject to the disclosure requirements of FASB Statement No. 131, *Disclosures about Segments of an Enterprise and Related Information*. In such circumstances, auditors should consider the guidance set forth under Auditing Interpretation No. 4, "Applying Auditing Procedures to Segment Disclosures in

Financial Statements,” of SAS No. 13, *Evidential Matter* (AICPA, *Professional Standards*, vol. 1, AU sec. 9326.22).

### Executive Summary-Business Combinations

- The ongoing consolidations of high-technology entities suggest that auditors are more likely to face the numerous and varied issues relating to business combinations.
- Auditors should carefully consider the individual circumstances of the client to identify the auditing and accounting issues that arise out of corporate consolidations.
- Auditors should consider the possible auditing and accounting issues that might arise as a result of a business combination, including the accounting methods used, effects on internal control, predecessor and successor communications, and discontinued operations.

### Auditing Derivatives

*What guidance is available for auditing derivative instruments?*

The topic of derivatives takes center stage this year, from both the accounting and auditing perspectives. FASB Statement No. 133, *Accounting for Derivative Instruments and Hedging Activities* (as amended), issued in June 1998, became effective for all fiscal quarters of all fiscal years beginning after June 15, 2000. Many high-tech entities are likely to be affected by FASB Statement No. 133 because they might have financial instruments that now should be accounted for as derivatives. In September of this year, the Auditing Standards Board (ASB) issued SAS No. 92, *Auditing Derivative Instruments, Hedging Activities, and Investments in Securities* (AICPA, *Professional Standards*, vol. 1, AU sec. 391). SAS No. 92, which will supersede SAS No. 81, *Auditing Investments* (AICPA, *Professional Standards*, vol. 1, AU sec. 332), is effective for audits of financial statements for fiscal years ending on or after June 30, 2001. Early application of the SAS is permitted.

### Guidance for Auditors

SAS No. 92 provides guidance for auditors in planning and performing auditing procedures for financial statement assertions about derivative instruments, hedging activities, and investments in securities. The guidance in the SAS applies to (1) *derivative instruments*, as defined by FASB Statement No. 133; (2) hedging activities in which the entity designates a derivative or a nonderivative financial instrument as a hedge of exposure for which FASB Statement No. 133 permits hedge accounting; and (3) *debt and equity securities*, as those terms are defined in FASB Statement No. 115, *Accounting for Certain Investments in Debt and Equity Securities*. The matters addressed by SAS No. 92 include—

- *The need for special skills or knowledge.* Auditors may need special skills or knowledge to plan and perform procedures for certain assertions about derivatives and securities, such as the ability to identify a derivative that is embedded in a contract or agreement.
- *Consideration of audit risk and materiality.* SAS No. 92 offers examples of considerations that affect the auditor's assessment of inherent risk (that is, the susceptibility of an assertion to a material misstatement, assuming there are no related controls) for assertions about derivatives or securities. Such factors include the complexity of the features of the derivative or security and the entity's experience with the derivative or security. The SAS also discusses control risk (that is, the risk that a material misstatement that could occur in an assertion will not be prevented or detected on a timely basis by an entity's internal control) assessment.
- *Designing substantive procedures based on risk assessment.* Auditors assess inherent and control risk for assertions about derivatives and securities to determine the nature, timing, and extent of the substantive procedures to be performed. Substantive procedures for derivatives and securities should address the five categories of assertions presented in SAS No. 31, *Evidential Matter*.
  1. *Existence or occurrence*—Existence assertions address whether the derivatives and securities reported in the financial statements exist at the balance sheet date. Occurrence assertions address whether derivatives and securities transactions reported in the financial statements (as a part of earnings, other comprehensive income, or cash flows) occurred.
  2. *Completeness*—Completeness assertions address whether all of the entity's derivatives and securities and the related transactions are reported in the financial statements.
  3. *Rights and obligations*—Assertions about rights and obligations address whether the entity has the rights and obligations associated with derivatives and securities reported in the financial statements.
  4. *Valuation*—Assertions about the valuation of derivatives and securities address whether the amounts reported in the financial statements were determined in conformity with GAAP. GAAP may require that a derivative or security be valued based on cost, the investee's financial results, or fair value. Also, GAAP for securities may vary depending on the type of security, the nature of the transaction, management's objectives related to the security; and the type of entity.
  5. *Presentation and disclosure*—Assertions about presentation and disclosure address whether the classification, description, and disclosure of derivatives and securities in the entity's financial statements are in conformity with GAAP

SAS No. 92 also discusses hedging activities and management representation issues.

### **Audit Guide to Complement SAS No. 92**

An Audit Guide to complement the SAS has been developed by the ASB and will be available in January 2001. The Guide provides practical guidance for implementing the

SAS in all types of audit engagements. The objective of the Guide is both to explain SAS No. 92 and to provide practical illustrations through the use of case studies.

The Guide will include an overview of derivatives and securities and the general accounting considerations for them, as well as case studies that address topics such as the use of interest rate futures contracts to hedge the forecasted issuance of debt, the use of put options to hedge available-for-sale securities, separately accounting for a derivative embedded in a bond, the use of interest rate swaps to hedge existing debt, the use of foreign-currency put options to hedge a forecasted sale denominated in a foreign currency, changing the classification of a security to held-to-maturity, control risk considerations when service organizations provide securities services, inherent and control risk assessment, and designing substantive procedures based on risk assessments.

### Executive Summary-Auditing Derivatives

- The topic of derivatives takes center stage this year, from both the accounting and auditing perspectives.
- Auditing guidance is available to auditors in the form of SAS No. 92, *Auditing Derivative Instruments, Hedging Activities, and Investments in Securities*.
- Further, more detailed guidance will be available in a related ASB Audit Guide that has been designed to complement the new SAS.

## ACCOUNTING ISSUES AND DEVELOPMENTS

### Revenue Recognition in Financial Statements—SEC Staff Accounting Bulletin

*What does the new SEC Staff Accounting Bulletin have to say about revenue recognition? What effect will it have on financial statement preparation and audits for high-tech entities?*

On December 3, 1999, the SEC staff released SAB No. 101, *Revenue Recognition in Financial Statements*.<sup>3</sup> This SAB addresses the application of GAAP to revenue recognition in financial statements. It applies to entities subject to SEC regulations. Initially, SAB No. 101 was required to be applied no later than the first fiscal quarter of the fiscal year beginning after December 15, 1999. However, subsequently the effective

<sup>3</sup>Staff Accounting Bulletins (SABs) are not rules or interpretations of the Securities and Exchange Commission (SEC); they represent interpretations and practices followed by staff of the Office of the Chief Accountant and the Division of Corporation Finance in administering the disclosure requirements of the federal securities laws.

date was amended twice by SAB No. 101A and SAB No. 101B. The most recent effective date according to SAB No. 101B is no later than the fourth fiscal quarter of the fiscal year beginning after December 15, 1999.

The SAB lists and explains four critical criteria needed for revenue recognition. All of the following criteria must be met for revenue to be recognized:

1. Persuasive evidence of an arrangement exists
2. Delivery has occurred or services have been rendered
3. The seller's price to the buyer is fixed or determinable
4. Collectibility is reasonably assured

The SAB addresses a number of revenue recognition topics. In this Alert we will discuss only those that are most relevant to high-tech entities.

### **Factors Precluding Revenue Recognition Even If the Title Has Passed to the Buyer**

Many high-technology manufacturers use written contracts to document the terms of an arrangement, particularly when the arrangement is complex. In other situations, the manufacturing company may use a purchase order from the customer to document its understanding with the customer. SAB No. 101 states that the presence of certain characteristics in a transaction precludes revenue recognition even if title to the product has passed to the buyer. It is common for high-technology companies to provide sales incentives that include some of these characteristics that preclude revenue recognition. According to SAB No. 101, the presence of one or more of the following characteristics precludes revenue recognition even if title to the product has passed to the buyer:

1. The buyer has the right to return the product and—
  - a. The buyer does not pay the seller at the time of sale, and the buyer is not obligated to pay the seller at a specified date or dates.
  - b. The buyer does not pay the seller at the time of sale but rather is obligated to pay at a specified date or dates, and the buyer's obligation to pay is contractually or implicitly excused until the buyer resells the product or subsequently consumes or uses the product.
  - c. The buyer's obligation to the seller would be changed (for example, the seller would forgive the obligation or grant a refund) in the event of theft or physical destruction or damage of the product.
  - d. The buyer acquiring the product for resale does not have economic substance apart from that provided by the seller.
  - e. The seller has significant obligations for future performance to directly bring about resale of the product by the buyer.
2. The seller is required to repurchase the product (or a substantially identical product or processed goods of which the product is a component) at specified prices that are not subject to change except for fluctuations due to finance and holding costs, and the amounts to be paid by the seller will be adjusted, as necessary, to

cover substantially all fluctuations in costs incurred by the buyer in purchasing and holding the product (including interest). The SEC staff believes that indicators of the latter condition include any of the following:

- a. The seller provides interest-free or significantly below market financing to the buyer beyond the seller's customary sales terms and until the products are resold.
  - b. The seller pays interest costs on behalf of the buyer under a third-party financing arrangement.
  - c. The seller has a practice of refunding (or intends to refund) a portion of the original sales price representative of interest expense for the period from when the buyer paid the seller until the buyer resells the product.
3. The transaction possesses the characteristics set forth in EITF Issue No. 95-1, *Revenue Recognition on Sales with a Guaranteed Minimum Resale Value*, and does not qualify for sales-type lease accounting.
  4. The product is delivered for demonstration purposes.

### Bill and Hold Transactions

As was mentioned before, it is not uncommon for high-tech entities to enter into bill and hold transactions. SAB No. 101 set forth certain criteria that a bill and hold transaction of a public company should meet in order to qualify for revenue recognition when delivery has not occurred. These include:

1. The risks of ownership must have passed to the buyer;
2. The customer must have made a fixed commitment to purchase the goods, preferably in written documentation;
3. The buyer, not the seller, must request that the transaction be on a bill and hold basis. The buyer must have a substantial business purpose for ordering the goods on a bill and hold basis;
4. There must be a fixed schedule for delivery of the goods. The date for delivery must be reasonable and must be consistent with the buyer's business purpose (for example, storage periods are customary in the industry);
5. The seller must not have retained any specific performance obligations such that the earning process is not complete;
6. The ordered goods must have been segregated from the seller's inventory and not be subject to being used to fill other orders; and
7. The equipment (product) must be complete and ready for shipment.

The SAB states that in applying the above criteria to a purported bill and hold sale, the individuals responsible for the preparation and filing of financial statements also should consider the following factors:

1. The date by which the seller expects payment, and whether the seller has modified its normal billing and credit terms for this buyer;
2. The seller's past experiences with and pattern of bill and hold transactions;



3. Whether the buyer has the expected risk of loss in the event of a decline in the market value of goods;
4. Whether the seller's custodial risks are insurable and insured;
5. Whether extended procedures are necessary in order to assure that there are no exceptions to the buyer's commitment to accept and pay for the goods sold (i.e., that the business reasons for the bill and hold have not introduced a contingency to the buyer's commitment).

### **Reliable Estimates of Product Returns**

As was mentioned before, high-tech companies often provide their customers with a right of return. FASB Statement No. 48 provides guidance for revenue recognition when a right of return exists. Paragraph 8 of FASB Statement No. 48 lists a number of factors that may impair the ability to make a reasonable estimate of product returns at the time of the sale, thereby preventing the seller from recognizing revenue. The paragraph concludes by stating "other factors may preclude a reasonable estimate." The SAB identifies the following additional factors, among others, that may affect or preclude the ability to make reasonable and reliable estimates of product returns:

- Significant increases in or excess levels of inventory in a distribution channel (sometimes referred to as "channel stuffing")
- Lack of "visibility" into or the inability to determine or observe the levels of inventory in a distribution channel and the current level of sales to end users
- Expected introductions of new products that may result in the technological obsolescence of and larger than expected returns of current products
- The significance of a particular distributor to the registrant's (or a reporting segment's) business, sales and marketing
- The newness of a product
- The introduction of competitors' products with superior technology or greater expected market acceptance, and other factors that affect market demand and changing trends in that demand for the registrant's products

Registrants and their auditors should carefully analyze all factors, including trends in historical data, that may affect registrants' ability to make reasonable and reliable estimates of product returns.

### **Acceptance, Cancellation, and Termination Clauses**

It is not uncommon for a high-technology company to include acceptance, cancellation, or termination clauses in its agreements with customers. According to SAB No. 101, if uncertainty exists about customer acceptance after delivery of a product or performance of a service, revenue should not be recognized until acceptance occurs or acceptance provisions lapse. With respect to cancellation or termination clauses, the SEC staff believes that they may be indicative of a demonstration period or an otherwise incomplete transaction. These contractual provisions raise questions about whether the sales price is fixed or determinable. The sales price in arrangements that

are cancelable by the customer are neither fixed nor determinable until the cancellation privileges lapse. If the cancellation privileges expire ratably over a stated contractual term, the sales price is considered to become determinable ratably over the stated term. Short-term rights of return, such as thirty-day money-back guarantees, and other customary rights to return products are not considered to be cancellation privileges but should be accounted for in accordance with FASB Statement No. 48.

### **Side Agreements**

To entice customers to buy their products, high-tech companies often offer additional incentives that effectively amend the master contract. These are called “side” agreements. The SAB states that registrants should ensure that appropriate policies, procedures, and internal controls exist and are properly documented so as to provide reasonable assurances that sales transactions, including those affected by side agreements, are properly accounted for in accordance with GAAP and to ensure compliance with section 13 of the Securities Exchange Act of 1934 (that is, the Foreign Corrupt Practices Act). Side agreements could include cancellation, termination, or other provisions that affect revenue recognition. The existence of a subsequently executed side agreement may be an indicator that the original agreement was not final and revenue recognition was not appropriate.

### **Licensing Arrangements**

High-technology companies often derive a significant portion of their revenues from licensing their products to customers. The SAB states that in those cases revenue should not be recognized until the license term begins. Accordingly, if a licensed product or technology is physically delivered to the customer, but the license term has not yet begun, revenue should not be recognized prior to inception of the license term. Upon inception of the license term, revenue should be recognized in a manner consistent with the nature of the transaction and the earnings process.

### **Income Statement Presentation—Gross Versus Net**

Before the advent of the “new economy,” stock prices were generally determined by the company’s bottom line. In today’s dot-com world, many Internet companies report net losses and yet are still doing very well in the stock market. The stock price for those companies is often affected more by the size of their revenue than by the size of their net income or loss. That is why it is extremely important to ensure that revenue is properly stated. The SAB gives an example of a company that operates an Internet site from which it sells products of another company. Customers place their orders for the product by making a product selection directly from the Internet site and providing a credit card number for the payment. The company operating the Internet site receives the order and authorization from the credit card company and passes the order on to the company whose product it sells so that it can ship the product directly to the customer. The company operating the Internet site does not take title to the product and has no risk of loss or other responsibility for the product. The company whose product is sold is responsible for all product returns, defects, and disputed credit card charges.

In the event a credit card transaction is rejected, the company operating the Internet site loses only its margin on the sale. In this situation, it is the SEC staff's view that the company operating the Internet site should report the revenue from the product on a net basis.

In assessing whether revenue should be reported gross with separate display of cost of sales to arrive at gross profit or on a net basis, the SEC staff considers whether the registrant

1. Acts as principal in the transaction.
2. Takes title to the products.
3. Has risks and rewards of ownership, such as the risk of loss for collection, delivery, or returns.
4. Acts as an agent or broker (including performing services, in substance, as an agent or broker) with compensation on a commission or fee basis.

If the company performs as an agent or broker without assuming the risks and rewards of ownership of the goods, sales should be reported on a net basis.

EITF Issue No. 99-19, *Reporting Revenue Gross as a Principal versus Net as an Agent*, provides additional guidance in determining whether to recognize revenue on a gross or net basis. It lists a number of factors that should be considered when making this decision. See the "Recent EITF Issues Relevant to High-Technology Industry" section of this Alert for a complete listing of EITF issues that might be relevant for high-tech industry.

### Conclusion

As auditor of an SEC registrant you should ensure that management has properly applied the accounting and disclosure requirements described in SAB No. 101. The SEC staff will not object if registrants that have not applied this accounting in the past do not restate prior financial statements, provided they report a change in accounting principle in accordance with APB Opinion 20, *Accounting Changes*. However, registrants that have not previously complied with GAAP should apply the guidance in APB Opinion 20 for the correction of an error.

Auditors might find helpful guidance recently issued by SEC staff on implementation of SAB No. 101. This guidance, in the form of a Frequently Asked Questions (FAQ) document, is available on the SEC's Web site at [www.sec.gov/offices/account/sab101.fq.htm](http://www.sec.gov/offices/account/sab101.fq.htm).

Auditors need to be aware that in this Alert we discussed only those issues that are most likely to affect high-tech entities. The SAB and FAQ discuss other topics that might be relevant to high-tech industry.

There are numerous issues on EITF's agenda dealing with revenue recognition. Auditors should be aware of final consensuses reached to ensure that, where applicable, their clients have properly applied these standards. See the "Recent EITF Issues Relevant to HighTechnology Industry" section of this Alert for a complete listing of EITF issues that might be relevant for high-tech industry.

**Help Desk**—This section presents only a summary of items from SAB No. 101 that are most likely to affect high-tech entities. Readers of this Alert are strongly encouraged to refer to the full text of SAB No. 101, which can be viewed at the SEC Web site at [www.sec.gov/rules/acctreps/sab101.htm](http://www.sec.gov/rules/acctreps/sab101.htm).

#### Executive Summary—Revenue Recognition in Financial Statements— SEC Staff Accounting Bulletin

- SAB No. 101 lists four critical criteria needed for revenue recognition.
- The SAB lists factors precluding revenue recognition even if the title has passed to the buyer.
- The SAB addresses bill and hold transactions by setting forth the criteria to be met to recognize revenue when delivery has not occurred.
- The SAB lists factors that may affect or preclude the ability to make reasonable and reliable estimates of product returns.
- The SAB discusses acceptance, cancellation, and termination clauses. It also addresses the issue of side agreements and licensing arrangements.
- The SAB discusses issues related to income statement presentation of revenue. It lists factors that should be considered when deciding whether revenue should be recognized on a gross or net basis. Additional guidance on this topic is provided in EITF Issue No. 99-19.
- Auditors might find helpful guidance, in the form of a FAQ document, recently issued by SEC staff on implementation of SAB No. 101. It can be found on the SEC's Web site.

### Recent EITF Issues Relevant to the High-Technology Industry

*What are some of the EITF issues that may be relevant to high-tech entities?*

Auditors of high-tech companies should pay close attention to EITF issues because in the past several years the EITF addressed a number of topics relevant to that industry. The application of EITF consensuses (category c of the GAAP hierarchy) effective after March 15, 1992, is mandatory under SAS No. 69, *The Meaning of Present Fairly in Conformity With Generally Accepted Accounting Principles in the Independent Auditor's Report* (AICPA, *Professional Standards*, vol. 1, AU sec. 411). Any EITF consensus issued before March 16, 1992, becomes effective in the hierarchy for initial application of an accounting principle after March 15, 1993. The following is a summary of EITF issues discussed in the past two years that are relevant to the high-tech industry.<sup>4</sup>

<sup>4</sup>This summary reflects information contained in the minutes to the September 2000 Emerging Issues Task Force (EITF) meeting. Look to the EITF Abstracts for final language. The Abstracts can be ordered directly from the FASB ([wwwfasb.org](http://wwwfasb.org)).

- EITF Issue No. 99-16, *Accounting for Transactions with Elements of Research and Development Arrangements*. Consensus was reached.
- EITF Issue No. 99-17, *Accounting for Advertising Barter Transactions*. Consensus was reached.
- EITF Issue No. 99-19, *Reporting Revenue Gross as a Principal versus Net as an Agent*. Consensus was reached.
- EITF Issue No. 00-2, *Accounting for Web Site Development Costs*. Consensuses were reached.
- EITF Issue No. 00-3, *Application of AICPA Statement of Position 97-2 to Arrangements That Include the Right to Use Software Stored on Another Entity's Hardware*. Consensuses were reached.
- EITF Issue No. 00-8, *Accounting by a Grantee for an Equity Instrument to Be Received in Conjunction with Providing Goods or Services*. Consensus was reached.
- EITF Issue No. 00-10, *Accounting for Shipping and Handling Fees and Costs*. Consensuses were reached.
- EITF Issue No. 00-14, *Accounting for Certain Sales Incentives*. Consensuses were reached.
- EITF Issue No. 00-20, *Accounting for Costs Incurred to Acquire or Originate Information for Database Content and Other Collections of Information*. Originally discussed September 20–21, 2000. Further discussion is planned.
- EITF Issue No. 00-21, *Accounting for Multiple-Element Revenue Arrangements*. Originally discussed July 19–20, 2000. Further discussion is planned.
- EITF Issue No. 00-22, *Accounting for "Points" and Certain Other Time-Based or Volume-Based Sales Incentive Offers, and Offers for Free Products or Services to Be Delivered in the Future*. Originally discussed September 20–21, 2000. Further discussion is planned.
- EITF Issue No. 00-23, *Issues Related to the Accounting for Stock Compensation under APB Opinion No. 25 and FASB Interpretation No. 44*. Originally discussed September 20-21, 2000. Consensuses reached on certain issues. Further discussion is planned.
- EITF Issue No. 00-24, *Revenue Recognition: Sales Arrangements That Include Specified-Price Trade-in Rights*. Originally discussed September 20–21, 2000. Further discussion is planned.
- EITF Issue No. 00-25, *Accounting for Consideration from a Vendor to a Retailer in Connection with the Purchase or Promotion of the Vendor's Products*. Originally discussed September 20–21, 2000. Further discussion is planned.

### Repricing of Employee Stock Options

*Will repricing of employee stock options be a significant issue for hightech entities this year? What guidance has the FASB issued recently to clarify accounting for this type of transaction?*

As we mentioned in the "Economic and Industry Developments" section, high-tech entities may choose to reduce the exercise price of fixed stock option awards (this

practice is commonly referred to as *repricing*) due to tumbling stock prices. In today's job market, where intense competition for employees exists, stock options often play a significant role in attracting and retaining talented people. Declines in stock prices can often reduce the value of stock options or render some of them worthless. In these cases companies often reprice the options close to current market value so that they remain an incentive for employees.

In March 2000, FASB issued Interpretation No. 44, *Accounting for Certain Transactions Involving Stock Compensation* (an interpretation of APB Opinion 25). The Interpretation does not amend APB Opinion 25 but instead clarifies some of the issues addressed in it. In this Alert we will discuss only the guidance provided in FASB Interpretation No. 44 with respect to accounting for repricing because this topic is the one most likely to be relevant to high-tech entities this year.

Before the issuance of this Interpretation, repricing was basically "free"—that is, it did not affect net income. With this new guidance, however, repricing most likely will have a negative impact on the bottom line. According to this Interpretation, if the exercise price of a fixed stock option award is reduced, the award shall be accounted for as variable from the date of the modification to the date the award is exercised, is forfeited, or expires unexercised. Subsequent to modification, additional compensation cost is calculated as the intrinsic value of the modified (or variable) award to the extent that it exceeds the lesser of the intrinsic value of the original award (1) at the original measurement date or (2) immediately prior to the modification. The remaining unrecognized original intrinsic value, if any, plus any additional compensation cost measured as described above shall be recognized over the remaining vesting (service) period, if any. If the modified award is fully vested at the date of the modification, any additional compensation cost to be recognized shall be recognized immediately. Also, under variable accounting, compensation cost shall be adjusted for increases or decreases in the intrinsic value of the modified award in subsequent periods until that award is exercised, is forfeited, or expires unexercised. However, compensation cost shall not be adjusted below the intrinsic value (if any) of the modified stock option or award at the original measurement date unless that award is forfeited because the employee fails to fulfill an obligation.

The effective date of FASB Interpretation No. 44 is July 1, 2000. However, modifications to fixed stock option awards that directly or indirectly reduce the exercise price of an award apply to modifications made after December 15, 1998. The effects of applying this Interpretation shall be recognized only on a prospective basis. Accordingly, no adjustments shall be made on initial application of this Interpretation to financial statements for periods prior to July 1, 2000. Additional compensation cost measured on initial application of this Interpretation that is attributable to periods prior to July 1, 2000, shall not be recognized.

Auditors should ensure that management of their high-tech clients properly account for repricing of their stock option awards. Auditors also should be alert to the potential effect that this Interpretation may have on internal control. SAS No. 55 identifies new accounting pronouncements as one of the circumstances that may increase risk relevant to the preparation of the financial statements.

**Help Desk**—This section presents only one aspect of FASB Interpretation No. 44 that is most likely to affect high-tech entities. Readers of this Alert are strongly encouraged to refer to the full text of FASB Interpretation No. 44, which can be found in the most recent edition of FASB *Original Pronouncements*, volume 3. See the FASB Web site at [www.rutgers.edu/Accounting/raw/fasb/public/index.html](http://www.rutgers.edu/Accounting/raw/fasb/public/index.html) for order information.

### Impairment of Long-Lived Assets

*How can the rapid pace of technological development affect the valuation of long-lived assets? What guidance is provided in FASB Statement No. 121 with respect to accounting for the impairment of long-lived assets?*

High-technology products are susceptible to rapid obsolescence. Long-lived assets used by enterprises involved in the manufacture of such products may require significant retooling to retain their usefulness. In some cases these assets may not lend themselves to modification and could be rendered obsolete. Additionally, the high-tech industry has experienced a spurt of merger and acquisition activity. The elimination of duplicate functions, which typically accompany a merger or acquisition, may affect the carrying amount of certain assets. These are just a few examples of the instances in which the carrying amounts of recorded assets may not be recoverable and the provisions of FASB Statement No. 121 may need to be applied.

FASB Statement No. 121, *Accounting for the Impairment of Long Lived Assets and for Long-Lived Assets to Be Disposed Of*, requires that long-lived assets and certain identifiable intangibles and goodwill related to those assets to be held and used by an entity, be reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. The Statement also requires that long-lived assets and certain identifiable intangibles to be disposed of be reported at the lower of carrying amount or fair value less costs to sell, except for assets covered by APB Opinion 30. Assets covered by APB Opinion 30 continue to be reported at the lower of the carrying amount or the net realizable value.

FASB Statement No. 121 is likely to have a significant impact on many manufacturers of high-tech equipment, given the inherently capital-intensive nature of the industry. In evaluating a high-tech entity's implementation of FASB Statement No. 121, major issues to be considered by auditors include—

- *The appropriate classification of long-lived assets as either those being held and used or those to be disposed of.* Auditors should obtain an understanding of the policies and procedures used by the company to classify long-lived assets pursuant to FASB Statement No. 121, as well as evaluating whether those classifications are proper.
- *The identification of events or circumstances indicating that the carrying amounts of assets to be held and used may not be recoverable.* Auditors should obtain an understanding of the policies and procedures used by the company to identify such

events and circumstances. Examples of such events and circumstances could include the following:

- A dramatic change in the manner in which an asset is used
- A reduction in the extent to which an asset is used
- Forecasts showing lack of long-term profitability
- A change in the law or business environment
- A substantial drop in the market value of an asset

If there is a reduction in the extent to which an asset is used and the asset is used in manufacturing a product, then consideration should be given to ARB No. 43, *Restatement and Revision of Accounting Research Bulletins*, chapter 4. If idle facility/asset expense is abnormal, it may be required to be treated as a period cost rather than be capitalized as part of the cost of inventory.

- *The assumptions used in the underlying calculation of estimated future cash flows when testing for asset impairment used in management's impairment test, and the assumptions used in estimating the fair value of assets for which an impairment loss is to be recognized.* A company's estimate of future cash flows from asset use, the discount rate used to determine an asset's present value, and the fair value of assets used in calculating impairment losses should be evaluated pursuant to the guidelines set forth in SAS No. 57. Procedures to be employed should include one or a combination of the following: (1) reviewing and testing the process used by management to develop the estimates, (2) developing an independent expectation to corroborate the reasonableness of the estimates, and (3) reviewing subsequent events or transactions occurring before the completion of fieldwork.
- *The recording of assets to be disposed of at the lower of carrying amount or fair value less costs to sell.* Auditors should verify that the company has appropriately classified and valued long-lived assets to be disposed of.
- *The disclosure requirements of FASB Statement No. 121.* Auditors should verify that all disclosure requirements of FASB Statement No. 121 have been included in the company's financial statements.

The auditors should be aware that in November 1999, the SEC staff released SAB No. 100, *Restructuring and Impairment Charges*, which, among other things, discusses the impairment of fixed assets and goodwill. SAB No. 100 can be found on the SEC Web site at [www.sec.gov/rules/accreps/sab100.htm](http://www.sec.gov/rules/accreps/sab100.htm).

## New FASB Pronouncements

*What new accounting pronouncements have been issued this year by the FASB?*

In this section we present brief summaries of accounting pronouncements issued since the publication of last year's Alert. The summaries are for informational purposes only and should not be relied on as a substitute for a complete reading of the applicable standard. For information on accounting standards issued subsequent to the writing



of this Alert, please refer to the Web sites provided throughout this section. You may also look for announcements of newly issued standards in the *CPA Letter* and the *Journal of Accountancy*.

**FASB Statement No. 138, *Accounting for Certain Derivative Instruments and Certain Hedging Activities*, an Amendment of FASB Statement No. 133**

FASB Statement No. 138 addresses a limited number of issues causing implementation difficulties for numerous entities that apply FASB Statement No. 133. This Statement amends the accounting and reporting standards of FASB Statement No. 133 for certain derivative instruments and certain hedging activities as indicated in the following paragraphs.

1. The normal purchases and normal sales exception in paragraph 10(b) may be applied to contracts that implicitly or explicitly permit net settlement, as discussed in paragraphs 9(a) and 57(c)(1), and contracts that have a market mechanism to facilitate net settlement, as discussed in paragraphs 9(b) and 57(c)(2).
2. The specific risks that can be identified as the hedged risk are redefined so that in a hedge of interest rate risk, the risk of changes in the benchmark interest rate (benchmark interest rate is defined in paragraph 4(jj) of FASB Statement No. 138) would be the hedged risk.
3. Recognized foreign-currency-denominated assets and liabilities for which a foreign currency transaction gain or loss is recognized in earnings under the provisions of paragraph 15 of FASB Statement No. 52, *Foreign Currency Translation*, may be the hedged item in fair value hedges or cash flow hedges.
4. Certain intercompany derivatives may be designated as the hedging instruments in cash flow hedges of foreign currency risk in the consolidated financial statements if those intercompany derivatives are offset by unrelated third-party contracts on a net basis.

FASB Statement No. 138 also amends FASB Statement No. 133 for decisions made by the FASB relating to the Derivatives Implementation Group (DIG) process. Certain decisions arising from the DIG process that required specific amendments to FASB Statement No. 133 are incorporated into FASB Statement No. 138.

**FASB Statement No. 139, *Rescission of FASB Statement No. 53 and Amendments to FASB Statements No. 63, 89, and 121***

FASB Statement No. 139 rescinds FASB Statement No. 53, *Financial Reporting by Producers and Distributors of Motion Picture Films*. An entity that previously was subject to the requirements of FASB Statement No. 53 shall follow the guidance in AICPA SOP 00-2, *Accounting by Producers or Distributors of Films*. This Statement also amends FASB Statement Nos. 63, *Financial Reporting by Broadcasters*; 89, *Financial Reporting and Changing Prices*; and 121, *Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of*.

Statement No. 139 is effective for financial statements for fiscal years beginning after December 15, 2000. Earlier application is permitted only upon early adoption of the SOP.

**FASB Statement No. 140, *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*, a Replacement of FASB Statement No. 125**

Issued in September 2000, FASB Statement No. 140 replaces FASB Statement No. 125, *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*. It revises the standards for accounting for securitizations and other transfers of financial assets and collateral and requires certain disclosures, but it carries over most of FASB Statement No. 125's provisions without reconsideration.

The Statement provides accounting and reporting standards for transfers and servicing of financial assets and extinguishments of liabilities. Those standards are based on consistent application of a *financial-components approach* that focuses on control. Under that approach, after a transfer of financial assets, an entity recognizes the financial and servicing assets it controls and the liabilities it has incurred, derecognizes financial assets when control has been surrendered, and derecognizes liabilities when extinguished. Statement No. 140 provides consistent standards for distinguishing transfers of financial assets that are sales from transfers that are secured borrowings.

A transfer of financial assets in which the transferor surrenders control over those assets is accounted for as a sale to the extent that consideration other than beneficial interests in the transferred assets is received in exchange. The transferor has surrendered control over transferred assets if and only if all of the following conditions are met:

1. The transferred assets have been isolated from the transferor—put presumptively beyond the reach of the transferor and its creditors, even in bankruptcy or other receivership.
2. Each transferee (or, if the transferee is a qualifying special-purpose entity (SPE), each holder of its beneficial interests) has the right to pledge or exchange the assets (or beneficial interests) it received, and no condition both constrains the transferee (or holder) from taking advantage of its right to pledge or exchange and provides more than a trivial benefit to the transferor.
3. The transferor does not maintain effective control over the transferred assets through either (a) an agreement that both entitles and obligates the transferor to repurchase or redeem them before their maturity or (b) the ability to unilaterally cause the holder to return specific assets, other than through a cleanup call.

The Statement requires that liabilities and derivatives incurred or obtained by transferors as part of a transfer of financial assets be initially measured at fair value, if practicable. It also requires that servicing assets and other retained interests in the transferred assets be measured by allocating the previous carrying amount between

the assets sold, if any, and retained interests, if any, based on their relative fair values at the date of the transfer.

The Statement requires that servicing assets and liabilities be subsequently measured by (a) amortization in proportion to and over the period of estimated net servicing income or loss and (b) assessment for asset impairment or increased obligation based on their fair values.

The Statement requires that a liability be derecognized if and only if either (a) the debtor pays the creditor and is relieved of its obligation for the liability or (b) the debtor is legally released from being the primary obligor under the liability either judicially or by the creditor. Therefore, a liability is not considered extinguished by an in-substance defeasance.

The Statement provides implementation guidance for assessing isolation of transferred assets; conditions that constrain a transferee; conditions for an entity to be a qualifying SPE; accounting for transfers of partial interests; measurement of retained interests; servicing of financial assets; securitizations, transfers of sales-type and direct financing lease receivables; securities lending transactions; repurchase agreements, including “dollar rolls,” “wash sales,” loan syndications, and participations; risk participations in banker’s acceptances; factoring arrangements; transfers of receivables with recourse; and extinguishments of liabilities. The Statement also provides guidance about whether a transferor has retained effective control over assets transferred to qualifying SPEs through removal-of-accounts provisions, liquidation provisions, or other arrangements.

The Statement requires a debtor to (a) reclassify financial assets pledged as collateral and report those assets in its statement of financial position separate from other assets not so encumbered if the secured party has the right by contract or custom to sell or repledge the collateral and (b) disclose assets pledged as collateral that have not been reclassified and separately reported in the statement of financial position. The Statement also requires a secured party to disclose information about collateral that it has accepted and is permitted by contract or custom to sell or repledge. The required disclosure includes the fair value at the end of the period of that collateral, and of the portion of that collateral that it has sold or repledged, and information about the sources and uses of that collateral.

The Statement requires an entity that has securitized financial assets to disclose information about accounting policies, volume, cash flows, key assumptions made in determining fair values of retained interests, and sensitivity of those fair values to changes in key assumptions. It also requires that entities that securitize assets disclose for the securitized assets and any other financial assets it manages together with them (a) the total principal amount outstanding, the portion that has been derecognized, and the portion that continues to be recognized in each category reported in the statement of financial position, at the end of the period; (b) delinquencies at the end of the period; and (c) credit losses during the period.

In addition to replacing FASB Statement No. 125 and rescinding FASB Statement No. 127, *Deferral of the Effective Date of Certain Provisions of FASB Statement No. 125*, this Statement carries forward the actions taken by FASB Statement No. 125.

FASB Statement No. 125 superseded FASB Statement Nos. 76, *Extinguishment of Debt*, and 77, *Reporting by Transferors for Transfers of Receivables with Recourse*. FASB Statement No. 125 amended FASB Statement No. 115, *Accounting for Certain Investments in Debt and Equity Securities*, to clarify that a debt security may not be classified as held-to-maturity if it can be prepaid or otherwise settled in such a way that the holder of the security would not recover substantially all of its recorded investment. FASB Statement No. 125 amended and extended to all servicing assets and liabilities the accounting standards for mortgage servicing rights now in FASB Statement No. 65, *Accounting for Certain Mortgage Banking Activities*, and superseded FASB Statement No. 122, *Accounting for Mortgage Servicing Rights*. FASB Statement No. 125 also superseded FASB Technical Bulletins No. 84-4, *In-Substance Defeasance of Debt*, and No. 85-2, *Accounting for Collateralized Mortgage Obligations (CMOs)*, and amended FASB Technical Bulletin No. 87-3, *Accounting for Mortgage Servicing Fees and Rights*.

FASB Statement No. 125 was effective for transfers and servicing of financial assets and extinguishments of liabilities occurring after December 31, 1996, and on or before March 31, 2001, except for certain provisions. FASB Statement No. 127 deferred until December 31, 1997, the effective date (a) of paragraph 15 of FASB Statement No. 125 and (b) for repurchase agreement, dollar-roll, securities lending, and similar transactions, of paragraphs 9 through 12 and 237(b) of FASB Statement No. 125.

The Statement is effective for transfers and servicing of financial assets and extinguishments of liabilities occurring after March 31, 2001. The Statement is effective for recognition and reclassification of collateral and for disclosures relating to securitization transactions and collateral for fiscal years ending after December 15, 2000. Disclosures about securitization and collateral accepted need not be reported for periods ending on or before December 15, 2000, for which financial statements are presented for comparative purposes.

The Statement is to be applied prospectively with certain exceptions. Other than those exceptions, earlier or retroactive application of its accounting provisions is not permitted.

#### **FASB Interpretation No. 44, *Accounting for Certain Transactions Involving Stock Compensation*, an Interpretation of APB Opinion 25<sup>5</sup>**

APB Opinion 25, *Accounting for Stock Issued to Employees*, was issued in October 1972. Since its issuance, questions have been raised about its application and diversity in practice has developed. During its consideration of the accounting for stock-based compensation, which led to the issuance of FASB Statement No. 123, *Accounting for Stock-Based Compensation*, the FASB decided not to address practice issues related

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<sup>5</sup>Certain implementation issues regarding FASB Interpretation No. 44, *Accounting for Certain Transactions Involving Stock Compensation*, as well as certain issues regarding the application of APB Opinion 25, *Accounting for Stock Issued to Employees* that are not addressed by Interpretation No. 44, are being addressed by the EITF in Issue No. 00-23.

to APB Opinion 25 because it had planned to supersede the Opinion. However, FASB Statement No. 123 permits entities to continue applying APB Opinion 25 to stock compensation involving employees. Consequently, questions remain about the application of APB Opinion 25 in a number of different circumstances.

FASB Interpretation No. 44 clarifies the application of APB Opinion 25 for only certain issues. It does not address any issues related to the application of the fair value method in FASB Statement No. 123. The issues addressed herein were selected after receiving input from members of both the FASB EITF and the task force on stock compensation that assisted in the development of FASB Statement No. 123. Among other issues, FASB Interpretation No. 44 clarifies (a) the definition of employee for purposes of applying APB Opinion 25, (b) the criteria for determining whether a plan qualifies as a noncompensatory plan, (c) the accounting consequence of various modifications to the terms of a previously fixed stock option or award, and (d) the accounting for an exchange of stock compensation awards in a business combination.

In considering those issues, the FASB focused on interpreting APB Opinion 25. The FASB decided not to amend the APB Opinion 25 framework because most of the problems inherent in the APB Opinion 25 intrinsic value method are addressed in FASB Statement No. 123 through that Statement's recommended fair value method. Consequently, in determining the guidance in this Interpretation, the FASB reached its conclusions within the framework of APB Opinion 25 and did not refer to concepts underlying the fair value method described in FASB Statement No. 123.

FASB Interpretation No. 44 is effective July 1, 2000, but certain conclusions in the Interpretation cover specific events that occur after either December 15, 1998, or January 12, 2000. To the extent that the Interpretation covers events occurring during the period after December 15, 1998, or January 12, 2000, but before the effective date of July 1, 2000, the effects of applying the Interpretation are recognized on a prospective basis from July 1, 2000.

### **EITF Consensus Positions**

The status of issues considered recently by the EITF of the FASB can be found in *Audit Risk Alert—2000/01* or on the FASB Web site.

### **New SOPs**

A complete listing of all SOPs issued this year by the AICPA can be found in *Audit Risk Alert—2000/01*.

### Executive Summary-New FASB Pronouncements

- FASB Statement No. 138, *Accounting for Certain Derivative Instruments and Certain Hedging Activities*, an amendment of FASB Statement No. 133
- FASB Statement No. 139, *Recission of FASB Statement No. 53, and Amendments to FASB Statements No. 63, 89, and 121*
- FASB Statement No. 140, *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*, a replacement of FASB Statement No. 125
- FASB Interpretation No. 44, *Accounting for Certain Transactions Involving Stock Compensation*, an interpretation of APB Opinion No. 25
- The status of issues considered recently by EITF of the FASB can be found in *Audit Risk Alert—2000/01* or on the FASB Web site
- A list of new SOPs can be found in *Audit Risk Alert—2000/01*



## APPENDIX 7-D

# Audit Issues in Revenue Recognition\*

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## INTRODUCTION

Revenue recognition continues to pose significant audit risk to auditors and has contributed to a perceived erosion in the integrity of the financial reporting process. In 1998, several high-profile incidents of improper revenue recognition attracted the attention of the business media and led to unflattering coverage. A substantial portion of the litigation against accounting firms reported to the AICPA SEC practice Section Quality Control Inquiry Committee cite revenue recognition issues. The number of Securities and Exchange Commissions (SEC) Accounting and Auditing Enforcement Releases involving improper revenue recognition has increased dramatically in recent years. Some of these cases have resulted in significant restatements of previously issued financial statements going back several years. Recently, the SEC expressed concerns about improper revenue recognition, among other issues, in a series of meetings held with members of the financial reporting, auditing, and standards-setting community, including the AICPA's Auditing Standards Board (ASB).

The implications are wide reaching. Investor confidence has driven the unparalleled success of the U.S. capital markets, and a key component in creating that confidence is the confirming role of audited financial statements. In this publication, the AICPA's intent is to help auditors fulfill their professional responsibilities with regard to auditing assertions about revenue. This publication:

- Discusses the responsibilities of management, boards of directors, and audit committees for reliable financial reporting
- Summarizes key accounting guidance regarding whether and when revenue should be recognized in accordance with generally accepted accounting principles (GAAP)
- Identifies circumstances and transactions that may signal improper revenue recognition
- Summarizes key aspects of the auditor's responsibility to plan and perform an audit under generally accepted auditing standards (GAAS)
- Describes procedures that the auditor may find effective in limiting audit risk rising from improper revenue recognition

The primary focus of this publication is revenue recognition for sales of goods and services (other than lending activities) by for-profit enterprises in the ordinary course of business. Revenue recognition for governmental and not-for-profit entities is beyond the scope of this publication. With the exception of software revenue recognition, industry-specific guidance is not discussed herein, although auditors and financial management may consult the "Resources" section at the end of this publication for industry-specific accounting and auditing literature.

In addition, SEC staff is developing a Staff Accounting Bulletin to address revenue recognition. It will be posted on the SEC's Web site at [www.sec.gov](http://www.sec.gov).

## RESPONSIBILITY FOR RELIABLE REPORTING

Management is responsible for the preparation and fair presentation of financial statements, including reported revenues. Among the financial reporting objectives relevant to assertions about revenue are the following:

- Recorded sales during the accounting period represent actual shipments of goods or rendering of services to customers who have made firm, enforceable commitments to purchase such goods or services.
- Deferred revenues are recognized in the appropriate period when shipments are made or services are rendered or other conditions requiring deferral are no longer present.
- Estimated amounts of reserves for sales returns, provision for customer rebates and dealer or customer discounts, and allowances for uncollectible receivables are reasonable.
- Policies for revenue recognition are adequately disclosed.<sup>1</sup>

Misstatements in reported revenue may result from error or from faulty judgment in the application of accounting principles. Revenue recognition principles sometimes are difficult to apply, especially in complex or unusual transactions, and often vary by industry. Management may inappropriately use “aggressive” accounting policies that reflect their understanding of the economic substance of the transactions and of industry practice. Misstatements in revenue also may arise when entity personnel at various levels participate in schemes, frequently with the collusion of others within the entity or with customers or suppliers, to overstate revenues intentionally. Intentional misstatement of the financial statements is fraudulent financial reporting.

This section discusses the factors and conditions within an enterprise that may mitigate the risk that improper revenue recognition will occur, whether it is caused by error or fraud.

### Deterrents to Improper Revenue Recognition

The National Commission on Fraudulent Financial Reporting, called the Treadway Commission (the Commission) after its Chairman, James C. Treadway, Jr., undertook a study from 1985 to 1987 to identify causal factors that can lead to fraudulent financial reporting and to develop recommendations to reduce its incidence. The Commission’s recommendations also are relevant for reducing the incidence of misstatements in financial reporting that result from errors, including the unintentional misapplication of accounting principles. Some of the commission’s recommendations for public companies, including recommendations that address the tone set by top management,

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<sup>1</sup> Revenue recognition in this publication is understood to be in accordance with generally accepted accounting principles (GAAP).

the audit committee, the internal audit function, and the internal control, are discussed below.

### **Tone at the Top**

The Commission stated the following:

The tone set by top management—the corporate environment or culture within which financial reporting occurs—is the most important factor contributing to the integrity of the financial reporting process. Notwithstanding an impressive set of written rules and procedures, if the tone set by management is lax, fraudulent financial reporting is more likely to occur.<sup>2</sup>

The Commission recommended that top management and the board of directors develop, communicate, and enforce a Code of Corporate Conduct to foster a strong ethical climate within the entity.

### **Audit Committee of the Board of Directors**

The Commission recommended that the audit committee of the board of directors be composed of independent (outside) directors. It also recommended that a written charter set forth their duties and responsibilities, and that they be given adequate resources and authority to fulfill their role of informed, vigilant, and effective overseers of the financial reporting process and the company's internal controls. An effective audit committee can help deter improper conduct by management. The important role of the audit committee on corporate governance also has been discussed in reports by the Public Oversight Board of the SEC Practice Section of the AICPA.<sup>3</sup> More recently, Arthur Levitt, Chairman of the SEC, and Lynn Turner, its Chief Accountant, have reiterated the call for the empowerment of audit committees that function as qualified, independent, committed, and tough-minded guardians of investor interests and corporate accountability. In response, the New York Stock Exchange and the National Association of Securities Dealers are sponsoring a blue-ribbon panel drawn from the various constituencies of the financial community to study the effectiveness of audit committees and to make concrete recommendations for improving audit committee oversight of the financial reporting process.

### **Internal Audit Function**

The Commission recommended that companies maintain an effective internal audit function that is adequately staffed with qualified personnel appropriate to the size and

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<sup>2</sup> *Report of the National Commission on Fraudulent Financial Reporting*, October 1987, p. 32.

<sup>3</sup> These reports are *In the Public Interest: Issues Confronting the Accounting Profession*, published in March 1993, and *Strengthening the Professionalism of the Independent Auditor*, a Report to the Public Oversight Board of the SEC Practice Section, AICPA from the Advisory Panel on Auditor Independence, published in September 1994.

nature of the company. To enhance the objectivity of the internal audit function, the chief internal auditor should have direct access and report regularly to the company's chief executive officer and to the audit committee. An important responsibility of the internal audit function is to monitor the performance of an entity's controls.

### Internal Control

The Commission also recommended that a framework of internal control be developed to enable management to identify and assess the risks of fraudulent financial reporting, and to design and implement internal controls that will provide reasonable assurance that fraudulent financial reporting will be prevented or subject to early detection. The outcome of this recommendation is *Internal Control—Integrated Framework*, a report published in 1992 by the Committee of Sponsoring Organizations (COSO) of the Treadway Commission (the COSO Report). The COSO Report describes internal control as a process consisting of five interrelated components that are necessary for entity objectives, including reliable financial reporting, to be achieved. The five components of internal control are the control environment, risk assessment, control activities, information and communication, and monitoring. Echoing the Commission's conclusion, the COSO Report states that the control environment sets the tone of an organization, influencing the control consciousness of its people, and is the foundation for all other components of internal control.

In addition, the Foreign Corrupt Practices Act of 1977 establishes a legal requirement that every SEC registrant devise and maintain a system of internal accounting controls sufficient to provide reasonable assurance that certain objectives are met, including that transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP. Some companies document the policies that management has established to comply with requirements of the Foreign Corrupt Practices Act and also require their employees, including the sales and marketing organizations, to certify that they have read and complied with the company's policies.

### Internal Control and Assertions about Revenue

The significant financial statement accounts relating to management's assertions about revenue include sales, sales returns and allowances, service revenue, accounts receivable and related allowances, deferred revenues, and cash. Management is responsible for the design, implementation, and effective operation of internal control over transactions in these accounts, including the development of significant accounting estimates and disclosures, in order to achieve operation of internal control over transactions in these accounts, including the development of significant accounting estimates and disclosures, in order to achieve the financial reporting objectives that were discussed in the first paragraph of this section. Internal control with respect to assertions about revenue is a process that involves:

- Identification, analysis, and management of risks that may cause misstatements of accounts involving assertions about revenue, including a consideration of how

significant estimates are developed, the possibility that unauthorized transactions may be recorded, and the possibility that authorized transactions may be recorded erroneously or omitted.

- Design and implementation of an information system, which includes the accounting system, and the methods and records established to accurately record, process, summarize, and report transactions, as well as the processes used to prepare significant accounting estimates and disclosures, regarding assertions about revenue.
- Design and implementation of control activities, including documented policies and procedures applied in the processing of transactions that flow through the accounting system in order to prevent, or promptly detect, misstatements in revenue.
- Monitoring of the design and operating effectiveness of internal controls over assertions about revenue to determine if they are operating as intended, and if not, to take corrective action.

Underlying the above, the control environment is the most significant factor influencing the integrity of reported revenue. The control environment includes factors such as integrity and ethical values, management's philosophy and operating style, board of directors or audit committee participation, commitment to competence, and assignment of authority and responsibility.

The COSO Report notes that internal control has inherent limitations. The benefits of controls must be considered relative to costs due to resource constraints. Another limiting factor is faulty human judgment in decision-making, or mistakes in application, on the part of a person responsible for establishing or performing a control. Furthermore, controls can be circumvented by the collusion of two or more people and by management override.

Both the Treadway Commission and the COSO Report stress the importance of management establishing and maintaining an appropriate tone at the top. An effective control environment fosters and in turn is reinforced by an effective audit committee, internal audit function, and internal control process. Collectively, these functions support management in achieving its objective of fair presentation of financial information.

## **SUMMARY OF SELECTED ACCOUNTING LITERATURE ON REVENUE RECOGNITION**

As noted previously, revenue recognition for purposes of this publication is understood to mean in accordance with generally accepted accounting principles (GAAP). This section summarizes some of the key authoritative accounting literature relevant to revenue recognition for sales of goods and services, including the conceptual basis for revenue recognition and also specific revenue recognition guidance for right of return, bill and hold, contract accounting, and sales of software, among others. The following paragraphs are not intended to be a substitute for the original pronouncements.

## Conceptual Basis for Revenue Recognition

The conceptual basis for revenue recognition is contained in Financial Accounting Standards Board (FASB) Statement of Financial Accounting Concepts No. 5, *Recognition and Measurement in Financial Statements of Business Enterprises*. Paragraph 83 states that recognition of revenue involves consideration of two factors, (a) being realized or realizable and (b) being earned. Paragraph 83(b) states:

Revenues are not recognized until earned. An entity's revenue-earning activities involve delivering or producing goods, rendering services, or other activities that constitute its ongoing major or central operations, and revenues are considered to have been earned when the entity has substantially accomplished what it must do to be entitled to the benefits represented by the revenues. [Footnote omitted.]

Paragraph 84(a) states that revenues from manufacturing and selling activities are commonly recognized at time of sale, usually meaning delivery.

## Revenue Recognition When Right of Return Exists

FASB Statement of Financial Accounting Standards No. 48, *Revenue Recognition When Right of Return Exists*, establishes accounting and reporting standards for sales of a product when the buyer has the right to return the product. Paragraph 6 provides that in such circumstances, revenue from the sales transaction should be recognized at time of sale only if all of the following conditions are met.

- a. The seller's price to the buyer is substantially fixed or determinable at the date of the sale.
- b. The buyer has paid the seller, or the buyer is obligated to pay the seller and the obligation is not contingent on resale of the product.
- c. The buyer's obligation to the seller would not be changed in the event of theft or physical destruction or damage of the product.
- d. The buyer acquiring the product for resale has economic substance apart from that provided by the seller. [Footnoted omitted.]
- e. The seller does not have significant obligations for future performance to directly bring about resale of the product by the buyer.
- f. The amount of future returns<sup>1</sup> can be reasonably estimated (paragraph 8).

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<sup>3</sup> Exchanges by ultimate customers of one item for another of the same kind, quality, and price (for example, one color or size for another) are not considered returns for purposes of this Statement.

If the above conditions are not met, sales recognition should be postponed until the right of return substantially expires or until such time that the conditions are met.



If revenue is recognized at time of sale because the above conditions are met, FASB Statement No. 48 requires that costs or losses that may be expected in connection with returns must be accrued in accordance with FASB Statement No. 4, *Accounting for Contingencies*. Sales revenue and cost of sales reported in the income statement should be reduced to reflect estimated returns.

Paragraph 8 of FASB Statement No. 48 describes a number of factors that may impair (but not necessarily preclude) the ability to make a reasonable estimate of the amount of future returns. Among those factors are the susceptibility of the product to significant external factors (for example, obsolescence or changes in demand); the absence of or lack of relevance of historical experience to the circumstances (for example, if a product, market, or customer is new); the length of the return period; and the absence of a large volume of relatively homogeneous transactions.

Paragraph 4 notes that FASB Statement No. 48 does not apply to:

- (a) accounting for revenue in service industries if part or all of the service revenue may be returned under cancellation privileges granted to the buyer, (b) transactions involving real estate or leases, or (c) sales transactions in which a customer may return defective goods, such as under warranty provisions.

### Bill and Hold Sales

In a bill and hold transaction, a customer agrees to purchase the goods but the seller retains physical possession until the customer requests shipment to designated locations. Normally, such an arrangement does not qualify as a sale because delivery has not occurred. Under certain conditions, however, when a buyer has made an absolute purchase commitment and has assumed the risks and rewards of the purchased product but is unable to accept delivery because of a compelling business reason, bill and hold sales may qualify for revenue recognition.

SEC Accounting and Auditing Enforcement Release (AAER) No. 108 specifies certain conditions or criteria that a bill and hold transaction of a public company should meet in order to qualify for revenue recognition. In addition, it specifies certain factors that should be considered in evaluating whether a bill and hold transaction meets the requirements for revenue recognition. AAER No. 108 states the following.

- [A] “bill and hold” transaction should meet the following conditions:
  - (1) The risks of ownership must have passed to the buyer;
  - (2) The customer must have made a fixed commitment to purchase the goods, preferably reflected in written documentation;
  - (3) The buyer, not the seller, must request that the transaction be on a bill and hold basis. The buyer must have a substantial business purpose for ordering the goods on a bill and hold basis;
  - (4) There must be a fixed schedule for delivery of the goods. The date for delivery must be reasonable and must be consistent with the buyer’s business purposes (e.g., storage periods are customary in the industry);

- (5) The seller must not have retained any specific performance obligations such that the earning process is not complete;
- (6) The ordered goods must have been segregated from the seller's inventory and not be subject to being used to fill other orders; and
- (7) The equipment must be complete and ready for shipment.

The above listed conditions are the important conceptual criteria which should be used in evaluating any purported bill and hold sale. This listing is not intended as a check list. In some circumstances, a transaction may meet all the factors listed above but not meet the requirements for revenue recognition.

In applying the above criteria to a purported bill and hold sale, the individuals responsible for preparation and filing of the financial statements should also consider the following factors:

- (1) The date by which the seller expects payment, and whether it has modified its normal billing and credit terms for this buyer;
- (2) The seller's past experiences with the pattern of bill and hold transactions;
- (3) Whether the buyer has the expected risk of loss in the event of a decline in the market value of the goods;
- (4) Whether the seller's custodial risks are insurable and insured;
- (5) Whether APB Opinion No. 21, pertaining to the need for discounting the related receivables, is applicable<sup>3</sup>; and
- (6) Whether extended procedures are necessary in order to assure that there are no exceptions to the buyer's commitment to accept and pay for the goods sold, i.e., that the business reasons for the bill and hold have not introduced a contingency to the buyer's commitment.

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<sup>3</sup> Once the individuals responsible for preparation and filing of the financial statements have ascertained that the revenue may be properly recognized, they, of course, have an ongoing obligation to review for collectibility of the bill and hold receivable.

Although AAER No. 108 is not binding on nonpublic companies, they may find it useful in analyzing bill and hold transactions.

## CONTRACT ACCOUNTING

### **Accounting Research Bulletin No. 45, *Long-Term Construction-Type Contracts***

Accounting Research Bulletin (ARB) No. 45, *Long-Term Construction-Type Contracts*, describes the advantages and disadvantages of the percentage-of-completion and completed-contract methods of accounting for long-term construction-type contracts. The standard establishes a preference for the use of percentage-of-completion accounting when estimates of costs to complete and extent of progress toward

completion of long-term contracts are reasonably dependable. The advantages of percentage-of-completion are the periodic recognition of income as it is earned, and the reflection of the status of uncompleted contracts that is provided through the current estimates of costs to complete or of progress toward completion. The disadvantage is that it is necessarily dependent upon estimates and, therefore, subject to uncertainty. In the absence of reasonably dependable estimates, or if inherent hazards cause forecasts to be doubtful, the completed-contract method should be used. The completed-contract method does not permit the recording of income prior to completion, or substantial completion of the contract. Therefore, the recording of income is not subject to the uncertainties of estimates, but the disadvantage is that the completed-contract method does not reflect current performance when the contract extends into more than one accounting period. ARB No. 45 requires disclosure of the method followed.

### ***Statement of Position 81-1, Accounting for Performance of Construction-Type and Certain Production-Type Contracts***

Statement of Position (SOP) 81-1, *Accounting for Performance of Construction-Type and Certain Production-Type Contracts*, provides more detailed guidance on the application of ARB No. 45. It expands the scope to include accounting for the performance of contracts for which specifications are provided by the customer for the construction of facilities or the production of goods or for the provision of related services. SOP 81-1 states that use of the percentage-of-completion or the completed-contract method of accounting should not be acceptable alternatives for the same circumstances. Determination of which of the two methods is preferable should be based on a careful evaluation of the circumstances. It identifies the circumstances appropriate to each of the methods, the bases of applying the methods, and the reasons for the recommendations.

**Percentage-of-Completion Method.** SOP 81-1 concludes that the percentage-of-completion method is the preferable accounting policy when reasonably dependable estimates of the extent of progress toward completion, contract revenues, and contract costs can be made. Paragraph 23 also requires that all of the following conditions exist.

- Contracts executed by the parties normally include provisions that clearly specify the enforceable rights regarding goods or services to be provided and received by the parties, the consideration to be exchanged, and the manner and terms of settlement.
- The buyer can be expected to satisfy his obligations under the contract.
- The contractor can be expected to perform his contractual obligations.

SOP 81-1 states that the ability to produce reasonably dependable estimates is an essential element of the contracting business and persuasive evidence to the contrary is necessary to overcome that presumption. A contractor's estimates of total contract revenue and total contract costs should be regarded as reasonably dependable if the

minimum total revenue and the maximum total cost can be estimated with a sufficient degree of confidence to justify the contractor's bid on contracts.

**Completed-Contract Method.** This method may be used in circumstances in which financial position and results of operations would not vary materially from those resulting from the use of the percentage-of-completion method, for example, when an entity has primarily short-term contracts. The completed-contract method is preferable in circumstances in which estimates cannot meet the criteria for reasonable dependability or in which there are inherent hazards. Examples of inherent hazards are contracts whose validity is seriously in question (that is, which are less than fully enforceable), contracts whose completion may be subject to the outcome of pending legislation or pending litigation, or contracts exposed to the possibility of the condemnation or expropriation of the resulting properties.

**Determining the Profit Center.** The basic presumption should be that each contract is the profit center for revenue recognition cost accumulation, and income measurement. That presumption may be overcome only if a contract or a series of contracts meets the conditions described for combining or segmenting contracts. Combining contracts for profit recognition purposes may occur when a group of contracts are so closely related that they are, in effect, parts of a single project with an overall profit margin, such as when a group of contracts have been negotiated as a package with the objective of achieving an overall profit. In SOP 81-1, paragraphs 37 and 38 detail specific criteria that must be met for contracts to be combined for accounting purposes.

A single contract or a group of contracts that otherwise meet the test for combining may include several elements or phases, each of which the contractor negotiated separately with the same customer and agreed to perform without regard to the performance of the others. A project consisting of a single contract or a group of contracts with segments that have different rates of profitability may be segmented if it meets specific criteria described in paragraphs 40, 41, or 42 of SOP 81-1.

**Measuring Progress on Contracts.** The meaningful measurement of the extent of progress toward completion is essential because this factor is used in determining the amounts of estimated contract revenue and the estimated gross profit that will be recognized in any given period. A number of acceptable methods are used including cost-to-cost, efforts-expended, units-of-delivery, and units-of-work-performed. Use of any given method depends on whether input measures (terms of efforts devoted to a contract) or output measures (terms of results achieved) are used. Output measures are generally the best method of progress toward completion but often they cannot be established and input measures must be used. The methods selected should be applied consistently to all contracts having similar characteristics. The acceptability of the results of input or output measures should be periodically reviewed and confirmed by alternative measures that involve observation and inspection, perhaps by comparison to results of calculations based on physical observations by engineers, architects, or similarly qualified personnel.

**Computation of Income Earned Under the Percentage-of-Completion Method.** Total estimated gross profit on a contract, the difference between total estimated contract revenue and total estimated contract cost, must be determined before the amount earned on the contract for a period can be determined. The portion of total revenue earned or the total amount of gross profit earned to date is determined by the measurement of the extent of progress toward completion using one of the methods discussed above. The computation of income earned for a period involves a determination of the portion of total estimated contract revenue that has been earned to date (earned revenue) and the portion of total estimated contract cost related to that revenue (cost of earned revenue). SOP 81-1 discusses two acceptable alternative approaches to determining earned revenue and cost of earned revenue.

**Revised Estimates.** Estimates of contract revenue, costs to complete, and the extent of progress toward completion must be continually reevaluated throughout the life of a contract. SOP 81-1 requires changes in estimates to be accounted for in the period of change as described in paragraph 31(a) of Accounting Principles Board (APB) Opinion No. 20, *Accounting Changes*.

**Provisions for Anticipated Losses on Contracts.** SOP 81-1 states that provisions for losses should be made in the period in which they become evident under either the percentage-of-completion method or the completed-contract method.

**Disclosures.** SOP 81-1 requires disclosure of the basic method of accounting used for contracts; departures from the basic accounting policy; methods of measuring extent of progress toward completion for contracts accounted for using the percentage-of-completion method; and specific criteria used to determine when a contract is substantially completed for contracts accounted for using the completed-contract method. It notes that APB Opinion 20 recommends disclosure of the effect of significant revisions of estimates if the effect is material.

## SOFTWARE REVENUE RECOGNITION

SOP 97-2, *Software Revenue Recognition*, as amended by SOP 98-9, *Modification of SOP 97-2, Software Revenue Recognition, With Respect to Certain Transactions*, provides guidance on applying GAAP in recognizing revenue on software transactions. Key provisions are discussed below.

If an arrangement to deliver software or a software system does not require significant production, modification, or customization of software, revenue should be recognized when all of the following criteria are met.

- Persuasive evidence of an arrangement exists.
- Delivery has occurred.

- The vendor's fee is fixed or determinable.
- Collectibility is probable.

### **Persuasive Evidence of an Arrangement Exists**

If the vendor has a customary business practice of utilizing written contracts, evidence of the arrangement is provided only by a contract signed by both parties. Vendors that do not rely on signed contracts should have other forms of evidence to document the transaction, such as a purchase order or on-line authorization. Even if all other requirements in the SOP for recognition of revenue are met (including delivery), revenue should not be recognized on any element of the arrangement unless persuasive evidence of an arrangement exists.

### **Delivery Has Occurred**

The principle of not recognizing revenue before delivery applies whether the customer is a user or a reseller. For software that is delivered electronically, delivery has been met when the customer takes possession of the software via a download or has been provided with access codes that allow the customer to take immediate possession of the software on its hardware pursuant to an agreement or purchase order for the software.

If uncertainty exists about customer acceptance after delivery, license revenue should not be recognized until acceptance occurs. Delivery should not be considered complete unless the destination is the customer's place of business or another site specified by the customer. If the customer specifies an intermediate site, but a substantial portion of the fee is not payable until the delivery by the vendor to another site specified by the customer, revenue should not be recognized until delivery is made to that other site. Revenue from transactions involving delivery agents of the vendor should be recognized when the software is delivered to the customer, not to the delivery agent.

### **The Vendor's Fee Is Fixed or Determinable and Collectibility Is Probable**

A software licensing fee is not fixed or determinable if it is based on the number of units distributed or copied, or the expected number of users of the product. If an arrangement includes rights of return or rights to refunds without return, conditions that must be met for the vendor to recognize revenue include that the amount of future returns or refunds can be reasonably estimated in accordance with FASB Statement No. 48. Any extended payment terms may indicate that the fee is not fixed or determinable. If payment of a significant portion of the fee is not due until after expiration of the license or more than 12 months after delivery, the licensing fee should be presumed not to be fixed or determinable unless the vendor can demonstrate a standard business practice of using long-term or installment contracts and a history of successfully collecting under the original payment terms without making concessions. If it cannot be concluded that a fee is fixed or determinable at the outset of an arrangement, revenue should be recognized as payments become due.

For reseller arrangements, factors such as the following may indicate that the fixed or determinable fees and collectibility criteria have not been met.

- Payment is substantially contingent on the reseller's success in distributing the product.
- Resellers may not be able to honor a commitment to make fixed and determinable payments until they collect cash from their customers.
- Uncertainties indicate the amount of future returns cannot be reasonably estimated.
- Distribution arrangements with resellers require the vendor to rebate or credit a portion of the fee if the vendor subsequently reduces its price for a product and the reseller still has rights with respect to that product (price protection).

Fees from licenses cancelable by the customer are neither fixed nor determinable until the cancellation privileges lapse. Fees from licenses with cancellation privileges that expire ratably over the license period are considered to become determinable ratably as the cancellation privileges lapse.

### **Contract Accounting**

If an arrangement to deliver software or a software system, either alone or together with other products or services, requires significant production, modification, or customization of software, the entire arrangement should be accounted for in conformity with ARB No. 45, using the relevant guidance in SOP 81-1, unless criteria specified in SOP 87-2 for separate accounting for any service element are met. SOP 97-2 also provides guidance on the application of contract accounting in arrangements involving software.

### **Multiple-element Arrangements**

Software arrangements may consist of multiple elements, that is, additional software products, upgrades and enhancements, postcontract customer support (PCS), or services, including elements deliverable only on a when-and-if-available basis. If contract accounting does not apply, the vendor's fee must be allocated to the various elements based on vendor-specific objective evidence of fair values, regardless of any separate prices stated within the contract for each element.

Vendor-specific objective evidence of fair value is limited to the following:

- The price charged when the same element is sold separately
- For an element not yet being sold separately, the price established by management having the relevant authority

In accordance with SOP 98-4, *Deferral of the Effective Date of a Provision of SOP 97-2, Software Revenue Recognition*, as amended by SOP 98-9, *Modification of SOP 97-2, Software Revenue Recognition, With Respect to Certain Transactions*, this provision need not be applied to transactions entered into before fiscal years beginning after March 15, 1999.

If sufficient vendor-specific objective evidence of fair values does not exist for the allocation of revenue to the various elements of an arrangement, all revenue from the arrangement should be deferred until such sufficient evidence exists, or until all elements have been delivered. Exceptions to this guidance are provided for PCS, services that do not involve significant customization, subscriptions, and arrangements in which the fee is based on the number of copies. In addition, SOP 98-9 amends this guidance for multiple-element arrangements in which there is vendor-specific objective evidence of the fair values of *all* undelivered elements, and vendor-specific objective evidence of fair value does not exist for one or more of the delivered elements. In such circumstances, it requires recognition of revenue in accordance with the *residual method*. Under the residual method, the total fair value of the undelivered elements is deferred, and the difference between the total arrangement fee and the amount deferred for the undelivered elements is recognized as revenue related to the delivered elements. SOP 98-9 is effective for transactions entered into in fiscal years beginning after March 15, 1999, with earlier application permitted. Restatement of prior periods is prohibited.

The portion of the fee allocated to an element should be recognized as revenue when all of the revenue recognition criteria have been met. In applying those criteria, the delivery of an element is considered not to have occurred if there are undelivered elements that are essential to the functionality of any delivered elements. In addition, no portion of the fee (including amounts otherwise allocated to delivered elements) meets the criterion of collectibility if the portion of the fee allocable to delivered elements is subject to forfeiture, refund, or other concession if the undelivered elements are not delivered. In order for the revenue related to an arrangement to be considered not subject to forfeiture, refund, or other concession, management must intend not to provide refunds or concessions that are not required under the provisions of the arrangement. The vendor's historical pattern of making refunds or other concessions that were not required under the original provisions (contractual or other) of other arrangements should be considered more persuasive than terms included in the arrangement that indicate that no concessions are required.

### Service Elements

Separate accounting for a service element of an arrangement is required if both of the following criteria are met.

- The services are not essential to the functionality of any other element of the transaction.
- The services are described in the contract such that the total price of the arrangement would be expected to vary as the result of the inclusion or exclusion of the services.

SOP 97-2 provides comprehensive guidance on different kinds of multiple-element arrangements, PCS, services, and contract accounting. In addition, it includes



appendixes with examples of the application of certain provisions of the SOP and a flowchart illustrating a decision process for recognizing revenue on software arrangements.

### Sales of Real Estate

FASB Statement No. 66, *Accounting for Sales of Real Estate*, establishes standards for recognition of profit on all real estate transactions without regard to the nature of the seller's business. It includes extensive guidance for the recognition of profit both for retail land sales and for real estate transactions that are not retail land sales. The general requirements for recognition of all the profit at the date of sale on real estate sales other than retail land sales are set forth in paragraphs 3 through 5 of the Statement and are summarized below. Similarly to SOP 97-2, the guidance in FASB Statement No. 66 demonstrates the application of the concept of recognizing revenue when *earned* and when *realized or realizable* to a specific subject matter.

For sales of real estate other than retail land sales, use of the *full accrual method*, that is, recognition of all of the profit at the date of sale, depends on the existence of the following two conditions: (a) the profit is determinable, that is, the collectibility of the sales price is reasonably assured or an uncollectible amount can be estimated, and (b) the earnings process is virtually complete, that is, the seller is not obligated to perform significant tasks after the sale to earn the profit. Part or all of the profit should be deferred until both conditions exist.

Collectibility is demonstrated by the buyer's commitment to pay as supported by substantial initial and continuing investments in the property such that the buyer's risk of loss through default motivates the buyer to honor the obligation to the seller.

Profit on real estate transactions should not be recognized by the full accrual method unless all of the following criteria are met.

- A sale is consummated, meaning that the parties are bound by the terms of a contract, all consideration has been exchanged, any permanent financing for which the seller is responsible has been arranged, and all conditions precedent to closing have been performed. These four conditions usually are met at the time of closing, not when an agreement to sell has been signed or at a preclosing.
- The buyer's initial and continuing investments are adequate to demonstrate a commitment to pay for the property.
- The seller's receivable is not subject to future subordination.
- The seller has transferred to the buyer the usual risks and rewards of ownership in a transaction that is in substance a sale and does not have a substantial continuing involvement with the property.

FASB Statement No. 66 also provides guidance on accounting for sales of real estate in circumstances in which criteria for the full accrual method are not met and partial recognition of profit may be appropriate.

## Financial Statement Disclosures

### FASB Statement No. 57, *Related Party Disclosures*

FASB Statement No. 57 requires disclosures of material related-party transactions other than compensation arrangements, expense allowances, and other similar items in the ordinary course of business, unless the transactions are eliminated in the preparation of consolidated or combined financial statements. Transactions between related parties are considered to be related-party transactions even though they may not be given accounting recognition. Paragraph 2 states:

The disclosures shall include:<sup>3</sup>

- a. The nature of the relationship(s) involved
- b. A description of the transactions including transactions to which no amounts or nominal amounts were ascribed, for each of the periods for which income statements are presented, and such other information deemed necessary to an understanding of the effects of the transactions on the financial statements
- c. The dollar amounts of transactions for each of the periods for which income statements are presented and the effects of any change in the method of establishing the terms from that used in the preceding period
- d. Amounts due from or to related parties as to the date of each balance sheet presented and, if not otherwise apparent, the terms and manner of settlement

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<sup>3</sup> In some cases, aggregation of similar transactions by type of related party may be appropriate. Sometimes, the effect of the relationship between the parties may be so pervasive that disclosure of the relationship alone will be sufficient. If necessary to the understanding of the relationship, the name of the related party would be disclosed.

Paragraph 3 states that transactions involving related parties cannot be presumed to be carried out on an arm's-length basis, and representations about related-party transactions should not imply that they were consummated on terms equivalent to arm's-length transactions unless such representations can be substantiated.

Paragraph 4 states that when a reporting enterprise is under common control with one or more other enterprises, the nature of that control relationship should be disclosed, even though there are no transactions between the enterprises, if the existence of that control could result in operating results or financial position of the reporting enterprise that differ significantly from those that would have been obtained if the enterprises were autonomous.

### APB Opinion 22, *Disclosure of Accounting Policies*

APB Opinion 22 requires that a description of all significant accounting policies of the reporting entity should be included as an integral part of the financial statements. Disclosure of accounting policies should identify and describe the accounting principles followed by the reporting entity and the methods of applying those principles that materially affect the financial statements. Paragraph 12 states:

In general, the disclosure should encompass important judgments as to appropriateness of principles relating to recognition of revenue and allocation of asset costs to current and future periods; in particular, it should encompass those accounting principles and methods that involve any of the following:

- a. A selection from existing acceptable alternative
- b. Principles and methods peculiar to the industry in which the reporting entity operates, even if such principles and methods are predominantly followed in that industry
- c. Unusual or innovative applications of generally accepted accounting principles (and, as applicable, of principles and methods peculiar to the industry in which the reporting entity operates).

### **SOP 94-6, *Disclosure of Certain Significant Risks and Uncertainties***

SOP 94-6, requires entities to include in their financial statements disclosures about the nature of their operations and about the use of estimates in the preparation of financial statements. If certain criteria are met, it requires disclosures about certain significant estimates and the current vulnerability due to certain concentrations, for example, concentrations in the volume of business transacted with a particular customer or concentrations in revenue from particular products or services.

### **Other Sources**

The “Resources” section at the end of this publication lists other sources of accounting guidance for revenue recognition that cover specific subject matter or that is industry-specific. It includes AICPA Industry Audit and Accounting Guides that provide auditing as well as accounting guidance.

In circumstances in which there is no specifically relevant authoritative accounting guidance and application by analogy does not seem appropriate, preparers and auditors may find it useful to refer to nonauthoritative sources such as AICPA Audit Risk Alerts and articles in the *Journal of Accountancy* or other professional publications.

A source of nonauthoritative guidance on revenue recognition is the FASB’s 1978 Invitation to Comment, *Accounting for Certain Service Transactions*. It provides that revenue from service transactions should be recognized based on performance. If performance consists of a single act, revenue should be recognized when that act takes place. If performance consists of multiple acts, revenue should be recognized based on the proportionate performance of each act. If the proportion of services to be performed in the final act is so significant to the whole service transaction that performance cannot be deemed to have taken place until that act is performed, revenue should be recognized when that act takes place. If there is a significant degree of uncertainty regarding realization of service revenue, revenue should not be recognized until collection. The Invitation to Comment also discusses the recognition of revenue in service transactions that involve nonrefundable initiation fees with subsequent periodic payments for future services, and on nonrefundable fees for the installation of equip-

ment that is essential to providing future services with subsequent periodic payments for the services.

The FASB considered the Invitation to Comment in the development of its Concept Statements, and subsequently the Emerging Issues Task Force (EITF) has addressed some of the issues (see the “Resources” section for a listing of EITF abstracts). Nevertheless, the Invitation to Comment was not further deliberated and its proposals are nonauthoritative.

## INDICATORS OF IMPROPER REVENUE RECOGNITION

Management engages the independent auditor to express an opinion on the financial statements that management prepares in accordance with generally accepted accounting principles (GAAP). Auditors should be alert to indicators of improper revenue recognition that may require special attention in performing the audit. This section discusses “red flags” that may signal improper revenue recognition, including risk factors that relate to misstatements arising from fraudulent financial reporting, other issues that may require special consideration, and examples of specific transactions or events that may indicate improper accounting for revenue.

### Risk Factors Relating to Misstatements Arising from Fraudulent Financial Reporting

Statement on Auditing Standards (SAS) No. 82, *Consideration of Fraud in a Financial Statement Audit* (AICPA, *Professional Standards*, vol. 1, AU sec. 316), requires the auditor to specifically assess the risk of material misstatement due to fraud. It identifies examples of risk factors that relate to misstatements arising from fraudulent financial reporting and groups them into the following categories:

- Management’s characteristics and influence over the control environment
- Industry conditions
- Operating characteristics and financial stability

Risk factors from each category that are particularly relevant to revenue recognition are summarized below.

### Management Characteristics and Influence over the Control Environment

The COSO Report states that the control environment, including factors such as integrity and ethical values, and management’s philosophy and operating style, sets the tone of an organization and is the foundation for all other components of internal control. Examples of risk factors relating to management’s characteristics and influence over the control environment that are particularly relevant to revenue recognition include the following.

- Management has a motivation to engage in fraudulent financial reporting. Specific indicators might be the following.
  - A significant portion of management’s compensation is represented by bonuses, stock options, or other incentives, the value of which is contingent upon the entity achieving unduly aggressive targets for operating results, financial position, or cash flow.
  - Management is excessively interested in maintaining or increasing the entity’s stock price or earnings trend through the use of unusually aggressive accounting practices.
  - Management makes a practice of committing to analysts, creditors, and other third parties to achieve what appear to be unduly aggressive or clearly unrealistic forecasts.
- Management fails to display and communicate an appropriate attitude regarding internal control and the financial reporting process.

Risk factors relating to management’s characteristics and influence over the control environment may vary depending on the nature of the business or the size of the entity. For example, management of a smaller entity may be motivated to engage in fraudulent financial reporting of revenue if failure to maintain a certain level of market capitalization or equity may trigger suspension from trading on a securities exchange.

### **Industry Conditions**

The economic environment in which an entity operates may heighten the risk of misstatements of revenue arising from fraudulent financial reporting. Examples of risk factors relating to industry conditions include the following.

- There is a high degree of competition or market saturation, accompanied by declining margins.
- The industry is highly vulnerable to rapidly changing technology or rapid product obsolescence.
- There has been a general economic downturn in the industry, making it difficult to achieve budgeted or forecasted results.

### **Operating Characteristics and Financial Stability**

The nature and complexity of the entity, its financial condition, and its profitability also may heighten the risk that the entity will engage in fraudulent financial reporting of revenue. Examples of risk factors relating to operating characteristics and financial stability include the following.

- There is an inability to generate cash flows from operations while reporting earnings and earnings growth.

- Assets, liabilities, revenues, or expenses are based on significant estimates that involve unusually subjective judgments or uncertainties, or that are subject to potential significant change in the near term in a manner that may have a financially disruptive effect on the entity. These might include ultimate collectibility of receivables, timing of revenue recognition, realizability of financial instruments based on the highly subjective valuation of collateral or difficult-to-assess repayment sources, or significant deferral of costs.
- Unusually rapid growth or profitability occurs, especially compared with that of other companies in the same industry.
- Loss of a major customer has created pressure to replace revenues and earnings.

## Other Issues Requiring Consideration

### Side Agreements

Side agreements are used to alter the terms and conditions of recorded sales transactions to entice customers to accept the delivery of goods and services. They may create obligations or contingencies relating to financing arrangements or to product installation or customization that may relieve the customer of some of the risks and rewards of ownership. Frequently, side agreements are hidden from the entity's board of directors and outside auditors, and only a very few individuals within an entity are aware that they exist.

Side agreements appear to be prevalent in high technology industries, particularly the computer hardware and software segments. The terms they provide may preclude revenue recognition.

### Channel Stuffing

Distributors and resellers sometimes delay placing orders until the end of a quarter in an effort to negotiate a better price on purchases from suppliers that they know want to report good sales performance. This practice may result in a normal pattern of increased sales volume at the end of a reporting period. An unusual volume of sales to distributors or resellers, particularly at or near the end of the reporting period, may indicate channel stuffing. Channel stuffing (also known as *trade loading*) is a marketing practice that suppliers sometimes use to boost sales by inducing distributors to buy substantially more inventory than they can promptly resell. Inducements to overbuy may range from deep discounts on the inventory to threats of losing the distributorship if the inventory is not purchased. Channel stuffing without appropriate provision for sales returns is an example of booking tomorrow's revenue today in order to window-dress financial statements. Channel stuffing also may be accompanied by side agreements with distributors that essentially negate some of the sales by providing for the return of unsold merchandise beyond the normal sales return privileges. Even when there is no evidence of side agreements, channel stuffing may indicate the need to increase the level of anticipated sales returns above historical experience.

### **Related-Party Transactions and Significant Unusual Transactions**

Related-party transactions require special consideration because related parties may be difficult to identify and related-party transactions may be used to fraudulently inflate earnings. Examples include the recording of sales of the same inventory back and forth among affiliated entities that exchange checks periodically to “freshen” the receivables, and sales with commitments to repurchase that, if known, would preclude recognition of revenue. Although unusual material transactions, particularly close to year end, may be an indicator of related-party transactions, a series of sales may be executed with an undisclosed related party that individually are insignificant but in total are material.

Significant, unusual, or highly complex transactions resulting in revenue recognition that are executed with customers who are not related parties similarly require special consideration because they also may pose “substance over form” questions and may involve the collusion of the entity and the customer in a fraudulent revenue recognition scheme.

### **Nature of Business and Accounting for Revenue**

Improper revenue recognition is not confined to any single industry. Risk factors also differ depending on the nature of the product or service and its distribution. Products that are sold to distributors for resale pose different risks than products or services that are sold to end-users. Sales in high technology industries where rapid product obsolescence is a significant issue pose different risks than sales of inventory with a longer life, such as farm or construction equipment, automobiles, trucks, and appliances. Although generally accepted accounting principles broadly govern revenue recognition, how those principles are applied in specific circumstances varies from industry to industry.

In gaining an understanding of the nature of the entity’s business, the auditor might consider factors that are relevant to the entity’s revenue recognition such as the following:

- The appropriateness of an entity’s application of accounting principles in the context of the industry in which it operates
- Whether there has been a change in the company’s revenue recognition policy and, if so, why
- The company’s practice with regard to sales and payment terms, and whether there are deviations from industry norms or from the entity’s own practices such as the following:
  - Sales terms that do not comply with the company’s normal policies
  - The existence of longer than expected payment terms or installment receivables
  - The use of nonstandard contracts or contract clauses with regard to sales
- Practices with regard to the shipment of inventory that could indicate the potential for misstatements of revenue or that could have other implications for the audit, such as the following.

- The company’s shipping policy is inconsistent with previous years. For example, if an entity ships unusually large quantities of product at the end of an accounting period, it may indicate an inappropriate cutoff of sales. Alternatively, if a company that normally ships around-the-clock has stopped shipments one or two days before the end of the current accounting period, it may indicate that management is abandoning its normal operating policies in an effort to manage earnings, which may have broader implications for the audit.
- Shipments recorded as revenue are sent to third-party warehouses rather than to customers.
- Shipments recorded as revenue result from billing for demonstration products that already are in the field.

### **Integrity of Evidence**

Another issue requiring special consideration is the completeness and integrity of the entity’s evidential matter supporting revenue recognition. Indicators that revenue may have been improperly recorded include the following.

- Responses from management or employees to inquiries about sales transactions or about the basis for estimating sales returns are inconsistent, vague, or implausible.
- Documents to support sales transactions are missing.
- Bills of lading have been signed by company personnel rather than a common carrier.
- Documents such as shipping logs or purchase orders have been altered.

SAS No. 82, discussed in the section entitled “Auditing Revenue Assertions,” provides guidance on how the auditor’s judgment about the risk of material misstatement due to fraud may affect the conduct of the audit.

### **Potential Accounting Misstatements**

This section discusses specific indicators relating to sales transactions that may evidence improper revenue recognition. A number of these examples represent obvious misstatements (and fraud as well). Others are transactions that merit further investigation to determine whether or not revenue has been improperly recorded. The indicators are categorized into sales that may fail as a result of the absence of an agreement, lack of delivery, or an incomplete earnings process.

#### **Absence of an Agreement**

A sale has not taken place if there is no actual, firm agreement between seller and buyer. Examples of obvious bogus sales are sales to nonexistent customers, sales to existing customers in which terms such as quantities or prices have been altered, and shipments on canceled or duplicated orders. Indicators of sales that may be improperly recorded because of lack of agreement between buyer and seller include the following:



- The use of letters of intent in lieu of signed contracts or agreements
- Sales of merchandise that is shipped in advance of the scheduled shipment date without evidence of the customer's agreement or consent or documented request for such shipment
- Sales recorded upon shipment of a product to customers who have been given a free tryout period after which the customer can return the product with no obligation
- Recognition of sales when customers have unilateral cancellation or termination provisions
- Sales in which evidence indicates the customer's obligation to pay for the product is contingent on the following:
  - Resale to another (third) party (for example, sale to distributor, or consignment sale)
  - Receipt of financing from another (third) party

### **Lack of Delivery**

FASB Concepts Statement No. 5, *Recognition and Measurement in Financial Statements of Business Enterprises*, states that revenues from manufacturing and selling activities are commonly recognized at the time of sale, usually meaning delivery. Indicators that delivery may not have occurred include the following:

- Sales are billed to customers prior to the delivery of goods and held by the seller (*bill and hold* or *ship in place* sales).
- Shipments are made after the end of the period (books kept open to record revenue for products shipped after the end of the period do not satisfy the delivery criterion for the current period).
- Shipments are made to a warehouse or other intermediary location without the instruction of the customer.
- Goods are preinvoiced prior to or in the absence of actual shipment.
- Partial shipments are made in which the portion not shipped is a critical component of the product.
- Purchase orders are recorded as completed sales.

### **Incomplete Earnings Process**

FASB Concepts Statement No. 5 states that revenues are not recognized until earned. Indicators that sales have been recorded before the revenue has been earned include the following:

- There are sales in which evidence indicates the customer's obligation to pay for the merchandise depends on fulfillment by the seller of material unsatisfied conditions.
- Goods are preinvoiced while still in the process of being assembled.
- Shipments are sent to and held by freight forwarders pending return to the company for required customer modifications.

- There are sales that require substantial continuing vendor involvement after delivery of merchandise (for example, software sales requiring installation, debugging, extensive modifications, other significant support commitments).

## AUDITING REVENUE ASSERTIONS

The objective of an audit of financial statements conducted in accordance with generally accepted auditing standards (GAAS) is to express an opinion on the financial statements. GAAS require that the auditor plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether caused by error or fraud.

No audit can be designed to provide absolute assurance that all revenue recorded by the client is appropriate or that fraudulent financial reporting is discovered. Nevertheless, an awareness of the conditions that increase audit risk, along with an appropriately skeptical response to issues identified during the planning process and during the performance of significant fieldwork, can help auditors increase the likelihood that either inadvertent or intentional material misstatements of revenue will be detected.

Revenue recognition issues continue to pose significant audit risk to auditors. The auditor's understanding of the entity's business—how it earns revenue, who is involved in the revenue process, how its controls over revenue transactions may be overridden, and what its motivation to misstate revenue may be—is essential to reducing that risk. Auditors need to pay particular attention to warning signals, such as those discussed herein in the section entitled “Indicators of Improper Revenue Recognition,” that can be indicative of improper revenue recognition practices. To achieve the audit objective and satisfy the auditor's responsibility, the audit needs to be planned and executed with an appropriate degree of professional skepticism.<sup>4</sup> Additional audit procedures directed to the audit of revenues also may be needed to reduce the risk of failing to detect material misstatement of the financial statements to an acceptably low level. This section summarizes both authoritative and nonauthoritative guidance to help auditors achieve that objective.

### The Audit Risk Model

SAS No. 47, *Audit Risk and Materiality in Conducting an Audit* (AICPA, *Professional Standards*, vol. 1, AU sec. 312.12), states that “the auditor should consider audit risk and materiality both in (a) planning the audit and designing auditing procedures and

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<sup>4</sup> Professional skepticism is characterized as “an attitude that includes a questioning mind and a critical assessment of audit evidence. The auditor uses the knowledge, skill, and ability called for by the profession of public counting to diligently perform, in good faith and integrity, the gathering and objective evaluation of evidence.” See “Due Professional Care in the Performance of Work” (AICPA, *Professional Standards*, vol. 1, AU sec. 230.07).

(b) evaluating whether the financial statements taken as a whole are presented fairly, in all material respects, in conformity with generally accepted accounting principles.”

Audit risk is the risk that the auditor may unknowingly fail to appropriately modify his or her opinion on financial statements that are materially misstated. Financial statements are materially misstated when they contain misstatements whose effect, individually or in the aggregate, is important enough to cause them not to be presented fairly, in all material respects, in conformity with generally accepted accounting principles (GAAP). The auditor’s consideration of materiality is a matter of professional judgment and is influenced by his or her perception of the needs of a reasonable person who will rely on the financial statements.

The auditor should plan the audit so that audit risk will be limited to a low level that is, in his or her professional judgment, appropriate for expressing an opinion on the financial statements.

The nature, timing, and extent of the procedures to be applied on a particular engagement are a matter of the auditor’s professional judgment, based on the specific circumstances. However, the procedures adopted should be adequate to achieve the auditor’s specific objectives and reduce detection risk to a level acceptable to the auditor. The evidential matter obtained should be sufficient for the auditor to form conclusions concerning the validity of the individual assertions embodied in the components of financial statements, and should provide a reasonable basis for his or her opinion.

An audit of financial statements is a cumulative process. The auditor may identify fraud risk factors or related-party transactions or other information relevant to the audit while performing procedures relating to acceptance or continuance of clients and engagements, during engagement planning, while obtaining an understanding of an entity’s internal control, or while conducting fieldwork. Such information may alter the auditor’s judgment about the levels of inherent and control risks and his or her preliminary judgment about materiality. In such cases, the auditor may need to reevaluate the nature, timing, and extent of auditing procedures he or she plans to apply, based on the revised consideration of audit risk and materiality, for all or certain of the account balances or classes of transactions and related assertion.

### Knowledge of the Business

SAS No. 22, *Planning and Supervision* (AICPA, *Professional Standards*, vol. 1, AU sec. 311.06) states:

The auditor should obtain a level of knowledge of the entity’s business that will enable him to plan and perform his audit in accordance with generally accepted auditing standards. That level of knowledge should enable him to obtain an understanding of the events, transactions, and practices that, in his judgment, may have a significant effect on the financial statements. The level of knowledge customarily possessed by management relating to managing the entity’s business is substantially greater than that which is obtained by the auditor in performing the audit. Knowledge of the entity’s business helps the auditor in:

- a. Identifying areas for special considerations.
- b. Assessing conditions under which accounting data are produced, processed, reviewed, and accumulated within the organization.
- c. Evaluating the reasonableness of estimates, such as valuation of inventories, depreciation, allowances for doubtful accounts, and percentage of completion of long-term contracts.
- d. Evaluating the reasonableness of management representations.
- e. Making judgments about the appropriateness of the accounting principles applied and the adequacy of disclosures.

The auditor's understanding of the client's business, its organization, and its operating characteristics is critical for planning and performing an effective audit. With regard to assertions about revenue, the understanding would include, where significant, the following matters:

- The kinds of products and services sold
- Whether seasonal or cyclical variations in revenue may be expected
- The marketing and sales policies customary for the client and the industry
- Policies regarding pricing, sales returns, discounts, extension of credit, and normal delivery and payment terms
- Who, particularly in the marketing and sales functions, is involved with processes affecting revenues including order entry, extension of credit, and shipping
- Whether there are compensation arrangements that depend upon the company's recording of revenue; for example, whether the sales force is paid commissions based on sales invoiced or sales collected, and the frequency with which sales commissions are paid, might have an effect on the recording of sales at the end of a period

An understanding of the classes and categories of the entity's customers—whether there are sales to distributors or value-added resellers or to related parties—is important. For example, if sales to distributors are material, the auditor would need to understand whether concessions have been made in the form of return product rights or other arrangements in the distribution agreements the company has entered into. For example, distribution agreements in the high technology industry might include terms such as price protection, rights of return for specified periods, rights of return for obsolete product, and cancellation clauses, such that the real substance of the agreement is that it results in consignment inventory.

Other factors that may be relevant to the auditor's understanding include whether the client assists distributors in placing product with end-users, and how the company manages, tracks, and controls its inventory that is held by distributors. For example, the company may take physical inventories of product held by distributors or receive periodic inventory reports from distributors that are reconciled to the company's records.

The auditor should understand the accounting principles that are appropriate for the client's sales transactions, including special industry practices. In considering the

appropriateness of recognizing revenue on sales to distributors, for example, the auditor should bear in mind that a sale is not final until the customer accepts the product and the risks and rewards of ownership have been transferred to the buyer.

Until the auditor understands the business sense of material transactions, he or she cannot complete the audit. If the auditor lacks specialized knowledge to understand a particular transaction, he or she should consult with persons who do have the requisite knowledge.

Auditors may find procedures such as those described below useful in obtaining knowledge about an entity's sales transactions.

### **Inquiry**

Inquiry of management is an effective auditing procedure in obtaining a knowledge of the entity and its internal controls. In situations involving unusual or complex revenue transactions, the auditor should consider making inquiries of representatives of the client's sales, marketing, customer service and returns departments, and other client personnel familiar with the transactions to gain an understanding of the nature of the transactions and any special terms that may be associated with them. Inquiries of legal staff also may be appropriate when sales contracts have nonstandard, unusual, or complex terms. Inquiry alone is not a sufficient auditing procedure, but information obtained from discussions with management and entity personnel may help the auditor identify matters that need to be corroborated with evidence obtained from other procedures, including confirmation from independent sources outside the entity.

### **Reading and Understanding Contracts**

Reading and understanding the terms of sales contracts will help the auditor obtain an understanding of what the customer expects and what the company is committed to provide. In addition, reading the contents of the company's sales contract (and sales correspondence) files may provide evidence of side agreements.

### **Assignment of Personnel and Supervision**

SAS No. 22 also discusses the supervision of personnel who are involved in the audit. An understanding of a client's business, its accounting policies and procedures, and the nature of its transactions with customers is useful in assessing the extent of experience or supervision required of the personnel assigned to audit revenue transactions. SAS No. 47, in AU sec. 312.17, states the following.

The knowledge, skill, and ability of personnel assigned significant engagement responsibilities should be commensurate with the auditor's assessment of the level of risk for the engagement. Ordinarily, higher risk requires more experienced personnel or more extensive supervision by the auditor with final responsibility for the engagement during both the planning and the conduct of the engagement.

Unusual or complex transactions, related-party transactions, and sales transactions based on contracts with complex terms may signal the need for more experienced

personnel assigned to those segments of the engagement, more extensive supervision, or the use of industry or other specialists.

### Consideration of Internal Control Over Revenue Recognition

The COSO Report broadly defines internal control as a process, effected by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives including reliable financial reporting. (See the section entitled "Responsibility for Reliable Reporting.")

SAS No. 55, *Consideration of Internal Control in a Financial Statement Audit* (AICPA, *Professional Standards*, vol. 1, AU sec. 319.19) states the following.

In all audits, the auditor should obtain an understanding of each of the five components of internal control sufficient to plan the audit by performing procedures to understand the design of controls relevant to an audit of financial statements, and whether they have been placed in operation. In planning the audit, such knowledge should be used to—

- Identify types of potential misstatements.
- Consider factors that affect the risk of material misstatement.
- Design substantive tests.

The auditor's understanding of internal control over revenue transactions would include the client's policies and procedures for receiving and accepting orders, extending credit, shipping goods, relieving inventory, billing and recording sales transactions, receiving and recording sales returns, and authorizing and issuing credit memos. This understanding also would include whether the entity has procedures for determining the proper cutoff of sales at the end of the accounting period. It also is important for the auditor to have an understanding of the computer applications and key documents (for example, purchase orders, shipping reports, bills of lading, invoices, credit memos) used during the processing of revenue transactions.

SAS No. 55, AU sec. 319.41, states that the auditor's knowledge of the design and operation of internal controls ordinarily is obtained through procedures such as inquiries of appropriate management, supervisory, and staff personnel; inspection of entity documents and records; and observation of entity activities and operations. For example, the auditor might obtain a knowledge of the design and operation of internal controls over the extension of credit to customers by performing procedures such as the following.

- Inquire of the credit manager and other credit department personnel about the entity's documented policies for approving sales orders before a shipping or production order is generated, including how—
  - New customer's creditworthiness is determined.
  - Standing customers' credit limits are established and reviewed.

- Exceptions are handled if orders outside predetermined limits are received.
- Management monitors the functioning of controls over the extension of credit.
- Inspect the documents that are used in various steps of the credit authorization process.
- Observe how the authorization of orders is executed by credit department personnel.

The auditor's understanding of internal control also would include information such as how the company monitors its sales contracts. Relevant aspects of this include the company's policy about management or other personnel who are authorized to prove nonstandard contract clauses; whether those personnel understand the accounting implications of changes to contractual clauses; and whether the entity enforces its policies regarding negotiation and approval of sales contracts and investigates exceptions. A lack of documented policies may give rise to a lack of compliance or inconsistent compliance with stated policies.

A sufficient understanding of the client's application of accounting principles, given the nature of its sales transactions, is essential. The auditor needs to obtain an understanding of the client's financial reporting process to prepare the financial statements, including disclosures. This understanding would include how the client develops significant estimates, such as reserves for sales returns and allowances for doubtful accounts. It also would include considering the company's procedures for accounting for and disclosing related-party transactions. (See the discussion entitled "Transactions with Related Parties," which follows.)

Assessing control risk is the process of evaluating the *effectiveness* of an entity's internal control in preventing or detecting material misstatements in the financial statements. SAS No. 55 requires the auditor who assesses control risk at below the maximum to obtain sufficient evidential matter to support that assessed level. Because of the limitations inherent in any internal control system, there is always some risk that controls may fail or may be overridden, especially at the end of a reporting period. SAS No. 55 requires the auditor to perform substantive tests for significant account balances and transaction classes, regardless of the assessed level of control risk.

If evidence is obtained that operation of a control is ineffective, the assurance provided from substantive tests should increase. For example, if the auditor discovers that the entity's approval process for nonstandard sales contracts is ineffective, he or she may decide to confirm contract terms with major customers. If the auditor determines that a control has been intentionally overridden, SAS No. 82, discussed below, provides guidance on how the audit may be affected.

### Consideration of Fraud in a Financial Statement Audit

SAS No. 82, *Consideration of Fraud in a Financial Statement Audit* (AICPA, *Professional Standards*, vol. 1, AU sec. 316), requires that the auditor specifically assess the risk of material misstatement of the financial statements due to fraud and consider that assessment in designing the audit procedures to be performed. Fraud risk factors

that are particularly relevant to the fraudulent financial reporting of revenue were discussed in the section entitled “Indicators of Improper Revenue Recognition.” SAS No. 82, AU sec. 316.13, also states the following:

As part of the risk assessment, the auditor also should inquire of management (a) to obtain management’s understanding regarding the risk of fraud in the entity and (b) to determine whether they have knowledge of fraud that has been perpetrated on or within the entity. Information from these inquiries could identify fraud risk factors that may affect the auditor’s assessment and related inquiry are (a) whether there are particular subsidiary locations, business segments, types of transactions, account balances, or financial statement categories where fraud risk factors exist or may be more likely to exist and (b) how management may be addressing such risks.

SAS No. 82, AU sec. 316.27, notes that the auditor’s judgments about the risk of material misstatement due to fraud may affect the audit in the ways discussed below.

### **Professional Skepticism**

The application of professional skepticism in response to the auditor’s assessment of the risk of material misstatement due to fraud might include (a) increased sensitivity in the selection of the nature and extent of documentation to be examined in support of material transactions, and (b) increased recognition of the need to corroborate management explanations or representations concerning material matters—such as further analytical procedures, examination of documentation, or discussion with others within or outside the entity.

### **Accounting Principles and Policies**

The auditor may decide to consider further management’s selection and application of significant accounting policies, particularly those related to revenue recognition. The auditor may have a greater concern about whether the accounting principles selected and policies adopted are being applied in an inappropriate manner to create a material misstatement of the financial statements.

### **Controls**

When a risk of material misstatement due to fraud relates to risk factors that have control implications, the auditor’s ability to assess control risk below the maximum may be reduced. The auditor’s consideration of internal control would need to include an added sensitivity to management’s ability to override such controls.

SAS No. 82, AU sec. 316.30, gives the following example of a specific response to the auditor’s assessment of the risk of material misstatement arising from fraudulent financial reporting of revenue.

If there is a risk of material misstatement due to fraud that may involve or result in improper revenue recognition, it may be appropriate to confirm with



customers certain relevant contract terms and the absence of side agreements—inasmuch as the appropriate accounting is often influenced by such terms or agreements. For example, acceptance criteria, delivery and payment terms and the absence of future or continuing vendor obligations, the right to return the product, guaranteed resale amounts, and cancellation or refund provisions often are relevant in such circumstances. [Footnote omitted.]

SAS No. 82 also notes that the nature, timing, and extent of audit procedures may need to be modified in response to the auditor’s assessment of the risk of material misstatement due to fraud. It includes specific examples of responses that are included in the discussion of various auditing procedures throughout this section.

### Transactions with Related Parties

SAS NO. 45, *Related Parties* (AICPA, *Professional Standards*, vol. 1, AU sec. 334), provides guidance on procedures to obtain evidential matter on related-party relationships and transactions that must be disclosed in accordance with FASB Statement No. 57. (See the section entitled “Summary of Selected Accounting Literature on Revenue Recognition.”) AU sec. 334.02 states that “the auditor should be aware that the substance of a particular transaction could be significantly different from its form and that financial statements should recognize the substance of particular transactions rather than merely their legal form.” In the absence of evidence to the contrary, transactions with related parties should not be assumed to be outside the ordinary course of business. The auditor, however, should be aware of the possibility that transactions with related parties may have been motivated by conditions such as an urgent desire for a continued favorable earnings record in the hope of supporting the price of the company’s stock, or significant obsolescence dangers because the company is in a high-technology industry.

SAS No. 45, AU sec. 334.08, describes examples of procedures for identifying material transactions with parties known to be related and for identifying material transactions that may indicate the existence of previously undetermined relationships. Among the procedures are the following:

- Review proxy and other material filed with the Securities and Exchange Commission and comparable data filed with other regulatory agencies for information about material transactions with related parties.
- Review conflict-of-interests statements obtained by the company from its management.
- Review the extent and nature of business transacted with major customers, suppliers, borrowers, and lenders for indications of previously undisclosed relationships.
- Review accounting records for large, unusual, or nonrecurring transactions or balances, paying particular attention to transactions recognized at or near the end of the reporting period.

SAS No. 45 requires the auditor to place emphasis on testing material transactions with parties he or she knows are related to the reporting entity. It states that procedures should be directed toward obtaining and evaluating sufficient competent evidential matter and should extend beyond inquiry of management. The following are among the procedures that should be considered to obtain satisfaction concerning the purpose, nature, and extent of related-party transactions and their possible effect on revenue recognition.

- Obtain an understanding of the business purpose of the transaction.
- Examine invoices, executed copies of agreements, contracts, and other pertinent documents, such as receiving reports and shipping documents.
- Determine whether the transaction has been approved by the board of directors or other appropriate officials.
- Confirm the transaction amount and terms, including guarantees and other significant data, with the other party or parties to the transaction.
- Refer to financial publications, trade journals, credit agencies, and other information sources when there is reason to believe that unfamiliar customers, suppliers, or other business enterprises with which material amounts of business have been transacted may lack substance.
- With respect to material uncollected balances, guarantees, and other obligations, obtain information about the financial capability of the other party or parties to the transaction. Such information may be obtained from audited or unaudited financial statements tax returns, reports issued by regulatory agencies or taxing authorities, financial publications, or credit agencies.

The auditor should consider whether he or she has obtained sufficient competent evidential matter to understand the relationship of the parties and the effects of related-party transactions of the financial statements.

### Analytical Procedures

SAS no. 56, *Analytical Procedures* (AICPA, *Professional Standards*, vol. 1, AU sec. 329), requires the use of analytical procedures in the planning and review phases of the audit. Analytical procedures also may be used as substantive tests, although SAS No. 56 notes that they may not be as effective or efficient as tests of details in providing the desired level of assurance for some assertions.

Analytical procedures involve the comparisons of recorded amounts, or ratios developed from the recorded amounts, to expectations developed by the auditor. The auditor's expectations may be developed from a variety of sources including the financial information for comparable prior periods, anticipated (budgetary) results, and information regarding the industry in which the client operates and its normal business practices with regard to sales and distribution. For analytical procedures to be effective, the expectation should be precise enough to provide the desired level of

assurance that differences that may be potential material misstatements, individually or when aggregated with other misstatements, would be identified for the auditor to investigate.

An objective of applying analytical procedures in the planning phase of the audit is to identify areas that may represent specific risks relevant to the audit, such as the existence of unusual transactions and events, and amounts, ratios, and trends that might indicate matters that have financial statement and audit planning ramifications. The following analytical procedures are particularly useful in identifying unusual fluctuations in the revenue cycle that warrant additional consideration. Depending on the presence of risk factors and other judgments made during audit planning, the auditor may wish to perform one or more of the following procedures:

- Compare monthly and quarterly sales by location and by product line with sales of the preceding comparable periods and for comparable periods in prior years. Consider whether the results are consistent with other known information such as expanding or declining markets, changes in sales price mix, and new or discontinued product lines. Comparison of weekly and daily sales may be appropriate for certain periods such as the last month or week of the year.
- Analyze the ratio of sales in the last month or week to total sales for the quarter or year.
- Compare revenues recorded daily for periods shortly before and after the end of the audit period for unusual fluctuations such as an increase just before and a decrease just after the end of the period.
- Compare gross profit ratio, overall and by product line, to previous years and to budget and consider in the context of industry trends.
- Compare details of units shipped with revenues and production records and consider whether revenues are reasonable compared to levels of production and average sales price.
- Compare the number of weeks of inventory in distribution channels with prior periods for unusual increases that may indicate channel stuffing.
- Compare percentages and trends of sales into the distributor channel with industry and competitors' sales trends, if known.
- Compare revenue deductions, such as discounts and returns and allowances, as a percentage of revenues with budgeted and prior period percentages for reasonableness in light of other revenue information and trends in the business and industry.
- Compare sales credits for returns subsequent to year end with monthly sales credits during the period under audit to determine whether there are unusual increases that may indicate contingent sales or special concessions to customers.
- Analyze the ratio of returns and allowances to sales.
- Compare the aging of accounts receivable in the current and prior periods for buildup of accounts receivable.
- Compare monthly cash receipts for the period under audit to cash receipts subsequent to year end to determine whether receipts subsequent to year end are unusually low compared to the collection history during the months under audit.

SAS No. 56 requires the auditor to evaluate significant unexpected differences that are identified by analytical procedures. Management responses ordinarily should be corroborated with other evidential matter. In situations in which an explanation for the difference cannot be obtained, the auditor should obtain sufficient evidence about the assertion by performing other audit procedures to determine whether the difference is likely misstatement. This may be particularly appropriate in investigating individually significant revenue transactions.

### Cutoff Tests, Vouching, and Other Substantive Tests of Details

The auditor should consider performing tests of details of transactions to determine whether transactions have been properly recorded in accordance with the company's stated accounting policies. Such tests may include cutoff tests and vouching.

#### Revenue Cutoff Tests

If sales transactions involve the shipment of a product, revenue cutoff tests are used to test the revenue recognition process by determining whether goods have been shipped to the customer and whether the related revenues have been recorded in the same accounting period as shipment occurred. Revenue cutoff tests often are performed in connection with inventory cutoff tests. The scope of cutoff tests may be influenced by the following:

- Large quantities of merchandise awaiting shipment being noted during the year-end inventory observation
- Significant in-transit inventory at year end and/or significant change from the prior year
- An unusual increase in sales in the last few days of the audit period followed by an unusual decrease in the first few days after the audit period
- Numerous shipping locations
- Products with a relatively large per unit value
- Situations in which revenue is recognized before shipment or passage of title

An example of a cutoff test is to examine invoices and shipping documents for several days before and after the end of the accounting period and to trace such documents to the receivables and revenue records for the appropriate period. Compare the date of the invoices to the date of the related shipping documents. The date of billing is not necessarily the time when the revenue should be recognized—it is merely an indication of when the goods were billed. Compare quantities invoiced to quantities shipped, and verify that shipment was made to the customer's site. To properly review the records, use the client's mechanism for establishing control over the recording of shipments and billing of goods, for example, prenumbered shipping reports and prenumbered invoices, for each shipping point.

#### Vouching

Vouching transactions is an effective and efficient procedure relating to *occurrence* or *accuracy* and *completeness* assertions when controls are weak. The objective is to

determine whether recorded transactions actually occurred (are supported by valid source documents or records) and were accurately recorded. An example of vouching transactions is to select a sample of sales invoices from the revenue journal for a period before and a period after the balance sheet date and test for the propriety of revenue recognition with reference to the contractual terms with the customer and relevant legal recognition with reference to the contractual terms with the customer and relevant legal and accounting relations. Trace all information (customer's name, product description, quantities, prices, terms, and shipping date) to shipping documents and approved sales order or other customer authorization. Trace prices charged to price lists or job quotations. Check extensions and foot invoices or billings for clerical accuracy. Trace invoiced amounts to the subsidiary accounts receivable ledger.

### Other Substantive Tests of Details

Other tests of details might include, depending on the specific risks and environment, the following:

- Examine inventory reports or other correspondence from distributors and reconcile this information with the company's records.
- Vouch all large or unusual sales made at quarter end and year end to original source documents.
- Perform a detailed view of the entity's quarter-end or year-end adjusting entries and investigate any that appear unusual as to nature or amount.
- Scan the general ledger, accounts receivable subledger, and sales journal for unusual activity.
- Check the clerical accuracy of the revenue journal or similar record and trace the postings of the totals to the appropriate account in the general ledger.
- Check the reconciliation of revenue journals during the audit period to the general ledger control account, or check the postings to the general ledger control account from sources other than the revenue journal for unusual or unexpected activity.
- Analyze and review deferred revenue accounts at end of the period for propriety of deferral.
- Analyze and review credit memos and other accounts receivable adjustments for the period subsequent to the balance sheet date.
- Scan the general ledger or subsidiary ledgers, as appropriate for a period subsequent to year end for reversals of sales or large sales returns.
- Review significant year-end contracts for unusual pricing, billing, delivery, return, exchange, or acceptance clauses. Perform post year-end specific review for contract revisions or cancellations and for refunds or credits issued.

### Confirmations

SAS No. 67, *The Confirmation Process* (AICPA, *Professional Standards*, vol. 1, AU sec. 330), provides guidance to auditors about obtaining evidence from third parties

about financial statement assertions made by management. SAS No. 31, *Evidential Matter* (AICPA, *Professional Standards*, vol. 1, AU sec. 326), states that it is generally presumed that evidential matter obtained from independent sources outside an entity provides greater assurance of reliability than that secured solely within the entity.

SAS No. 67 requires auditors who have not requested confirmations in the examination of accounts receivable to document how they overcame the presumption to do so.

SAS No. 67, AU sec. 330.25, also states the following:

The auditor's understanding of the client's arrangements and transactions with third parties is key to determining the information to be confirmed. The auditor should obtain an understanding of the substance of such arrangements and transactions to determine the appropriate information to include on the confirmation request. The auditor should consider requesting confirmation of the terms of unusual agreements or transactions, such as bill and hold sales, in addition to the amounts. The auditor also should consider whether there may be oral modifications to agreements, such as unusual payment terms or liberal rights of return. When the auditor believes there is a moderate or high degree of risk that there may be significant oral modifications, he or she should inquire about the existence of details of any such modifications to written agreements. One method of doing so is to confirm both the terms of the agreements and whether any oral modifications exist. [Footnote omitted.]

As previously discussed, the confirmation of contract terms is suggested in SAS No. 82 in response to the auditor's assessment of the risk of material misstatements arising from fraudulent financial reporting, and in SAS No. 45 to determine the purpose, nature, and extent of transactions with related parties and their effects on the financial statements.

In addition, in some entities, the nature of the business is such that the majority of revenues are comprised of complex transactions evidenced by individual contracts. Entities in which the majority of sales are made pursuant to standard terms also may enter into such contracts for amounts that may be material to recorded revenue. Auditors need to read and understand the terms of contracts because they may significantly affect the accounting treatment for the transaction. In situations in which the auditor requests confirmation of contract terms, he or she should consider confirming with the customer *all* the significant contract terms, including information about payment terms, right-of-return privileges, acceptance criteria, termination arrangements, or bill and hold transactions. The auditor should consider the need to confirm with the customer whether there are significant unfulfilled vendor obligations or the existence of any oral or written agreements, particularly with regard to return to termination arrangements, that may alter the terms of the contract. In some circumstances, auditors might also consider contacting major customers orally in addition to written confirmations to determine whether the responses to confirmation requests received appropriate attention from personnel who are knowledgeable about the contract.

### Evaluating Accounting Estimates Relevant to Revenue Recognition

The auditor is responsible for evaluating the reasonableness of accounting estimates made by management in the context of the financial statements taken as a whole. Evaluation of estimates is always an area of auditing concern because the measurement of estimates is inherently uncertain and depends on the outcome of future events. SAS No. 57, *Auditing Accounting Estimates* (AICPA, *Professional Standards*, vol. 1, AU sec. 342.10) states the following:

In evaluating reasonableness, the auditor should obtain an understanding of how management developed the estimate. Based on that understanding, the auditor should use one or a combination of the following approaches:

- a. Review and test the process used by management to develop the estimate.
- b. Develop an independent expectation of the estimate to corroborate the reasonableness of management's estimate.
- c. Review subsequent events or transactions occurring prior to completion of fieldwork.

Estimates that are significant to management's assertions about revenue include sales returns, the allowance for doubtful accounts, and revenues from contracts accounted for by the percentage-of-completion method of accounting.

Auditors often use historical data to evaluate the reasonableness of estimates such as reserves for sales returns. Historical data may indicate client practices to take back inventory even when no contractual right of return exists. Analysis of the aging of accounts receivables that reflects a "building up" of receivables may indicate contingent sales or concessions to customers regarding the return of goods. Auditors also should consider reviewing sales to major customers, particularly to distributors, to detect excess purchases (channel stuffing) that may be at greater risk of return in the subsequent period.

A company's ability to make reasonable estimates of sales returns may be impaired if the company does not have sufficient visibility into what is going on in the sales channel. Reliance on solely historical averages may be insufficient, especially if the environment is somewhat volatile.

Estimating reserves for sales returns is particularly difficult when a new product has been introduced for which there is no historical data. Procedures that the auditor may consider include the following:

- Read trade magazines and analysts' reports to gain an understanding of the acceptance of the product in the marketplace.
- Analyze activity subsequent to year end when actual product returns may have occurred.
- Consider the susceptibility of the product to technological change and how thoroughly tested it was prior to release.
- Analyze historical returns for similar product lines.

The ability to make reasonable estimates of future returns is one of the conditions that must be met for recognition of revenue at the time of sale in accordance with FASB Statement No. 48, *Revenue Recognition When Right of Return Exists*. (See the section entitled “Summary of Selected Accounting Literature on Revenue Recognition.”) If reasonable estimates cannot be made, revenue recognition should be deferred.

In addition to analyzing historical data and the accounts receivable aging reports, auditors should consider testing the company’s estimate of the collectibility of receivables by procedures such as the following:

- Obtain publicly available information on major customers to determine their ability to honor outstanding obligations to the company.
- Investigate unusual credit limits or nonstandard payment terms granted to customers.
- Test subsequent collections of receivables.

Revenue recognition for contracts accounted for by the percentage-of-completion method is dependent on estimates of contract revenues, contract costs, and the extent of progress toward completion. Meaningful measurement of the extent of progress toward completion is essential because this factor is used in determining the amounts of estimated contract revenue and estimated gross profit that will be recognized as earned in any given period. All of the factors that affect total estimated revenue, including the basic contract price, contract options, change orders, claims, and contract provisions for penalties and incentive payments, must be reevaluated throughout the life of a contract. Although costs incurred to date may be verifiable, estimated costs to complete also are subject to continual refinement as work progresses. Auditors should obtain a sufficient understanding of the contract to evaluate the reasonableness of management’s assumptions regarding the estimates. Management also may rely on engineers or architects to make significant estimates. In that case, the auditor should consider SAS No. 73, *Using the Work of a Specialist* (AICPA, *Professional Standards*, vol. 1, AU sec. 336), and the need to evaluate the relationship of the specialist to the client, including circumstances that might impair the specialist’s objectivity. If the auditor believes the specialist’s objectivity might be impaired, the auditor should perform additional procedures with respect to some or all of the specialist’s findings to determine that the findings are not unreasonable or should engage another specialist for that purpose.

### Observation of Inventory

In cases in which inventory is observed at the end of a reporting period, auditors frequently obtain information pertaining to the final shipments of goods made during the period. This information later is compared to the client’s sales records to determine whether a proper cutoff of sales occurred. Additional procedures include inspecting the shipping areas at the observation site and making inquiries about whether goods in the shipping area will be included in inventory. If they are not to be included in



inventory, the auditor may need to obtain information about the nature of the goods and the quantities, and make additional inquiries of management. Auditors also might inspect the site to determine whether any other inventory has been segregated, and inquire of management whether the company's shipping policy is consistent with prior periods and, if not, why.

If entities have numerous shipping locations, auditors should consider observing inventory counts at all locations on the same day. Alternatively, auditors should consider whether inventories are being shipped from one entity location to another and recorded as sales.

In situations in which potential obsolescence or technology issues may pose special problems, the auditor should consider whether the staff who have been assigned to observe the inventory have the appropriate experience and training and whether the extent of supervision is appropriate for the assessed level of risk.

### Management Representations

SAS No. 85, *Management Representations* (AICPA, *Professional Standards*, vol. 1, AU section 333), requires the auditor to obtain written representations from management as a part of an audit of financial statements performed in accordance with GAAS. Such representations are part of the evidential matter the independent auditor obtains, but they are not a substitute for the application of those auditing procedures necessary to afford a reasonable basis for an opinion. Written representations from management complement other auditing procedures.

SAS No. 85 provides guidance on the matters to which specific representations should relate, including the financial statements; completeness of information; recognition, measurement and disclosure; and subsequent events. Examples of such representations that are relevant to revenue recognition include the following representations:

- There has been no fraud that could have a material effect on the financial statements.
- Related-party transactions, including sales and amounts receivable from related parties, have been properly recorded and disclosed.
- All financial records and related data have been made available.
- Significant estimates and material concentrations that are required to be disclosed in accordance with SOP 94-6 have been disclosed.

The representation letter ordinarily should be tailored to include additional appropriate representations from management relating to matters specific to the entity's business or industry. The auditor may consider it useful to obtain written representations concerning specific revenue recognition issues, such as the terms and conditions of unusual or complex sales agreements. Such representations may include confirmation that there are no contingencies that affect the obligation of customers to pay for merchandise purchased, and they may also include confirmation regarding the existence of side arguments.

Auditors should consider whether there is a need to obtain written representations from individuals below the executive level, such as sales personnel.

### Adequacy of Disclosure

SAS No. 32, *Adequacy of Disclosure in Financial Statements* (AICPA, *Professional Standards*, vol. 1, AU sec. 431), requires the auditor to express a qualified or an adverse opinion if management omits from the financial statements, including the accompanying notes, information that is required by GAAP.

The auditor should review the financial statements to determine whether disclosures are adequate with regard to revenue recognition policies, information about major customers or significant concentrations of credit risk, related-party transactions, and the effect of significant revisions to estimates in percentage-of-completion contracts.

### Evaluation of Audit Evidence

SAS No. 31, *Evidential Matter* (AICPA, *Professional Standards*, vol. 1, AU sec. 326.25), states the following:

In evaluating evidential matter, the auditor considers whether specific audit objectives have been achieved. The independent auditor should be thorough in his or her search for evidential matter and unbiased in its evaluation. In designing audit procedures to obtain competent evidential matter, he or she should recognize the possibility that the financial statements may not be fairly presented in conformity with generally accepted accounting principles or a comprehensive basis of accounting other than generally accepted accounting principles. In developing his or her opinion, the auditor should consider relevant evidential matter regardless of whether it appears to corroborate or to contradict the assertions in the financial statements. To the extent the auditor remains in substantial doubt about any assertion of material significance, he or she must refrain from forming an opinion until he or she has obtained sufficient competent evidential matter to remove such substantial doubt, or the auditor must express a qualified opinion or a disclaimer of opinion. [Footnotes omitted.]

## RESOURCES

### Financial Accounting Standards Board

#### Statements of Financial Accounting Standards<sup>5</sup>

FASB Statement No. 5, *Accounting for Contingencies*, (FASB, *Current Text*, vol. 1, sec. C59)

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<sup>5</sup>This section does not include guidance related to financial instruments, such as FASB Statement No. 125, *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*, and related EITF Issues.

FASB Statement No. 45, *Accounting for Franchise Fee Revenue* (FASB, *Current Text*, vol. 2, sec. Fr3)

FASB Statement No. 48, *Revenue Recognition When Right of Return Exists* (FASB, *Current Text*, vol. 1, sec. R75)

FASB Statement No. 50, *Financial Reporting in the Record and Music Industry* (FASB, *Current Text*, vol. 2, sec. Re4)

FASB Statement No. 51, *Financial Reporting by Cable Television Companies* (FASB, *Current Text*, vol. 2, sec. Ca4)

FASB Statement No. 53, *Financial Reporting by Producers and Distributors of Motion Picture Films* (FASB, *Current Text*, vol. 2, sec. Mo6)

FASB Statement No. 57, *Related Party Disclosures* (FASB, *Current Text*, vol. 1, sec. R36)

FASB Statement No. 66, *Accounting for Sales of Real Estate* (FASB, *Current Text*, vol. 1, sec. R10)

### **Exposure Drafts Outstanding**

Proposed Statement of Financial Accounting Standards, *Rescission of FASB Statement No. 53*, issued October 16, 1998, comment deadline January 18, 1999

### **Technical Bulletins**

FASB Technical Bulletin No. 90-1, *Accounting for Separately Priced Extended Warranty and Product Maintenance Contracts* (FASB, *Current Text*, vol. 1, sec R75)

### **Statement of Financial Accounting Concepts**

FASB Concepts Statement No. 5, *Recognition and Measurement in Financial Statements of Business Enterprises*, (FASB, *Original Pronouncements*, vol. 2)

FASB Concepts Statement No. 6, *Elements of Financial Statements* (FASB, *Original Pronouncements*, vol. 2)

### **Emerging Issues Task Force Abstracts**

EITF Issue No. 84-15, *Grantor Trusts Consolidation*

EITF Issue No. 84-17, *Profit Recognition on Sales of Real Estate with Graduated Payment Mortgages or Insured Mortgages*

EITF Issue No. 84-37, *Sale-Leaseback Transaction with Repurchase Option*

EITF Issue No. 84-24, *Distribution Fees by Distributors of Mutual Funds That Do Not Have a Front-End Sales Charge*

EITF Issue No. 85-27, *Recognition of Receipts from Made-Up Rental Shortfalls*

EITF Issue No. 86-6, *Antispeculation Clauses in Real Estate Sales Contracts*

EITF Issue No. 86-7, *Recognition by Homebuilders of Profit from Sales of Land and Related Construction Contracts*

EITF Issue No. 86-17, *Deferred Profit on Sale-Leaseback Transaction with Lessee Guarantee of Residual Value*

EITF Issue No. 86-29, *Nonmonetary Transactions: Magnitude of Boot and the Exceptions to the Use of Fair Value*

- EITF Issue No. 87-9, *Profit Recognition on Sales of Real Estate with Insured Mortgages or Surety Bonds*
- EITF Issue No. 87-10, *Revenue Recognition by Television “Barter” Syndicators*
- EITF Issue No. 88-12, *Transfer of Ownership Interest as Part of Down Payment under FASB Statement No. 66*
- EITF Issue No. 88-14, *Settlement of Fees with Extra Units to a General Partner in a Master Limited Partnership*
- EITF Issue No. 88-18, *Sales of Future Revenues*
- EITF Issue No. 88-24, *Effect of Various Forms of Financing under FASB Statement No. 66*
- EITF Issue No. 89-7, *Exchange of Assets or Interest in a Subsidiary for a Noncontrolling Equity Interest in a New Entity*
- EITF Issue No. 91-6, *Revenue Recognition of Long-Term Power Sales Contracts*
- EITF Issue No. 91-9, *Revenue and Expense Recognition for Freight Services in Process*
- EITF Issue No. 93-11, *Accounting for Barter Transactions Involving Barter Credits*
- EITF Issue No. 95-1, *Revenue Recognition on Sales with a Guaranteed Minimum Resale Value*
- EITF Issue No. 95-4, *Revenue Recognition on Equipment Sold and Subsequently Repurchased Subject to an Operating Lease*
- EITF Issue No. 96-17, *Revenue Recognition under Long-Term Power Sales Contracts That Contain Both Fixed and Variable Pricing Terms*

### Other

- FASB Invitation to Comment, *Accounting for Certain Service Transactions*, 1978.

## American Institute of Certified Public Accountants

### Statements on Auditing Standards

- SAS No. 1, *Codification of Auditing Standards and Procedures*, “Due Professional Care in the Performance of Work” (AICPA, *Professional Standards*, vol. 1, AU sec. 230)
- SAS No. 22, *Planning and Supervision* (AICPA, *Professional Standards*, vol. 1, AU sec. 311)
- SAS No. 31, *Evidential Matter* (AICPA, *Professional Standards*, vol. 1, AU sec. 326)
- SAS No. 32, *Adequacy of Disclosure in Financial Statements* (AICPA, *Professional Standards*, vol. 1, AU sec. 431)
- SAS No. 45, *Omnibus Statement on Auditing Standards—1983*, “Related Parties” (AICPA, *Professional Standards*, vol. 1, AU sec. 334)
- SAS No. 47, *Audit Risk and Materiality in Conducting an Audit* (AICPA, *Professional Standards*, vol. 1, AU sec. 312)
- SAS No. 55, *Consideration of Internal Control in a Financial Statement Audit* (AICPA, *Professional Standards*, vol. 1, AU sec. 319)

- SAS No. 56, *Analytical Procedures* (AICPA, *Professional Standards*, vol. 1, AU sec. 329)
- SAS No. 57, *Auditing Accounting Estimates* (AICPA, *Professional Standards*, vol. 1, AU sec. 342)
- SAS No. 67, *The Confirmation Process* (AICPA, *Professional Standards*, vol. 1, AU sec. 330)
- SAS No. 73, *Using the Work of a Specialist* (AICPA, *Professional Standards*, vol. 1, AU sec. 336)
- SAS No. 82, *Consideration of Fraud in a Financial Statement Audit* (AICPA, *Professional Standards*, vol. 1, AU sec. 316)
- SAS No. 85, *Management Representations* (AICPA, *Professional Standards*, vol. 1, AU sec. 333)

### Statements of Position

- Auditing Property and Liability Reinsurance* (unnumbered, issued October 1982)
- Auditing Life Reinsurance* (unnumbered, issued November 1984)
- SOP 75-2, *Accounting Practices of Real Estate Investment Trust*
- SOP 78-9, *Accounting for Investments in Real Estate Ventures*
- SOP 81-1, *Accounting for Performance of Construction-Type and Certain Production-Type Contracts*
- SOP 85-3, *Accounting by Agricultural Producers and Agricultural Cooperatives*
- SOP 90-3, *Definition of the Term Substantially the Same for Holders of Debt Instruments, as Used in Certain Audit Guides and a Statement of Position*
- SOP 92-1, *Accounting for Real Estate Syndication Income*
- SOP 92-5, *Accounting for Foreign Property and Liability Reinsurance*
- SOP 93-1, *Financial Accounting and Reporting for High-Yield Debt Securities by Investment Companies*
- SOP 93-2, *Determination, Disclosure, and Financial Statement Presentation of Income, Capital Gain, and Return of Capital Distributions by Investment Companies*
- SOP 95-1, *Accounting for Certain Insurance Activities of Mutual Life Insurance Enterprises*
- SOP 97-2, *Software Revenue Recognition*
- SOP 98-4, *Deferral of the Effective Date of a Provision of SOP 97-2, Software Revenue Recognition*
- SOP 98-9, *Modification of SOP 97-2, Software Revenue Recognition, With Respect to Certain Transactions*

### Exposure Drafts Outstanding

- Proposed Statement of Position, *Accounting by Producers and Distributors of Films*, issued October 16, 1998, comment deadline January 18, 1999
- Proposed Audit and Accounting Guide, *Audits of Investment Companies*, issued September 22, 1998, comment deadline December 22, 1998
- Proposed Audit and Accounting Guide, *Life and Health Insurance Entities*, issued September 4, 1998, comment deadline December 4, 1998

**Practice Bulletins**

Practice Bulletin No. 5, *Income Recognition on Loans to Financially Troubled Countries*

Practice Bulletin No. 6, *Amortization of Discounts on Certain Acquired Loans*

**Audit and Accounting Guides**

*Consideration of Internal Control in a Financial Statement Audit*

*Agricultural Producers and Cooperatives*

*Airlines*

*Banks and Savings Institutions*

*Brokers and Dealers in Securities*

*Casinos*

*Construction Contractors*

*Entities with Oil and Gas Producing Activities*

*Finance Companies*

*Health Care Organizations*

*Investment Companies*

*Property & Liability Insurance Companies*

**Auditing Practice Releases**

*Analytical Procedures*

*Confirmation of Accounts Receivable*

*Audits of Inventories*

**1998/99 Audit Risk Alerts**

*General Audit Risk Alert*

*Auto Dealerships Industry Developments*

*Construction Contractors Industry Developments*

*Depository and Lending Institutions Industry Developments*

*Health Care Organizations Industry Developments*

*High-Technology Enterprises Industry Developments*

*Insurance Companies Industry Developments*

*Investment Companies Industry Developments*

*Real Estate Industry Developments*

*Retail Enterprises Industry Developments*

*Securities Industry Developments*

**Practice Alerts**

These are published by the Professional Issues Task Force of the SEC Practice Section and available on the AICPA Web site.

Practice Alert 98-3, *Revenue Recognition Issues*

Practice Alert 98-2, *Professional Skepticism and Related Topics*

Practice Alert 98-1, *The Auditor's Use of Analytical Procedures*

Practice Alert 95-3, *Auditing Related Parties and Related-Party Transactions*

**Other**

Accounting Principles Board Opinion No. 10, *Omnibus Opinion—1966* (FASB, *Current Text*, vol. 1, sec. R75)

Accounting Principles Board Opinion No. 22, *Disclosure of Accounting Policies* (FASB, *Current Text*, vol. 1, sec. A10)

Accounting Research Bulletin No. 43, *Restatement and Revision of Accounting Research Bulletins*, (FASB, *Current Text*, vol. 1, sec. R75)

Accounting Research Bulletin No. 45, *Long-Term Construction-Type Contracts* (FASB, *Current Text*, vol. 2, sec. Co4)

Public Oversight Board of the SEC Practice Section. *In the Public Interest: Issues Confronting the Accounting Profession*. New York: AICPA. 1993.

Ramos, Michael, *Considering Fraud in a Financial Statement Audit: Practical Guidance for Applying SAS NO. 82*. New York: AICPA. 1997.

\_\_\_\_\_, *Auditing Estimates and Other Soft Accounting Information*. New York: AICPA. 1998.

Report to the Public Oversight Board of the SEC Practice Section from the Advisory Panel on Auditor Independence. *Strengthening the Professionalism of the Independent Auditor*. New York: AICPA. 1994.

**Other Publications**

*Internal Control—Integrated Framework*. COSO (Committee of Sponsoring Organizations of the Treadway Commission). 1991.

*Report of the National Commission on Fraudulent Financial Reporting*. National Commission on Fraudulent Financial Reporting. 1987.

Securities and Exchange Commission Accounting and Auditing Enforcement Release No. 108, in *Federal Securities Law Reports*. Chicago: Commerce Clearing House, Inc. (looseleaf).

## CHAPTER EIGHT

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# Accounting for Research and Development Arrangements

## 8.1 GENERAL

### (a) Research and Development Arrangements in Which Funds Are Provided by Others

Software companies, like many other high-technology companies, must perform significant amounts of research and development to develop and enhance their products. Many different kinds of arrangements are used to structure research and development activities; some involve an entity formed specifically as a vehicle to carry out the research activities. The software company will normally produce and market the software products after development. The separate research and development entity is usually granted, as part of the arrangement, rights to future economic benefits of the results of the research and development activities, such as a royalty interest, a revenue interest, or a share of profits realized from the related products. While such arrangements often involve the formation of a separate research and development entity, they are sometimes set up merely as a contract between the software company and existing entities.

Software companies often obtain funds from other parties—usually hardware vendors, software vendors, or end-user consortiums—for use in performing the research and development. Many software companies do not engage in transactions in which research and development is funded by others because of (1) difficulty in obtaining investor interest and (2) the high cost of capital to the software company. However, enough of these arrangements take place in one form or another to make this a specialized area of accounting for software companies.

If a separate research and development entity is used, the funds are obtained through equity investments or loans to the entity. In other types of arrangements, funds are



obtained directly from other parties. The arrangements often provide that the funds are paid to the software company for services performed in carrying out the research and development work. Some research and development arrangements obligate the software company to assume risks that would otherwise be risks of the funding parties, such as where the software company takes on an obligation to ensure that the parties will recover all or a portion of the funds they have provided, regardless of the outcome of the research and development activities.

This can be done, for example, by a software company agreeing to an obligation to purchase ownership interests or assets of the research and development entity under specified conditions, or giving a guarantee that the funding parties will recover some or all of the funds provided through guaranteed minimum royalties.

If a software company assumes risks that protect funding parties from losses that would otherwise be risks of real equity participants in a research and development project, the funding is, in substance, a financing. The accounting principles that have been established for such arrangements recognize this. These accounting principles and their applications are discussed in this chapter.

## **8.2 ACCOUNTING PRINCIPLES FOR RESEARCH AND DEVELOPMENT ARRANGEMENTS**

### **(a) FASB Statement No. 68**

In October 1982, the FASB issued FASB Statement No. 68, *Research and Development Arrangements*, which is the primary accounting pronouncement on this subject. FASB Statement No. 68 applies to all research and development arrangements that are completely or partially funded by others. The major thrust of FASB Statement No. 68 is to define, how to identify, and account for research and development arrangements that should be considered financing transactions.

The following summary shows how to account for funds provided by others in research and development arrangements:

Terms of Arrangement	Accounting
The software company can be required to repay the funding parties regardless of the results of the research and development.	Funds provided by others are accounted for as a liability.
The software company has the right but not the obligation to acquire the results of the research and development	Funds provided by others are accounted for as reimbursed costs under a contract to perform research and development for others.

If a research and development arrangement is subject to the AICPA's Industry Audit Guide, *Federal Government Contractors*, there are certain accounting and financial presentation requirements that may be more stringent than those of FASB Statement No. 68 in that the applicable rules for those situations are more narrow and definitive. The scope of this chapter does not include those situations.

### **(b) Arrangements Covered by FASB Statement No. 68**

A research and development arrangement contemplated by FASB Statement No. 68 is a formal or informal agreement between two or more parties to finance or engage in research and development. The arrangement may be structured as a joint venture, a limited partnership, a corporation, a contract to perform research and development services for others, or otherwise. The research and development work is generally performed under contract by one of the parties to the arrangement.

FASB Statement No. 2, *Accounting for Research and Development Costs*, defines "research" as follows:

Research is planned search or critical investigation aimed at discovery of new knowledge with the hope that such knowledge will be useful in developing a new product or service . . . or a new process or technique . . . or in bringing about a significant improvement in existing products or processes. [FASB Statement No. 2, paragraph 8.a]

FASB Statement No. 2 defines "development" as follows:

Development is the translation of new knowledge gained in research or other knowledge into a plan or design for new or significantly improved products or processes, whether intended for sale or internal use. It includes the conceptual formulation, design, and testing of product alternatives, construction of prototypes, and operation of pilot plants; it does not include routine or periodic alterations to existing products and processes nor market research and market testing activities. [FASB Statement No. 2, paragraph 8.b]

## **8.3 DETERMINING WHETHER A LIABILITY TO REPAY EXISTS**

### **(a) Explicit Contractual Liability to Repay**

An entity participating in a research and development arrangement in which funds are provided by others must determine whether the terms of the arrangement result in a liability to repay some or all of the funds provided by the other parties. Various circumstances can result in the conclusion that there is a liability to repay. Among the examples of circumstances that indicate the existence of an obligation to repay are:

- The enterprise guarantees, or has a contractual commitment that assures, repayment of the funds provided by the other parties regardless of the outcome of the research and development.
- The other parties can require the enterprise to purchase their interests in the research and development regardless of the outcome.
- The other parties automatically will receive debt or equity securities of the enterprise upon termination or completion of the research and development regardless of the outcome. [FASB Statement N. 68, paragraph 6]

If any of the above circumstances are present, they will usually be based on contractual terms and will be relatively easy to evaluate in making the determination of whether an obligation to repay exists.

### (b) Substantive Liability to Repay

The evaluation of whether there is a liability to repay does not end with considering only explicit contractual obligations. It is also necessary to evaluate whether circumstances other than explicit contractual terms result in a substantive liability to repay. The passage of risk must be substantive and genuine. Following are examples of conditions indicative of the existence of a substantive obligation to repay:

- The enterprise has indicated an intent to repay all or a portion of the funds provided regardless of the outcome of the research and development.
- The enterprise would suffer a severe economic penalty if it failed to repay any of the funds provided to it regardless of the outcome of the research and development. An economic penalty is considered “severe” if in the normal course of business an enterprise would probably choose to pay the other parties rather than incur the penalty. For example, an enterprise might purchase the partnership’s interest in the research and development if the enterprise had provided the partnership with proprietary basic technology necessary for the enterprise’s ongoing operations without retaining a way to recover that technology or prevent it from being transferred to another party, except by purchasing the partnership’s interest.
- A significant related party relationship between the enterprise and the parties funding the research and development exists at the time the enterprise enters into the arrangement.
- The enterprise has essentially completed the project before entering into the arrangement. [FASB Statement No. 68, paragraph 6]

If one of the above conditions is present, there is a presumption that there is a liability to repay some or all of the funds provided by others if the research and development is not successful and the transaction should be accounted for as if there is a contractual obligation to repay. This presumption can be overcome only by substantial evidence that clearly establishes that the other parties have retained the risk of loss of the funds they have provided.

### (c) Related Parties in Research and Development Arrangements

If a significant related party has provided funds in a research and development arrangement, it is virtually impossible to overcome the presumption that there is an obligation to repay, regardless of the contractual arrangements. The rationale for this is that, because of the significant related party relationship, the stated terms of the arrangement could be changed to benefit the funding party to the detriment of the software company, or the effect of a repayment could be achieved outside the scope of the research and development arrangement. For example, the effect of a repayment could be accomplished by additional dividend payments or adjustment of future pricing of products and services sold by one related party to another.

If a significant related party relationship exists, efforts to present substantial evidence that there is no obligation to repay are generally futile. A significant party relationship combined with significant participation of the related party in the research and development arrangement essentially cannot be overcome. No formal guidelines or requirements exist in generally accepted accounting principles that establish a “bright-line” of how large the related party’s interest in the research and development arrangement must be to make the presumption of an obligation to repay impossible to overcome. However, cases seen in practice indicate that the presumption certainly is difficult to overcome if a related party ownership interest in the funding party or the related party’s participation in the research and development arrangement is 10 percent or more. Under requirements of generally accepted accounting principles and practice, the 10 percent level is not necessarily conclusive but it is presumptive, requiring compelling evidence to overcome. For public companies the SEC has established a “bright-line” of 10 percent as resulting in a significant party relationship. This was set forth in SEC Staff Accounting Bulletin No. 63, which is included in Appendix 8-B.

## 8.4 Accounting If There Is a Liability to Repay

Generally, software companies will avoid research and development arrangements with a liability to repay because they do not achieve the often-desired effect of “off-balance-sheet” financing. However, occasionally they are seen in practice and it is important to understand the accounting implications of a liability to repay. If it has been determined that there is a liability to repay, the software company should record a liability equal to the funds provided. To illustrate, assume that a software company has incurred research and development costs of \$100,000 in developing a software product. Other parties have provided 90 percent of the funds (\$90,000) in exchange for a royalty interest of 10 percent of gross revenue from sale of the software product. The contractual terms or other conditions lead to the conclusion that there is an obligation to repay. The following journal entries would be made by the software company:

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Cash	\$ 90,000	
Liability to repay other parties		\$ 90,000
(Funds received from other parties)		
Research and development expense	\$100,000	
Cash		\$100,000
(Expenditures)		

If the software company later purchases the interests of the other parties or otherwise repays them, that transaction is recorded as the payment of the liability, as follows:

Liability to repay other parties	\$ 90,000	
Cash (or other consideration given)		\$ 90,000
(Repayment of other parties)		

If the software company is not required to repay the other parties after having recorded a liability, the accounting for the retirement of the liability depends on whether the research and development has been successful or unsuccessful. If the project has been unsuccessful, the related products are abandoned, and it is determined that no repayment will be made, the liability is reversed as follows:

Liability to repay other parties	\$ 90,000	
Other income		\$ 90,000
(Elimination of liability to repay)		

If this results in a significant credit to current expense, adequate disclosure should be made. It might be appropriate to report the credit as a separate line item in the income statement, depending on significance. If the transaction is with a related party, the SEC may require that the credit be to capital rather than to income. (The SEC has required such a “capital contribution” approach in similar situations involving related parties.)

If the project has been successful, the liability is reduced as the benefits of the research and development are realized by the other parties (such as through royalty payments). The effect is that the software company would report in income all of the profits derived from the products or services until the liability has been completely retired. To illustrate, assume that the other parties are to receive royalties of \$90,000 based on 10 percent of first-year revenue totaling \$900,000. The software company would record the following:

Cash (or accounts receivable)	\$900,000	
Revenue		\$900,000
(Gross revenue)		
Liability to repay other parties	\$ 90,000	
Cash (or accounts payable)		\$ 90,000
(Royalties due to other parties)		

If, for the second period after project completion, the same revenue level of \$900,000 is achieved, the software company records the following:

Cash (or accounts receivable)	\$900,000	
Revenue		\$900,000
(Gross revenue)		
Royalty expense	\$ 90,000	
Cash (or accounts payable)		\$ 90,000
(Royalties due to other parties)		

As illustrated above, initial payments to others are accounted for as repayment of the liability and subsequent payments are accounted for as an expense.

## 8.5 ACCOUNTING IF THERE IS NO LIABILITY TO REPAY

If it has been determined that there is no obligation to repay funds provided by others, the software company should account for the transaction as a contract to perform research and development for others. Funds to be received should be recognized as revenue when earned, and costs allocable to the portion of the project related to the interests of the other parties should be recognized as expenses. To illustrate, assume the same facts as in the preceding section. The accounting for funds provided by other parties and costs incurred would be:

Research and development expense	\$100,000	
Cash		\$100,000
(Expenditures)		
Cash	\$ 90,000	
Services (or consulting) revenue		\$ 90,000
(Funds received from other parties)		

In the immediately preceding entry, the credit could be recorded as a reduction of research and development expenses. If the above accounting is used for the receipt of the funds, without the recording of a liability, the following accounting would result in both the first and second years after completion of the product (assumptions are the same as in Section 8.4):

Cash (or accounts receivable)	\$900,000	
Revenue		\$900,000
(Gross revenue)		
Royalty expense	\$ 90,000	
Cash (or accounts payable)		\$ 90,000
(Royalties due to other parties)		

The software company recognizes royalty expense of \$90,000 in both the first and second years in the illustration in Section 8.5. In the illustration in Section 8.4, the first-year royalties are charged to the liability, resulting in higher reported income by the software company for that year. Cumulatively, the only significant difference between the illustrations in Sections 8.4 and 8.5 relates to timing of income recognition. If there is a liability to repay, there is, in effect, a delay in recognition of proceeds from the funding parties in income.

If there is no liability to repay and the software company later exercises an option to purchase the interests of the other parties, the acquisition of the others' interests should be accounted for in accordance with APB Opinion No. 17, *Intangible Assets*: assets required for use in research and development should be charge to research and development expense unless they have alternative future use. This accounting is discussed in FASB Interpretation No. 4, *Applicability of FASB Statement No. 2 to Business Combinations Accounted for by the Purchase Method*, and Emerging Issues Task Force Issue No. 86-14, *Purchased Research and Development Projects in a Business Combination*.

## 8.6 LIABILITY TO REPAY A PORTION OF FUNDS PROVIDED

The terms of some research and development arrangements result in a software company having an obligation to repay only a portion of funds provided by others. This can be caused by a contractual obligation to purchase only a portion of the others' interests or by a contractual limitation on the amount the software company can be required to repay, which is less than the total funds provided. An obligation to repay a portion of the funds provided should be accounted for partly as an obligation to repay and partly as a contract to perform research and development for others.

For the portion of the arrangement accounted for as an obligation to repay, a liability should be recorded based on the contractual terms of the arrangement. Generally, a "partial obligation to repay" will arise either as the initial funds are provided or on a pro rata basis as the funds are provided.

To illustrate, assume that a software company guarantees minimum return of the interests of other parties for an amount equal to 50 percent of funds provided to date by the other parties. If total funds of \$200,000 have been provided to date by other parties and used for expenditures on the project, the software company would account for those funds as follows:

Cash (or accounts receivable)	\$200,000	
Services (or consulting) revenue		\$100,000
Liability to repay other parties		100,000
(Funds received from other parties)		

As mentioned in regard to the illustration in Section 8.5, the credit to revenue could alternatively be recorded as a reduction of research and development expenses.

## 8.7 SPECIAL CONSIDERATIONS FOR ISSUANCE OF SECURITIES IN CONNECTION WITH A RESEARCH AND DEVELOPMENT ARRANGEMENT

### (a) General

A software company may have an obligation to acquire the results of research and development or an obligation to repay funds provided by other parties by issuing securities, such as common stock of the software company. Alternatively, a software company may not have an obligation but may elect to purchase the results of research and development by issuing securities pursuant to an option or otherwise. Accounting for these situations is discussed in FASB Technical Bulletin No. 84-1, *Accounting for Stock Issued to Acquire the Results of a Research and Development Arrangement*. However, the value to be assigned to the securities needs special consideration.

Many research and development arrangements include the issuance of stock purchase warrants to funding parties. If warrants are issued in connection with a research and development arrangement, a portion of the proceeds received from the funding parties, equal to the fair market value of the warrants, should be allocated to paid-in capital. This reduces the amount of proceeds available to recognize as revenue or as a credit to expense.

Stock issued in connection with the acquisition of the results of a research and development arrangement should be accounted for at the fair market value of the stock issued or the consideration received, whichever is more clearly evident. Generally, the fair market value of the stock issued will be more clearly evident. However, the determination of fair market value of securities may not be straightforward in some situations, even if a software company's stock is traded publicly. For example, stock to be issued may not be registered and freely tradable, leading to a value less than the price of publicly traded shares. Other restrictions placed on the stock should also be considered for possible effects on fair market value. In some circumstances, it may be necessary to obtain an appraisal of fair market value of securities from a qualified expert, such as an investment banker.

### (b) If There Is an Obligation to Repay

If the accounting is based on an obligation to repay, the software company should record a liability when the funds are provided by other parties, as illustrated in Section 8.4. Thereafter, to the extent that the fair market value of the securities that would be issued exceeds the recorded liability, the liability should be increased and additional interest expense recognized.

To illustrate, assume that other parties provide to a software company \$200,000 for research and development and that the software company is obligated to acquire the results by issuing 10,000 shares of common stock to the funding parties at the conclusion of the research and development project, regardless of its outcome. The fair market value of the stock is \$20 per share at the inception of the arrangement. In performing the research and development, the software company incurs costs of



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\$175,000. At the end of the project, the market value of the stock has increased to \$30 per share for a total of \$300,000 (10,000 shares x \$30) and the stock is issued. The software company would record the following:

Cash	\$200,000	
Liability to repay other parties		\$200,000
(Funds received from other parties)		
Research and development expense	\$175,000	
Cash (or accounts payable)		\$175,000
(Expenditures)		
Interest expense	\$100,000	
Liability to repay other parties		\$100,000
(Increase liability to market value of stock)		
Liability to repay other parties	\$300,000	
Common stock and additional paid-in capital		\$300,000
(Issuance of stock)		

### (c) If There Is No Obligation to Repay

If the accounting is based on there not being an obligation to repay, the software company would account for the arrangement as a contract to perform research and development for other parties, as illustrated in Section 8.5. If the software company has an option to acquire the results of the research and development in exchange for securities, a later acquisition of the results of the research and development should be accounted for based on the following:

1. If the project consists of incomplete research and development, the fair market value of the securities issued should be recognized as research and development expense.
2. If the project consists of complete research and development but the fair market value of the securities issued exceeds the amount that can be supported as the fair market value of the assets acquired, the supportable value of the acquired assets is recorded to assets and the excess of the value of the securities over the value of the assets is recognized as research and development expense.
3. If the project consists of complete research and development and the fair market value of the securities is less than the supportable value of the assets acquired, the assets are recorded at the value of the securities issued.

If both complete and incomplete research and development are acquired as a package, which frequently happens, an allocation should be made to each, based on discounted cash flow expected to be received from the software products.

An acquisition of the results of the research and development may involve a “basket” of software or software products in various stages of development or completion. While this situation is often seen in business combinations, it can also occur in the

acquisition of the results of funded research and development. It is necessary to determine how much of the software acquired relates to:

1. Products that have achieved technological feasibility under FASB Statement No. 86, and whose cost therefore must be capitalized
2. Products that have *not* yet achieved technological feasibility under FASB Statement No. 86, and whose costs must therefore be expensed as research and development expense immediately
3. Software or software technology with “alternative future use” in more than one research and development project or product or otherwise. Costs in this category are not research and development costs and are capitalizable if they satisfy the net realizable value realization test of FASB Statement No. 86; if not, they must be expensed.

Because of the specific product orientation of most software development, this third category can often be ignored. However, there may be specific algorithms, or even whole modules, that do not relate uniquely to products in the first two categories that might relate to the third category.

Included in this third category might be some software that the company would expect to sell. However, the expectation must be based on realistic plans, and not merely a feeling that if the development does not succeed, the company would hope to sell the incomplete product—the residual value of incomplete software development projects is usually significant.

Once the software assets acquired have been identified, the cost should be allocated based upon the relative value of the assets. The value is typically determined by estimating the future net cash flow from the various software assets acquired. This must consider sales, less development, distribution, and other direct costs. Consideration must also be given to the impact of future enhancements, which frequently will cause use of a relatively short period of time for projection of revenue for an existing product that will soon be subject to significant enhancement.

The estimated future cash flow is then discounted to present value using interest rates reflecting the risk attached to the various software assets. The purchase price is then allocated based on the relative values, and what is capitalizable is carried forward as an asset, and what is not capitalizable is expensed immediately.

## 8.8 FINANCIAL REPORTING FOR RESEARCH AND DEVELOPMENT ARRANGEMENTS

### (a) If There Is an Obligation to Repay

There are no special financial statement disclosure requirements for a research and development arrangement accounted for as an obligation to repay. However, if an arrangement is significant, it would be appropriate to describe the arrangement and the related amounts that have been recognized in the financial statements. These disclosures are generally considered to be appropriate for any significant research and

development arrangement, regardless of how it is accounted for. Following is an example of a financial statement note describing a significant research and development arrangement accounted for as an obligation to repay:

**Note 5—Research and Development Arrangements**

In 2001, ABC Software Company (“the Company”) entered into a research and development arrangement to develop Program XYZ. The arrangement was structured as a limited partnership. The partnership agreement provides that, upon successful completion of the project, the Company will receive from the partnership an exclusive license to market Program XYZ and the partnership will receive royalties equal to 10 percent of the Company’s total revenues from Program XYZ. The Company became the general partner of the partnership. The total funds contributed by all limited partners, including the Company, amounted to \$1,000,000. The Company guaranteed minimum royalties to the other participants regardless of the outcome of the research and development activities in an amount equal to the total funds provided by the other participants. As of December 31, 2001, the Company has recorded a liability of \$300,000 representing the amount of funds provided by the other participants.

**(b) If There Is an Obligation to Repay But No Repayment Is Made**

If a software company accounts for an arrangement as an obligation to repay but is not required to make a repayment of some or all of the obligation in connection with a successful project, note disclosure can be somewhat more complex. Following is an illustration of a financial statement note appropriate for a software company that was required to purchase only a portion of the interests of other participants:

**Note 5—Research and Development Arrangements**

In 2001, ABC Software Company (“the Company”) entered into a research and development arrangement to develop Program XYZ. The arrangement was structured as a limited partnership. Total capital contributed by the partners amounted to \$7,000,000. The partnership agreement provided that the Company would perform the research and development and that, upon the successful development of Program XYZ, the Company would receive an exclusive license to market the product in exchange for a royalty to be paid to the partnership equal to 15 percent of the Company’s total revenue from the product. The Company is the general partner in the partnership. The Company accounted for the research and development arrangement as a financing because the partnership agreement obligated the Company to purchase the limited partners’ interests for the amount of their original investment. Accordingly, the Company recorded the receipt of \$7,000,000 from the partnership as a liability. In 2002, the Company was required to purchase certain of the limited partner interests for \$4,000,000 and recorded the payments as reductions of the liability. The

remaining liability of \$3,000,000 is being reduced as payments are made for royalties earned by remaining limited partners other than the Company.

### (c) Contracts to Perform Research and Development for Others

FASB Statement No. 68 requires the following disclosures for research and development arrangements accounted for as contracts to perform research and development for others. Similar arrangements may be combined in making the disclosures.

1. Terms of significant arrangements as of the date of each balance sheet presented, including the terms of any royalty arrangements, purchase provisions, license agreements, and commitments to provide additional funding
2. Amounts of compensation earned and costs incurred for the arrangements for each period for which an income statement is presented

## 8.9 ILLUSTRATION OF ACCOUNTING FOR A RESEARCH AND DEVELOPMENT ARRANGEMENT WITH A LIABILITY TO REPAY

### (a) Assumptions

ABC Software Company causes a research and development partnership to be formed for the purpose of developing Program XYZ. The partnership will be funded by the sale of 1,000 partnership units at \$10,000 each, for a total of \$10,000,000. ABC Software Company will purchase 30 percent of the units and the remaining 70 percent will be upsold to unrelated third parties. ABC Software Company is engaged by the partnership to perform the research and development for which the partnership pays ABC Software Company \$10,000,000. Performing the research and development costs ABC Software Company \$8,000,000.

The partnership agreement provides that at the conclusion of the project and at the option of the other parties, ABC Software Company can be required to purchase the partnership interests of the other parties at an amount equal to their original investment. The project is a success and the new product is licensed to ABC Software Company for exclusive marketing in exchange for a royalty obligation equal to five percent of ABC Software Company's gross revenue from the product. At the conclusion of the project, 50 percent of the partnership interests held by third parties were tendered to ABC Software Company pursuant to the repayment obligation. In the first year of marketing Program XYZ, ABC Software Company realized gross revenue of \$12,000,000 from the product.

The following entries assume completion of all activities. When a project is in progress, various receivables and payable between ABC Software Company and the partnership would be established and relieved as cash transfers and research activities take place.

**(b) Accounting by the Partnership**

The partnership books would be prepared as follows:

(1) Cash	\$10,000,000	
Capital—ABC Software Company		\$ 3,000,000
Capital—other parties (Capital contributions)		7,000,000
(2) Research and development expense	\$10,000,000	
Cash (Expenditures)		\$10,000,000
(3) Capital—other parties	\$ 3,500,000	
Capital—ABC Software Company		\$ 3,500,000
(Purchase of 350 units by ABC Software Company)		
(4) Cash	\$ 600,000	
Royalty income (5% royalty on revenue of \$12,000,000)		\$ 600,000

**(c) Accounting by ABC Software Company**

**(i) Separate Entity Books of ABC Software Company.** The separate entity books of ABC Software Company would be prepared as follows:

(1) Investment in partnership	\$ 3,000,000	
Cash (Capital contributions)		\$ 3,000,000
(2) Operating expenses	\$ 8,000,000	
Cash (Expenditures)		\$ 8,000,000
(3) Cash	\$10,000,000	
Service (or consulting) revenue (Payment from partnership for performing research and development services)		\$10,000,000
(4) Research and development expense	\$ 3,000,000	
Investment in partnership (ABC company share of partnership loss)		\$ 3,000,000
(5) Investment in partnership	\$ 3,500,000	
Cash (Purchase of 350 partnership units)		\$ 3,500,000

(6) Cash (or accounts receivable)	\$12,000,000	
Product revenue		\$12,000,000
(Revenues from marketing Program XYZ)		
(7) Royalty expense	\$ 600,000	
Cash		\$ 600,000
(Royalties due to partnership)		
(8) investment in partnership	\$ 390,000	
Royalty income (or share of partnership income)		\$ 390,000
(ABC Company share of royalties earned by partnership)		

Some software companies would record the credit in entry (3) above to research and development expense. The approach used in this section and in the following section is to prepare the separate entity books of ABC Software Company as if the research and development arrangement is accounted for on the basis of the structure of the arrangement. This results in preparation of the company's books on a "statutory" basis—such as how the company's records would be maintained to flow directly into the company's tax return. Using a statutory view, the company and the partnership are different entities and the accounting follows the legal and tax treatment of the arrangement. If this approach is used, modifications to adjust the accounting to generally accepted accounting principles for external reporting may be booked along with consolidation entries.

Alternatively, "pro rata direct eliminations" can be booked in the primary books of account of the company to result in the accounting required for external reporting. If this approach is used, the pro rata direct eliminations would need to be "unbooked" on a worksheet basis in preparing the company's tax return, to recast the data for the legal and statutory structure. This approach, which will not be illustrated, can be achieved by recording directly in the books of the company the consolidation entries illustrated in the following section, or by recording the entries illustrated above net of the effects of the entries illustrated in the following section.

**(ii) ABC Software Company Consolidation Entries.** The following entries would be recorded in the ABC Company consolidation:

(A) Service (or consulting) revenue	\$3,000,000	
Research and development expense		\$3,000,000
(Eliminate revenue in proportion to ABC Company ownership of partnership)		
(B) Service (or consulting) revenue	\$7,000,000	
Liability to others		\$7,000,000
(Establish liability for funds provided by others)		

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(C) Research and development expense	\$8,000,000	
Operating expenses (salaries, facilities, etc.)		\$8,000,000
(Reclassify expenses)		
(D) Liability to repay others	\$3,500,000	
Investment in partnership		\$3,500,000
(ABC Company share of partnership loss)		
(E) Liability to repay others	\$ 210,000	
Royalty expense		\$210,000
(Reduce liability for funds provided by others because of purchase of their units)		

(iii) **ABC Software Company Consolidated Statements—Overall Effect.** Combining the ABC Software Company separate entity books in Section 8.9(c)(i) and the consolidation entries in Section 8.9(c)(ii) results in the following overall effect of the research and development arrangement in the ABC Software Company consolidated financial statements. As discussed in the proceeding section, these overall effects can be recorded in the primary books of the company rather than in two pieces (one for the legal and statutory treatment and another in consolidation) to adjust the data to amounts for consolidated external financial reporting.

**ABC Software Company Consolidation**  
(amounts in thousands)

<i>Account</i>	<i>ABC Software Company</i>	<i>Consolidation Entries</i>	<i>Consolidated</i>
Cash	(1) \$ (3,000)		
	(2) (8,000)		
	(3) 10,000		
	(5) (3,500)		
	(6) 12,000		
	(7) (600)		
	\$ 6,900		\$ 6,900
Investment in partnership	(1) \$ 3,000	(D) \$ (3,500)	
	(4) (3,000)		
	(5) 3,500		
	(8) 390		
	\$ 3,890	\$ (3,500)	390
Liability to others		(B) \$ (7,000)	
		(D) 3,500	
		(E) 210	
		\$ (3,290)	\$ (3,290)
Product revenue	(6) \$(12,000)		\$(12,000)
Service revenue	(3) (10,000)	(A) \$ 3,000	
		(B) 7,000	
		10,000	
Operating expenses	(2) \$ 8,000	(C) \$ (8,000)	
Research and development expense	(4) 3,000	(A) \$ (3,000)	
		(C) 8,000	
		\$ 5,000	\$ 8,000
Royalty income and expense	(7) \$ 600	(E) \$ 210	
	(8) (390)		
	\$ 210		





## APPENDIX 8-A

# Statement of Financial Accounting Standards No. 68

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### INTRODUCTION

1. The FASB has been asked how an enterprise should account for an arrangement through which research and development is funded by other parties. Some consider a research and development arrangement to be simply a contract to do research for others. Others believe that such arrangements are, in essence, borrowings by the enterprise. They believe the research and development expenditures should be reflected in the enterprise's financial statements as current expenses in accordance with FASB Statement No. 2, *Accounting for Research and Development Costs*. As a result of those different views, the reporting of similar arrangements has been inconsistent.

2. The legal structure of a research and development arrangement may take a variety of forms and often is influenced by federal and state income tax and securities regulations. An enterprise might have an equity interest in the arrangements, or its legal involvement might be only contractual (for example, a contract to provide services and an option to acquire the results of the research and development).

## SCOPE

3. This Statement establishes standards of financial accounting and reporting for an enterprise that is a party to a research and development arrangement through which it can obtain the results of research and development funded partially or entirely by others. It applies whether the research and development is performed by the enterprise, the funding parties, or a third party. Although the limited-partnership form of arrangement is used for illustrative purposes in this Statement, the standards also apply for other forms. This Statement does not address reporting of government sponsored research and development.

## STANDARDS OF FINANCIAL ACCOUNTING AND REPORTING

4. An enterprise shall determine the nature of the obligation it incurs when it enters into an arrangement with other parties who fund its research and development. The factors discussed in paragraphs 5–11 and other factors that may be present and relevant to a particular arrangement shall be considered when determining the nature of the enterprise's obligation.

### Obligation Is a Liability to Repay the Other Parties

5. If the enterprise is obligated to repay any of the funds provided by the other parties regardless of the outcome of the research and development, the enterprise shall estimate and recognize that liability. This requirement applies whether the enterprise may settle the liability by paying cash, by issuing securities, or by some other means.

6. To conclude that a liability does not exist, the transfer of the financial risk involved with research and development from the enterprise to the other parties must be substantive and genuine. To the extent that the enterprise is committed to repay any of the fund provided by the other parties regardless of the outcome of the research and development, all or part of the risk has not been transferred. The following are some examples in which the enterprise is committed to repay:

- a. The enterprise guarantees, or has a contractual commitment that assures, repayment of the funds provided by the other parties regardless of the outcome of the research and development.
- b. The other parties can require the enterprise to purchase their interest in the research and development regardless of the outcome.

- c. The other parties automatically will receive debt or equity securities of the enterprise upon termination or completion of the research and development regardless of the outcome.

7. Even though the written agreements or contracts under the arrangement do not require the enterprise to repay any of the funds provided by the other parties, surrounding conditions might indicate that the enterprise is likely to bear the risk of failure of the research and development. If those conditions suggest that it is probable<sup>1</sup> that the enterprise will repay any of the funds regardless of the outcome of the research and development, there is a presumption that the enterprise has an obligation to repay the other parties. That presumption can be overcome only by substantial evidence to the contrary.

8. Examples of conditions leading to the presumption that the enterprise will repay the other parties include the following:

- a. The enterprise has indicated an intent to repay all or a portion of the funds provided regardless of the outcome of the research and development.
- b. The enterprise would suffer a severe economic penalty if it failed to repay any of the funds provided to it regardless of the outcome of the research and development. An economic penalty is considered “severe” if in the normal course of business an enterprise would probably choose to pay the other parties rather than incur the penalty. For example, an enterprise might purchase the partnership’s interest in the research and development if the enterprise had provided the partnership with proprietary basic technology necessary for the enterprise’s ongoing operations without retaining a way to recover that technology, or prevent it from being transferred to another party, except by purchasing the partnership’s interest.
- c. A significant related party<sup>2</sup> relationship between the enterprise and the parties funding the research and development exists at the time the enterprise enters into the arrangement.
- d. The enterprise has essentially completed the project before entering into the arrangement.

9. An enterprise that incurs a liability to repay the other parties shall charge the research and development costs to expense as incurred. The amount of funds provided by the other parties might exceed the enterprise’s liability. That might be the case, for example, if license agreements or partial buy-out provisions permit the enterprise to use the results of the research and development or to reacquire certain basic technology or other assets for an amount that is less than the funds provided. Those agreements

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<sup>1</sup> *Probable* is used here consistent with its use in FASB Statement No. 5, *Accounting for Contingencies*, to mean that repayment is likely.

<sup>2</sup> *Related parties* are defined in FASB Statement No. 57, *Related Party Disclosures*.

or provisions might limit the extent to which the enterprise is economically compelled to buy out the other parties regardless of the outcome. In those situations, the liability to repay the other parties might be limited to a specified price for licensing the results or for purchasing a partial interest in the results. If the enterprise's liability is less than the funds provided, the enterprise shall charge its portion of the research and development costs to expense in the same manner as the liability is incurred. For example, the liability might arise as the initial funds are expended, or the liability might arise on a pro rata basis.

### **Obligation Is to Perform Contractual Services**

**10.** To the extent that the financial risk associated with the research and development has been transferred because repayment of any of the funds provided by the other parties depends solely on the results of the research and development having future economic benefit, the enterprise shall account for its obligation as a contract to perform research and development for others.

**11.** If the enterprise's obligation is to perform research and development for others and the enterprise subsequently decides to exercise an option to purchase the other parties' interests in the research and development arrangement or to obtain the exclusive rights to the results of the research and development, the nature of those results and their future use shall determine the accounting for the purchase transaction.<sup>3</sup>

### **Loan or Advance to the Other Parties**

**12.** If repayment to the enterprise of any loan or advance by the enterprise to the other parties depends solely on the results of the research and development having future economic benefit, the loan or advance shall be accounted for as costs incurred by the enterprise. The costs shall be charged to research and development expense unless the loan or advance to the other parties can be identified as relating to some other activity, for example, marketing or advertising, in which case the costs shall be accounted for according to their nature.

### **Issuance of Warrants or Similar Instruments**

**13.** If warrants or similar instruments are issued in connection with the arrangement, the enterprise shall report a portion of the proceeds to be provided by the other

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<sup>3</sup>Paragraph 5 of FASB Interpretation No. 4, *Applicability of FASB Statement No. 2 to Business Combinations Accounted for by the Purchase Method*, states: ". . . the accounting for the cost of an item to be used in research and development activities is the same under paragraphs 11 and 12 of Statement 2 whether the item is purchased singly, or as part of a group of assets, or as part of an entire enterprise in a business combination accounted for by the purchase method." The accounting for other identifiable intangible assets acquired by the enterprise is specified in APB Opinion No 17, *Intangible Assets*.

parties as paid-in capital. The amount so reported shall be the fair value of the instruments at the date of the arrangement.

### Disclosures

**14.** An enterprise that under the provisions of this Statement accounts for its obligation under a research and development arrangement as a contract to perform research and development for others shall disclose<sup>4</sup> the following:<sup>5</sup>

- a. The terms of significant agreements under the research and development arrangement (including royalty arrangements, purchase provisions, license agreements, and commitments to provide additional funding) as of the date of each balance sheet presented.
- b. The amount of compensation earned and costs incurred under such contracts for each period for which an income statement is presented.

### Effective Date and Transition

**15.** The provisions of this Statement shall be effective for research and development arrangements covered by this Statement that are entered into after December 31, 1982 with earlier application encouraged in financial statements that have not been previously issued. This Statement may be, but is not required to be, applied retroactively to previously issued financial statements. If previously issued financial statements are restated, the financial statements shall, in the year that this Statement is first applied, disclose the nature of any restatement and its effects on income before extraordinary items, net income, and related per share amounts for each restated year presented.

**The provisions of this Statement need  
not be applied to immaterial items.**

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<sup>4</sup> Statement 57 specifies additional disclosure requirements for related party transactions and certain control relationships.

<sup>5</sup> An enterprise that is a party to more than one research and development arrangement need not separately disclose each arrangement unless separate disclosure is necessary to understand the effects on the financial statements. Aggregation of similar arrangements by type may be appropriate.



## APPENDIX 8-B

# SEC Staff Accounting Bulletin No. 63

### STAFF ACCOUNTING BULLETIN NO. 63

The staff herein adds Section O to Topic 5 of the staff accounting bulletin Series. This section discusses the staff's position regarding the application of the provisions of Statement of Financial Accounting Standards No. 68, "Research and Development Arrangements," when the parties that fund an enterprise's research and development activities are affiliated or related to the enterprise performing those activities.

### TOPIC 5: MISCELLANEOUS ACCOUNTING

\* \* \* \* \*

#### *O. Research and Development Arrangements*

*Facts:* FASB Statement No. 68 paragraph 7 states that conditions other than a written agreement may exist which create a presumption that the enterprise will repay the funds provided by other parties under a research and development arrangement. Paragraph 8(c) lists as one of those conditions the existence of a "significant related party relationship" between the enterprise and the parties funding the research and development.

*Question 1:* What does the staff consider a "significant related party relationship" as that term is used in paragraph 8(c) of FASB Statement No. 68?

*Interpretive Response:* The staff believes that a significant related party relationship exists when 10 percent or more of the entity providing the funds is owned by related



parties.<sup>1</sup> In unusual circumstances, the staff may also question the appropriateness of treating a research and development arrangement as a contract to perform service for others at the less than 10 percent level. In reviewing these matters the staff will consider, among other factors, the percentage of funding entity owned by the related parties in relationship to their ownership in and degree of influence or control over the enterprise receiving the funds.

*Question 2:* Paragraph 7 of FASB Statement No. 68 states that the presumption of repayment “can be overcome only by substantial evidence to the contrary.” Can the presumption be overcome by evidence that the funding parties were assuming the risk of the research and development activities since they could not reasonably expect the enterprise to have resources to repay the funds based on its current and projected future financial condition?

*Interpretive Response:* Paragraph No. 5 of FASB Statement No. 68 specifically indicates that the enterprise “may settle the liability by paying cash, by issuing securities, or by some other means.” While the enterprise may not be in a position to pay cash or issue debt, repayment could be accomplished through the issuance of stock or various other means. Therefore, an apparent or projected inability to repay the funds with cash (or debt which would later be paid with cash) does not necessarily demonstrate that the funding parties were accepting the entire risks of the activities.

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<sup>1</sup> Related parties as used herein are as defined in paragraph 24 of SFAS No. 57.

## CHAPTER NINE

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# Taxation of Computer Software Companies

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## 9.1 INTRODUCTION

The developments discussed throughout other chapters of *Software Industry Accounting* have influenced the federal income tax treatment of software companies. The effects of these developments on the taxation of software companies are discussed in this chapter. The authors will focus on U.S. taxation as well as the tax implications of international transactions. Comments also will be provided about tax implications of costs to acquire software, both on a stand-alone basis and in connection with the acquisition of a trade or business.

## 9.2 TAXATION OF REVENUE

### (a) Computation of Taxable Income

The computation of taxable income involves generally two types of considerations:

1. A software company must determine the timing of the recognition of items of income.

2. Because certain types of income are taxed at different rates, software companies must ascertain the nature of the items of income.

Most software company income is taxed in accordance with the general rules of taxation and is characterized as ordinary income. For example, income from licensing software, providing software development services, sales of combined hardware and software systems, sales of prepackaged software products, and postcontract customer support fees result in ordinary income. Certain other items of income may be taxed as capital gains income.

This chapter will deal primarily with the computation of ordinary income items for software companies. Because the character is known, the main consideration with regard to these items is the timing of income recognition. Software companies generally use the accrual method of accounting. Although it is possible for a software company meeting certain criteria to compute its taxable income on the cash basis, these situations are beyond the scope of this chapter. Therefore, a discussion of cash-basis software companies is not included.

The international implications of software transactions are briefly discussed in section 9.5.

### **(b) Brief Overview of Methods of Accounting**

Software companies must compute taxable income in accordance with the overall method of accounting used to regularly compute income in their books and records. Thus, companies that employ the accrual method of accounting for items of income and expense must generally compute their taxable income using this overall method. The treatment of a particular item is permissible, however, only where the treatment “clearly reflects income” to the satisfaction of the IRS. Fortunately, use of generally accepted accounting principles within the software industry ordinarily will be regarded as resulting in a clear reflection of income, but there are two major exceptions:

1. The tax law includes a number of rules governing the tax treatment of items of income or expense. Where one of these provisions applies, it must be followed regardless of the generally accepted accounting treatment of the item.
2. For consistent application of the treatment of an item, taxable income must be computed by reflecting items of income and expense consistently from year to year.

The rules governing accounting methods exhibit a strong preference for year-to-year consistency. For example, a taxpayer who has established an accounting practice for a particular item that is contrary to a statutory provision covering that item must nevertheless continue to follow the erroneous practice. Changes in the manner in which taxable income is computed, including changes from erroneous methods to proper methods of accounting, may be implemented only with the permission of the Internal Revenue Service (IRS). In addition, adjustments to prevent either omission or duplication of items of income are required to be made in connection with any allowable change in the method of accounting.

A little-known and troubling aspect of working with the tax rules is contending with unpublished practices of the IRS. These practices may or may not be consistent with published guidance, may or may not be applied uniformly and can, and frequently do, change over time without notice. Thus, the process of obtaining IRS permission to change a method of accounting is complicated and it is often difficult to obtain permission for even simple accounting method changes.

It is important to note that a software company is not protected from penalties for the failure to follow a specific statutory provision in situations where the company consistently follows an established practice. This rule is intended to encourage companies not following specific statutory rules to apply for accounting method changes. Thus a software company following an accounting practice contrary to a specific rule for a particular item may be penalized for continuing to follow its historic practice or, in the event the company discovers the treatment and merely changes it, may be penalized for changing without permission. Penalty protection is only available where the company requests and receives IRS permission for a change. Moreover, penalty protection may not be available where a company is under examination before the IRS.

### (c) Revenue Recognition: In General

A software company must accrue items of income if all events have occurred that fix, with reasonable certainty, its right to receive income and the amount of income may be reasonably estimated. A substantial body of law exists to assist in determining when the so-called “all events” test is met. A detailed discussion of this body of law is not necessary here because the question of when a software company’s right to income becomes fixed is governed by considerations that are very similar to the factors to be considered when evaluating it under AICPA Statement of Position (SOP) 97-2, *Software Revenue Recognition*.

Moreover, the tax rules contain provisions dealing with advance payments; these provisions require that items of income recognized for financial accounting purposes also must be recognized for tax purposes, regardless of whether the all-events test is met. This exception to the general rules for determining taxable income applies because deferral of taxation is not appropriate if a software company has the ability to pay the tax with regard to an item of income, as evidenced by recognition of the item for financial accounting purposes. The term “advance payments” is something of a misnomer—it is not necessary that payments actually be received for one of these provisions to apply. As a practical matter, the application of the advance payment rules should be considered for situations in which payments have been received and for situations in which receivables have been recorded.

The combined effect of these rules is that software companies often do not need to look beyond the financial accounting principles of revenue recognition. If items of income are recognized for financial accounting purposes under SOP 97-2, taxation of the items may be required. On the other hand, where items of income may not be recognized under SOP 97-2, it is generally for reasons that would indicate that all events

have not occurred that fix the software company's right to the income. In these situations, deferral is appropriate for both accounting and tax purposes.

**(d) Tax Ramifications of Implementation of SOP 97-2:  
In General**

All software companies were required to adopt SOP 97-2 for fiscal years beginning after December 15, 1997. For many software companies, SOP 97-2, which superseded SOP 91-1, this required a change in how revenue was recognized for financial accounting purposes. Because generally accepted accounting principles (GAAP) generally indicate how taxable income should be recognized within the software industry, the changes required by SOP 91-1 and 97-2 have dictated that changes to the computation of taxable income were also appropriate. However, changes in the computation of taxable income require IRS approval for implementation as discussed in Section 11.2(b). Statement of Position 97-2 changed significantly the financial accounting treatment of multiple element arrangements. In many cases a software company is now required to defer revenue of a type previously recognized at an earlier date. Changes in accounting methods for tax occurred as a result of SOP 97-2.

If a software company was required for accounting purposes to change to a deferral of revenue that was recognized earlier because the income earning process is not complete as contemplated in SOP 97-2, this indicated that (1) the all-events test is not met and (2) income is clearly reflected for tax purposes at a time later than the time previously used by the software company to report income. In these situations, a corresponding change for tax purposes should have been requested by the software company and the IRS should have granted this change. Moreover, tax benefits may have resulted from the change if approved by the IRS. These benefits may be somewhat limited as a result of the operation of the rules preventing duplication or omission of items of income in connection with accounting method changes. These rules are contained in § 481 of the Internal Revenue Code (IRC), and the adjustments are referred to, by tax practitioners and the IRS, as "481 adjustments."

For those few software companies that were required to accelerate items of income under SOP 97-2, a strict application of the tax rules may indicate that income may continue to be deferred for tax purposes under the theory that the historical method of computing income must continue to be applied to maintain year-to-year consistency. The IRS may reject a strict application, arguing that the clear reflection of income requirement overrides. Software companies may have had to change and conform their tax accounting treatment with the SOP in these situations.

**(e) Postcontract Customer Support**

The application of the tax accounting rules for postcontract customer support differs somewhat from the general rules discussed above. Deferral of revenue in accordance with SOP 97-2 is considered appropriate because the earnings process is completed ratably over the period to which the payments relate for postcontract customer support. Thus, software companies either receive payments or record receivables that qualify as advance payments for purposes of the tax rules (see subsection (c) above). Because

software companies must defer revenue for advance payments relating to postcontract customer support under SOP 97-2, the financial conformity rules requiring the immediate recognition of advance payments do not apply and the general rules for accruing income come into play. Under SOP 97-2, if vendor-specific objective evidence of fair values does not exist to permit the allocation of revenue to the elements of the arrangement and the postcontract customer support is the only undelivered element, the entire fee would be recognized ratably over the term of the postcontract customer support for financial accounting purposes. In this scenario, the tax rules would require that the revenue for the agreement fall into one of two categories discussed below.

The tax rules permitting the deferral of income relating to advance payments fall into two categories. One set of rules deals with advance payments for goods and the other set deals with advance payments for services. The application of these rules is determined by income tax regulations, by other published guidance, and the policies applied by the IRS that are not published. Previously, it was not clear, because of unpublished IRS practices, which set of rules would apply for postcontract customer support. However, rulings granted by the IRS indicate a change in practice that clarifies the tax accounting for postcontract customer support.

Historically, postcontract customer support has been viewed as a service activity falling within the deferral rules applicable to advance payments for services. These rules, contained in Revenue Procedure (Rev. Proc.) 71-21 (1971-2 C.B. 549), permit the deferral of advance payments for certain services if the services to which the payments relate are required to be provided by the end of the taxable year following the year of receipt of the advance payment.

As part of a broader effort to restrict Rev. Proc. 71-21 that predated the adoption of SOP 91-1 and 97-2, the IRS had been closely scrutinizing applications for change to deferral under Rev. Proc. 71-21 and had been attempting to formulate a theory under which the historic application of this procedure could be restricted. As a result, the IRS adopted a practice of denying Rev. Proc. 71-21 treatment in situations where the contract for services may be renewable at the option of the customer. Following this reasoning, 71-21 treatment would be denied because a renewable contract would be considered to contemplate services beyond the end of the taxable year following receipt of the advanced payment.

As applied to software companies, the IRS formulated the view that a one-year software maintenance contract may be viewed as contemplating services beyond the end of the succeeding taxable year if the contract permits the customer to renew merely by paying the subsequent year's fee. Thus, in the common situation where the software company offers one-year contracts, bills its customers annually and continues to provide service only where a customer pays for the subsequent years' maintenance, the IRS considered each contract to be a multiyear contract. This IRS practice resulted in the rejection of numerous software company requests under Rev. Proc. 71-21 in prior years.

Thus, disparate application of Rev. Proc. 71-21 arose. Taxpayers that historically used Rev. Proc. 71-21 may continue deferral under the general consistency rules applicable to tax accounting methods. Newly formed companies and companies receiving advance payments for the first time could adopt Rev. Proc. 71-21 treatment without

IRS permission under the general rules applicable to the adoption of accounting methods. Only those taxpayers required to request permission from the IRS because of their prior practice of recording advance payments as income were denied Rev. Proc. 71-21 treatment.

In light of these developments, a taxpayer in the business of developing standard software products sought to defer advance payment revenue in accordance with the rules applicable to “inventoriable goods” in Treasury Regulations (Treas. Reg.) § 1.451-5. Prior to submitting its request to defer advance payments for inventoriable goods, the taxpayer entered into an agreement with the IRS as to the portion of the advance payments relating to postcontract customer support that was applicable to telephone support services. This portion of the software company’s advance payments was then excluded from the method change request. The software company proceeded to request the application of the inventoriable goods exception to the portion of its advance payments for postcontract customer support attributable to the provision of periodic updates of its products. In Private Letter Ruling 9231002, the IRS granted this taxpayer’s request and permitted the taxpayer to defer recognition of advance payments attributable to postcontract customer support, with the limitation that all amounts deferred must be included in income by the end of the second taxable year following the year the advance payments are received.

In reaching this result, the IRS reached two conclusions that are noteworthy:

1. The IRS agreed with the software company’s assertion that the transaction between the software company and its customers should be viewed as sales, rather than licenses or lease payments.
2. The IRS ruled that the individual items of off-the-shelf software offered for sale by the software company were inventoriable goods.

Software companies seeking to defer a portion of the advance payments applicable to postcontract customer support were pleased with this development. It may have created problems, however, within the national office of the IRS. It appears that the IRS representatives who granted Private Letter Ruling 9231002 had not yet consulted with others within the IRS. As noted earlier, a group within the IRS responsible for handling requests under Rev. Proc. 71-21 had been studying ways to deny deferral for advance payments. It is possible that release of the ruling was viewed by this group as a method of thwarting their goals. In addition, another group within the IRS had initiated a study of the nature of income-generating transactions (i.e., sale v. license) for software companies, for purposes of various provisions of the tax laws governing income generated in transactions that cross U.S. borders.

By their nature, Private Letter Rulings are applicable only to the taxpayer to whom they are granted. Many software companies and tax practitioners believed that the issuance of this ruling may have indicated a change in the informal practices within the IRS regarding implementation of SOP 91-1 and later 97-2. Accordingly, the IRS received numerous requests for application of the inventoriable goods provisions following the release of Private Letter Ruling 9231002. Many of the taxpayers who had

previously requested Rev. Proc. 7121 treatment requested inventoriable goods treatment as an alternative.

Subsequently, the IRS issued rulings that may indicate a limited resolution of these issues. The IRS used legislation dealing with acquired intangibles to create a definition of software that is considered to meet the Treas. Reg. § 1.451-5 definition of “goods.” (The IRS has stated in these rulings that this conclusion may be applied only to the determination of whether advance payments for postcontract customer support may be deferred, thereby implying that the IRS’s position on the proper characterization of these payments for purposes of other provisions of the tax rules is not resolved.)

As discussed more fully in Part 9.4(a), software meeting the following three-part test is not treated as a “section 197 intangible”:

- The software is acquired subject to a nonexclusive license
- The software is readily available for purchase by the general public
- The software acquired has not been substantially modified

The IRS adopted this definition for purposes of considering ruling requests under Treas. Reg. § 1.451-5, designating software meeting these tests as “off-the-shelf” software. The IRS then used this definition to sort through its existing requests, asking taxpayers to represent whether their software met these tests. Many taxpayers who received these requests from the IRS were concerned about how to respond, particularly in light of the fact that the meaning of some of these conditions is not clear. For example, it is not clear whether a large complex software product that may only be acquired for a price in excess of \$1 million is readily available for purchase by the general public. In addition, when modifications rise to the level of substantial is not clear. In spite of these limitations, many software companies responded to the IRS that their software met these conditions. Many of these companies have received ruling granting “inventoriable goods” treatment on advanced payments for maintenance revenue.

These rulings do not address deferral of advanced payments for the portion of postcontract customer support that relates to telephone support service. These rulings also left unresolved the treatment of advanced payments for other software. The potential application of Rev. Proc. 71-21 must be considered in these situations. In a surprising change, the IRS has granted permission to apply Rev. Proc. 71-21 in these other situations. It is not clear whether the IRS has changed its view on renewability or whether the IRS permitted the software company seeking the change to represent that their contracts were not renewable. In this latter situation, the software company may have received permission to change, only to find their use of Rev. Proc. 71-21 challenged upon exam.

#### **(f) Characterization of Revenue from Software Transactions**

Generally, tax rules treat most revenue-generating transactions by software companies as ordinary transactions. For example, amounts paid for the right to use software,



whether characterized as royalties, license fees, or lease payments, result in ordinary income to software companies. Similarly, revenue-generating transactions treated as the sale of goods that are held for sale in the ordinary course of business are treated as ordinary income transactions. For software companies, this treatment would apply to combined sales of hardware and software and to software-only transactions that are treated as sales. Amounts received by software companies from transactions that involve the provision of software development services are also subject to ordinary income treatment. Thus, it is an unusual transaction by a software company that is not an ordinary income transaction.

An exception may apply if a software company seeks to sell off a product or code set. In this situation, ordinary income treatment may not be appropriate, provided that the software company transfers all substantial rights in the software. If this occurs, the likely result is that the software sold will be treated as “section 1231 property.” Gains on section 1231 property are taxed as capital gains.

Section 1231 property is generally defined to include depreciable property used in a trade or business that is not held primarily for sale. The software should be considered to be depreciable property even if the software company created the software through its own research efforts and deducted the costs to create the software in the year incurred. Further, the software should not be treated as held for sale if the software company sells both source and object code and parts with all substantial rights in the software. This distinguishes the transaction from the sale of individual units of the software in the ordinary course of business.

Characterization issues may also be important for software companies because of provisions of the tax rules designed to prevent “sheltering” of passive income within corporations. For example, a penalty tax applies on accumulations of income within a “personal holding company” (PHC). By way of further example, a tax on excess passive income applies to certain subchapter S corporations.

In both of these situations, the passive income to which the penalty tax applies is defined to include royalty income. An exception may apply, however, for certain software royalties meeting the following four conditions:

1. Computer software royalties must be received by a corporation engaged in the active conduct of the trade or business of developing, manufacturing or producing computer software.
2. Computer software royalties that meet the first requirement must make up at least 50 percent of the ordinary income of the corporation for that year.
3. The amount of expenses allocable to trade or business, research and development, or amortization of start-up expenses, must equal at least 25 percent of the ordinary gross income of the corporation for the year. Alternatively, the average of such deductions for the five tax years ending with the current year must be at least 25 percent of the ordinary gross income for that period.
4. The sum of dividends paid during the year must equal or exceed the amount by which the corporation’s income exceeds 10 percent of its ordinary gross income.

In November 1996, the Treasury issued proposed regulations with respect to classifying software transactions subject to international tax rules. Under these proposed regulations, a transaction must be classified as the transfer of a copyright right, transfer of a copyrighted article, provision of services or transfer of “know-how.” A transfer of a copyright right is any transaction involving a computer program where the recipient receives at least one of the following four rights: (1) the right to make copies for purposes of distribution; (2) the right to prepare derivative computer programs based on the copyrighted program; (3) the right to make public performance of the program; and (4) the right to publicly display the computer program. A transfer of a copyrighted article is a transaction involving a copy of a copyrighted program and does not include any of the four rights discussed above.

Once classified, the transaction must then be characterized as a sale or exchange of goods, a license, or a lease. Transfer of a copyright right is considered to be a sale if “all substantial rights” in the copyright have been transferred. The key factors to consider are the term of use, restrictions on use and transfer, and whether the recipient obtains an exclusive or non-exclusive right. If all substantial rights are not transferred, the transaction is characterized as a license generating royalty income. Transfer of a copyrighted article is considered to be a sale if the “benefits and burdens” of ownership have transferred to the recipient. Otherwise, this transfer is treated as a lease generating rental income.

Whether a transaction qualifies as a “provision of services” is determined based on the surrounding facts and circumstances, including the intent of the parties involved and the allocation of risk. Information provided will be considered to be “know-how” if it (1) relates to computer programming techniques, (2) cannot be copyrighted, and (3) is not subject to trade secret protection.

### 9.3 TAX TREATMENT OF RESEARCH AND DEVELOPMENT COSTS

#### (a) In General

For financial accounting purposes research and development costs are generally expensed in the year incurred, in accordance with FASB Statement No. 2, *Accounting for Research and Development Costs*. As discussed in more detail in Chapter 6, certain costs associated with developing software must be capitalized for financial accounting purposes under FASB Statement No. 86, *Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed*. Expensing generally applies to these types of costs for tax purposes. Before discussing the rules governing software development costs, a brief review of the underlying rules on the tax treatment of research costs is appropriate.

The tax rules permit either current expensing or capitalization and amortization of certain research and development costs over a period of 60 months or less. Under definitions developed in the 1950s, the tax laws refer to the costs that may be treated in

this manner as “research or experimental expenditures.” This terminology was originally intended to refer to the usual and customary costs associated with industrial and commercial research and development.

The tax law definition of research or experimental expenditures is slightly broader than the financial accounting concept of research and development costs. This distinction generally has limited practical significance, however, because few companies separately compute research or experimental expenditures for tax purposes. Moreover, most companies expense currently their research or experimental expenditures. For these reasons, the deduction of these costs is often the same for financial accounting and tax purposes.

These general rules governing the treatment of research or experimental expenditures applied to software development costs until 1969.

### **(b) Software-Specific Rules**

The decision to unbundle hardware and software set into motion the AICPA Task Force on Accounting for the Development and Sale of Computer Software. The IRS also acted in response to this development by promulgating a series of examination guidelines relating to software costs. These guidelines, published in Rev. Proc. 69-21 (1969-2 C.B. 303), included guidelines permitting current expensing or optional capitalization and amortization of software development costs. Revenue Procedure 69-21 permits software development costs to be currently expensed or capitalized and amortized over a period of 60 months or less. This treatment applies to the costs of developing software for sale and to the costs of creating software to be used by a company in its business.

This treatment is substantially similar to the treatment of research costs under § 174 of the IRC. Although 60-month amortization of capitalized research costs is the general rule in both of these areas, Rev. Proc. 69-21 permits capitalized software costs to be amortized over a period shorter than 60 months if the taxpayer can justify a shorter life to the satisfaction of the IRS. The IRS has not issued any guidance on how a shorter life might be established and there exists no specific authority on this issue. It is likely, however, that 60 months may be too long a life in many cases, given the pace of technological development within the software industry today.

For purposes of Rev. Proc. 69-21, the term “computer software” includes:

... All programs or routines used to cause a computer to perform a desired task or set of tasks, and the documentation required to describe and maintain those programs. Computer programs of all classes, for example, operating systems, executive systems, monitors, compilers and translators, assembly routines, and utility programs as well as application programs are included. “Computer software” does not include procedures which are external to the computer operations, such as instructions to transcription operators and external control procedures.

This definition was updated and expanded in proposed regulations issued in January 1997 concerning the amortization of certain intangibles. According to the proposed intangibles regulations, computer software is any program or routine (that is, any sequence of machine-readable code) that is designed to cause a computer to perform a desired function or set of functions, and the documentation required to describe and maintain those programs. It includes all forms and media in which the software is contained, whether written, magnetic, or otherwise. However, computer software does not include any data or information base unless the item is in the public domain and incidental to a computer program. The requirement that a database must be in the public domain is in contrast to the definition of “computer program” provided in the proposed software regulations, which did not have a similar requirement. However, both definitions require the database to be incidental to the computer program.

The proposed intangibles regulations also include other provisions of importance to software companies. In general, these regulations provide for 15-year amortization of certain software costs that are not specifically provided for in other sections. Examples of non-15-year software include software included in the cost of computer hardware, which is capitalized and depreciated along with the hardware, and software that is readily available for purchase by the general public, which is amortized over a 36-month period. A potential problem for software companies is that the proposed regulations appear to require capitalization and amortization over a 15-year period of all amounts paid pursuant to a license of intangibles. The authors’ firm submitted comments to the IRS and Treasury stating that this would be a radical departure from long-held income tax principles and was not envisioned by the drafters of this statute. If the proposed regulation is not changed, all royalty payments paid as a result of licensing transactions would have to be amortized over 15 years instead of being fully deducted in the year paid.

It is important to note that, in spite of these proposed regulations, Rev. Proc. 69-21 continues to be used to provide guidelines for deductibility of certain software costs and carries substantial precedential value since proposed regulations do not become law until they are issued as final regulations.

### (c) Limitations on Revenue Procedure 69-21

The tax treatment of software development costs under Rev. Proc. 69-21 is similar to the treatment of research or experimental expenditures. The IRS did not adopt the view that software development costs are section 174 costs under Rev. Proc. 69-21. Instead, the IRS reasoned that:

[t]he costs of developing software (whether or not the particular software is patented or copyrighted) in many respects so closely resemble the kind of research or experimental expenditures that fall within the purview of section 174 of the Internal Revenue Code of 1954 as to warrant accounting treatments similar to that accorded such costs under that section.

However, in guidelines announced in Rev. Proc. 97-50 for costs related to ensuring Year 2000 compliance of computer systems, the IRS states that these costs fall within the purview of Rev. Proc. 69-21. The direct reference to Rev. Proc. 69-21 is significant because the IRS continued to uphold this definition of software development costs during a time when defining these types of costs has become very contentious.

#### **(d) Capitalization of Software Development Costs**

Under general tax accounting principles, expenditures resulting in a self-constructed asset having a useful life extending substantially beyond the end of a taxpayer's year must be capitalized. In the event that the capitalized costs have a determinable useful life, they may be recovered through either depreciation or amortization deductions over that life. An exception to these general rules is provided, however, for research or experimental expenditures as defined in § 174. Moreover, software companies may avoid capitalizing these costs under Rev. Proc. 69-21, if they follow one of the two specific alternative methods of accounting for these costs. Thus, software companies may be protected from capitalization of software development costs under § 174 or Rev. Proc. 69-21.

In March 1993, the IRS stated that it "has no present intention of changing its administrative position contained in Rev. Proc. 69-21, but continues to study its viability." The IRS concluded affirmatively that "as long as Rev. Proc. 69-21 remains in effect, taxpayers are not required to capitalize (and may currently deduct) computer software development costs." As discussed in Section 11.3 (c), the IRS seemed to uphold the validity of Rev. Proc. 69-21 in Rev. Proc. 97-50.

Once the decision of deducting or capitalizing software development costs is made, it must be consistently followed from year to year in accordance with the consistency rules generally applicable to accounting methods that were outlined in section 9.2(b).

In 1994, the IRS issued a ruling in which an accounting method change that was implemented without permission was sanctioned by the IRS. This ruling, which appears contrary to the IRS's own regulations, may have been designed to require the taxpayer to continue capitalizing software development costs. In Private Letter Ruling 9421003, a taxpayer in the oil and gas pipeline business began capitalizing software development costs for financial accounting purposes and unknowingly followed this treatment for tax purposes for five years. When the taxpayer discovered the new treatment of software development costs, it filed amended tax returns in an effort to revert to its long-standing method of expensing software development costs in the year incurred. The IRS rejected this treatment, thereby sanctioning the change that had been implemented without permission, following the theory that the taxpayer had established a new method by capitalizing a portion of its software development costs. Having sanctioned the unauthorized change, the IRS went on to rule that the taxpayer could not correct its unauthorized change by amending its returns because this would be contrary to its newly established method of capitalization.

In March 1998, the Accounting Standards Executive Committee (AcSEC) of the American Institute of Certified Public Accountants (AICPA) released new guidance with respect to internal use software in Statement of Position (SOP) 98-1, *Accounting for the Costs of Computer Software Developed or Obtained for Internal Use*. While the financial accounting ramifications are discussed in detail elsewhere in this book, this does not change the accepted tax accounting methods for development of internal use software found in Rev. Proc. 69-21 and Sec. 174. Thus, in order to avoid the result of PLR 9421003, companies should be careful to not change their tax method of accounting for these costs by inadvertently following the new financial accounting guidelines in SOP 98-1 for tax purposes.

Finally, it should be noted that the IRS views as appropriate the capitalization by software companies of the costs of duplication and packaging of individual items of software offered for sale in accordance with the general inventory capitalization rules.

### (e) IRS Attempts to Define Deductible Software Development Costs

The rules permitting current deductibility of research or experimental expenditures do not apply to the costs to acquire or create land or property that may be depreciated under the tax rules. Undertakings that involve research and that ultimately result in an asset to be used in a business present difficult allocation issues. The following example, drawn from the income tax regulations, illustrates this allocation:

A taxpayer undertakes to develop a new machine for use in his business. He expends \$30,000 on the project of which \$10,000 represents the actual costs of material, labor, etc. to construct the machine and \$20,000 represents research costs which are not attributable to the machine itself. The taxpayer may deduct the \$20,000 not attributable to the machine as research or experimental expenditures. The \$10,000 must be capitalized into an asset and recovered through depreciation deductions.

As noted above, the treatment of software development costs in accordance with Rev. Proc. 69-21 applies to costs to create software for internal use as well as to costs to create software to be held for sale or lease to others. The application of Rev. Proc. 69-21 to costs to create software for internal use may be at odds with the machine example discussed above. This is true, for example, if some portion of the costs to develop and create software for internal use may be viewed as equivalent to the costs to construct the machine in the above example.

The IRS had been concerned for many years about this issue, but when Financial Accounting Standards Board (FASB) Technical Bulletin No. 79-2, *Computer Software Costs*, was issued, this concern became much more acute. The statement by an authoritative accountancy body that not all software development costs are research and development costs led the IRS to consider whether Rev. Proc. 69-21 should be modified. The view that not all software development costs are research and development

costs took hold within the IRS and expanded to include not only the costs of developing software for internal use, but also the costs to create software for sale or license to others.

In 1981, as part of the Economic Recovery Tax Act, and at approximately the same time that IRS skepticism about the current deductibility of software development costs was growing, Congress enacted a tax credit for increasing research expenditures and defined credit-eligible expenditures with reference to research or experimental expenditures. Thus, just as the IRS was reconsidering whether software development costs should be included with research expenses, Congress provided a substantial credit to software companies and other taxpayers engaged in research.

In response to its concerns, the IRS set about trying to define those software development costs that should be research or experimental expenditures. The IRS then intended to follow the definitional effort with guidance on the treatment of capitalized software development costs.

In early 1983, the first step in this plan was executed. Proposed regulations were issued, under § 174 of the IRC, that would have substantially restricted both the research credit and the deductibility of software costs. These proposed rules began with the proposition that, generally, software development costs are not research or experimental expenditures under § 174. Most software companies did not see this coming and were shocked. Drawing on the work of the FASB, the IRS proposed regulations that generally would have denied § 174 treatment if the operational feasibility of the software was not seriously in doubt. Thus, the proposed rules would have limited § 174 treatment to situations that involved serious doubt regarding whether the software could be written.

Fortunately, criticism of the proposed operational feasibility standard was both swift and strong. In addition, software companies were aided by two other factors:

1. The proposed regulations would have required significant cutbacks in the deductions for product development costs in the United States.
2. Severe restrictions were proposed on the deductibility of research and development costs in consumer products industries.

Thus, the proposed regulations were extremely controversial, which led the IRS to conclude that another approach to the definition of research would be required.

By the time Congress began the major overhaul of the tax laws that ultimately produced the Tax Reform Act of 1986, the IRS had not completed its development of a more serviceable approach to the definition of research or experimental expenditures. Congress became concerned that some taxpayers were claiming the research credit for inappropriate costs and decided to create a definition of research that was specific to the research credit. As part of this process, Congress expressed the view that software development costs should be eligible as research under the same standards as other types of costs. Following the enactment of the Tax Reform Act, the IRS issued a notice stating that future regulations defining research or experimental expenditures would examine software costs in light of the same standards as other types of costs.

In May 1989, another set of proposed amendments to regulations under § 174 of the Internal Revenue Code (“IRC”) was issued, indicating that the approach proposed in 1983 had been rejected. The 1989 proposed regulations contemplated a time-line approach, stating that research in connection with a product development effort occurs up until the point in time when the basic design specifications of a product are established. After that time, product development activities generally would not qualify as research.

The approach that the IRS proposed in 1989 may have been derived from an extension of the view that not all software development costs are research or experimental expenditures. The IRS took the broader view that not all product development costs are research or experimental expenditures. In addition, the concept of basic design specifications used by the IRS to define when research ends may be traced to the FASB Statement No. 86 concept that capitalization of software development costs is appropriate once a detailed program design has been completed. Thus, although software companies felt they had gained a victory in 1986 when Congress stated that software development costs should be treated as research costs under the same standard as other types of costs, the IRS appears to have turned that around and adopted a broader view that not all product development costs should be treated as research.

Examples in the proposed rules illustrated the cutoff at around two-thirds of the total product development costs. Moreover, examples in the proposed rules would have excluded, from qualification as research, expenses arising from incremental, evolutionary product development efforts. These same general rules would have applied to software development costs. Particularly troubling for software companies was an example illustrating the application of the basic design specification cutoff: the costs of developing “Writer 1.1” did not qualify as research where a software company had previously developed “Writer 1.0.”

Overall reaction to these proposed rules was very negative. Numerous accounting firms and software companies commented that the basic design specifications approach was not well suited to the tax rules and objected to the exclusion of evolutionary product development efforts. The automobile industry submitted to the IRS an exhaustive analysis of the legislative history of section 174 of the IRC and concluded that restrictions of the magnitude the IRS was proposing were contrary to congressional intent and to the policies underlying the long-standing tax rules. A coalition of micro-computer software companies advised by the authors of this chapter stated that the application of a time-line concept was at odds with the manner in which they actually performed product development efforts and highlighted that the conclusion that a product development effort did not involve research cannot be derived from the fact that a previously developed product with a similar name had already been created.

The IRS responded to these criticisms by rejecting the 1989 proposal and, in March 1993, took the extremely unusual step of issuing yet another set of proposed regulations seeking to define research or experimental expenditures. As noted, both the 1983 and 1989 proposed regulations may have been drawn from financial accounting concepts now contained in FASB Statement No. 86. Both of these proposals were soundly criticized as being contrary to the policy of § 174 of the IRC, and the IRS agreed that these



approaches would not be implemented, as illustrated by its withdrawal of both of these sets of rules.

For these reasons, the capitalization of costs in accordance with FASB Statement No. 86 is not relevant in determining whether costs to develop software are research or experimental expenditures under § 174 of the IRC.

Under the 1993 proposed regulations, expenses qualify as research costs “if they are for activities intended to discover information that would eliminate uncertainty concerning the development or improvement of a product.” The necessary uncertainty exists “if the information reasonably available to the taxpayer does not establish the capability or method for developing or improving the product.” In this latest attempt to define research, the IRS shifted its emphasis from the financial accounting concepts now contained in FASB Statement No. 86 to concepts drawn from the definitional modifications made to the research credit in 1986. The 1993 proposed rules contained no examples of the application of the new uncertainty standard and did not purport to provide software-specific rules.

On October 3, 1994, the IRS issued final regulations under § 174, thus bringing to a close this 11-year saga. As with the 1993 proposed regulations, these final regulations do not contain software-specific rules. The regulations state the IRS position that the nature of a taxpayer’s activities determined whether the activities are research costs qualifying under IRC § 174. Thus, neither the nature of the product nor improvement made is conclusive.

The final regulations retain the uncertainty test from the proposed rules with minor modifications:

- **Design of products.** The final regulations expressly clarify that the taxpayer’s knowledge at the outset that a product development project will be successful does not preclude the process of determining the appropriate design of the product from qualifying as research and experimentation.

The preamble to the final regulations acknowledges “dual purposes” of § 174—to encourage research and to avoid administrative complexity. Because the latter problem is not limited to cases in which the success of a product development is in doubt, the preamble states that § 174 should apply whenever the taxpayer is uncertain either as to the capability or method for developing or improving the product, or as to the appropriate design of the product.

- **Existing knowledge.** The final regulations drop the reference in the proposed uncertainty test to information reasonably available to the taxpayer. As a result, the determination of uncertainty relates to information actually available to the taxpayer. Thus, the preamble states, uncertainty may exist if the taxpayer must engage in procedures “that, while not particularly involved, are nonetheless in the nature of research activities” to design, develop, or improve a product.

In another favorable development, the final regulations expressly provide that the exclusion from § 174 of quality control testing does not apply to testing to determine

if the design of a product is appropriate. Thus, the costs for validation testing to ensure that a product design meets its intended objectives are eligible under § 174.

The final regulations are effective for taxable years beginning after October 3, 1994, and the IRS also stated that return positions consistent with the final regulations will be recognized by the IRS as consistent with the prior (1957) regulations.

#### (f) Deductible Contract Research Costs

The tax rules permit a software company to deduct not only research or experimental expenditures arising from research activities conducted by the company, but also permit amounts paid for qualifying research conducted by another company (or individual) on the software company's behalf to be deductible as research costs. The determination of when payments made to a third party are for research conducted on behalf of the software company is difficult. In order to claim that payments were for contract research expenses, the software company must bear the expense of the research regardless of the outcome of the research effort and the software company must benefit from the effort. A software company will benefit from a research effort if it obtains rights to exploit the research results by virtue of the payments.

Because it is difficult to determine which of two parties to a contract may consider the research to have been conducted on its behalf, situations occasionally arise where both parties to the contract will claim the research costs as their own. The IRS has recently become aware of some of these situations and is becoming more aggressive in examinations in this area. The IRS is particularly interested in the risks under a contract and frequently evaluates warranty provisions and guarantees in light of software company claims that they are a risk. The IRS also evaluates whether software companies retain meaningful rights to exploit research results.

The contract research rules are essentially the complement of the research credit funding rules. For this reason, it is often useful to evaluate contract research arrangements in light of the research credit funding rules. The research credit funding rules are discussed toward the end of the next subsection.

#### (g) Research Credit

As noted above, a credit for increasing research expenditures was enacted in 1981. Because the credit was intended to provide an incentive for increases in research spending, the research credit is available for qualified research costs incurred in any given tax year, in excess of a taxpayer-specific base amount. The credit applies at a rate of 20 percent of the excess of qualified research costs over the base amount.

The research credit originally applied to almost all product development costs that were made to the definition of costs eligible for the credit; in 1989, the manner in which the credit was computed was significantly changed.

The research credit was initially enacted with a sunset provision in order to provide Congress an opportunity to re-evaluate its effectiveness before a more permanent incentive was put in place. Because Congress in recent years has been perpetually short of money to provide tax incentives, the research credit has been enacted for only limited periods each time it has been extended. (The credit has ultimately been extended each

time.) In the two situations where it was permitted to expire, Congress provided both a retroactive and prospective extension, thereby preventing gaps in the application of the credit rules.

The taxpayer-specific base amount is currently computed using a research intensity concept. The foundation of this concept is the idea that taxpayers should continue to dedicate a historic proportion of sales to their research efforts. Thus, the research credit rules refer back to the years 1984 through 1988 and use this period of time to compute the ratio of qualified research costs to sales. This historic ratio is then applied to a rolling average of the prior four years' gross receipts to arrive at the annual base. Special rules apply to "start-up" companies that did not have research and sales in the majority of the years 1984 through 1988. Qualified research expenses incurred in any given year in excess of the base may give rise to research credits.

For companies in the business of developing computer software for sale, the research credit generally applies to the qualifying costs that are directly attributable to the research efforts conducted to create products for sale. Qualified costs include wages, supplies, and 65 percent of contract research payments. The costs of acquiring machinery and equipment, depreciation on property (e.g., computers) used in the performance of research, and overhead costs allocated to research efforts through burden rates on labor or otherwise are not credit-eligible.

In evaluating the research credit, an important consideration for software companies is the special research credit funding rules. Under these rules, software companies must omit from their research credit computations otherwise qualifying research costs to the extent of funding amounts received. These rules must be considered where research is performed under a customer contract.

There appears to be an infinite variety of customer contractual arrangements that must be considered in light of the funding rules. Analyses of these arrangements must be made in light of two key elements of the funding rules: (1) rights in the research results and (2) risks under the contract.

A software company must retain substantial rights in the software created under the contract in order to claim the research credit. If substantial rights are not present, the software company must exclude from its research computation all otherwise qualifying amounts incurred under a contract. A common example of a situation in which a software company does not retain substantial rights is the situation where the company is prohibited from marketing the software created under the contract. Substantial rights are also not retained where the software company must pay the funding company a market value royalty on subsequent sales of the software. In these situations, the funding company will be treated as the owner of the software. If a software company retains substantial rights, it may claim the research credit on costs incurred pursuant to the contract, but only to the extent the software company is at risk for the amounts incurred. Thus, if a software company enters into a time-and-materials contract to create software for another party, none of the amounts would be incurred at the software company's risk because the company will be reimbursed for its expenses. On the other hand, where the contract calls for the software company to create software that performs specified functions for a specified price, the software company is

fully at risk and may claim the credit because the contract is essentially a contract for the purchase of finished software.

As noted above, the IRS in recent years has begun to examine with greater intensity contractual arrangements involving research. Because of the rich variety of the arrangements and the complexity of the rules, this can be a troublesome area for software companies. The IRS has been particularly aggressive in examinations of government contracts.

The research credit may also be available to software companies for qualified costs to create software for internal use. For example, the research credit applies for software created by the taxpayer for use in other qualified research activities. Thus, the research credit may apply for the qualifying costs incurred by a software company to develop software programming tools for use in creating new or improved products for sale.

In early 1997, proposed § 41 regulations were issued dealing with the qualification of internal use software for the research credit. The proposed regulations do not appear to create any new rules or requirements; rather, they appear to generally follow the legislative history of the Tax Reform Act of 86 (TRA 86), which established a three-part test that internal use software be “innovative,” involve significant economic risk, and not be commercially available (in addition to the general requirements for credit eligibility). Several groups, representing high tech companies, including the authors’ firm, have asked Treasury to consider several changes. First an ambiguous reference to a “high threshold of innovation” can be construed as a fourth test, in addition to the three-part test, which is inconsistent with legislative intent. Second, a clarification was requested to clearly state the credit eligibility of general and administrative software and software written to perform noncomputer services such as banking or accounting, provided all tests for credit eligibility are fulfilled. Third, Treasury was urged to implement an activity-based approach consistent with the final § 174 regulations to focus on the nature of the activities being performed instead of the end result of the research.

*United Stationers* was the first case to address credit eligibility of internal-use software. In October 1997, a District Court generally upheld the magistrate’s recommendation that the costs did not qualify for the research credit. The court found that the company failed to meet the requirement that the research must be undertaken to discover information that is “technological in nature.” Although the projects themselves may have been considered technological, the court stated there was no evidence that there had been any “discovery.” The court also looked to a footnote from the TRA 86 legislative history stating that activities that “expand or refine existing principles of computer science” meet the technological in nature requirement. The court found that the petitioner “merely applied, modified, and at most, built upon pre-existing technological information.” The IRS may view these interpretations as additional tests required in order to qualify internal use software development activities for the research credit. Minimally, this decision will support increased challenges by IRS of internal use software research credit claims.

In June 1998, the Tax Court ruled similarly in *Norwest*. In that case, the court held that seven of the eight internal-use software development projects conducted by

Norwest did not qualify for the research credit. The court re-named the “technological in nature” test the “discovery test,” and held that, in order to satisfy the discovery test, a taxpayer must discover information beyond what is known in the field. Furthermore, relying on the same footnote from the TRA 86 legislative history on which the district court relied in *United Stationers*, the Tax Court held that research activities do not qualify for the credit unless there is technical uncertainty about the ability to reach the desired results. Thus, the court ruled, business or economic uncertainty is not sufficient for the activities to qualify for the research credit.

Minimally, these decisions will support increased challenges by the IRS of internal use software research credit claims, and they may increase challenges to the use of the research credit in general.

One part of the four-part test for credit eligibility created in the TRA 86 requires the research to be “undertaken for the purpose of discovering information which is technological in nature.” The proposed regulations may place emphasis on whether a company’s research efforts result in a “discovery” or even an actual scientific or technological advancement. Possibly, these regulations would preclude both evolutionary and “failed” research activities which can currently qualify for the credit, particularly in light of *United Stationers* and *Norwest*. Any type of discovery test is inconsistent with legislative intent as Congress rejected a proposal in 1984 that would have tied eligibility for the credit to the concept of technological advancement. The author’s firm submitted comments to the IRS stating these points and emphasizing that the proper focus of research and development (R&D) credit eligibility is on the nature of the taxpayer’s activities, not the end result of the research.

## 9.4 TAX TREATMENT OF COSTS TO ACQUIRE SOFTWARE

### (a) Acquisition of Less than All Substantial Rights

Software acquisitions that are generally treated as the purchase of a depreciable asset involve the payment of a lump sum for a limited set of rights to use software. Acquisitions treated as purchases may be made separately or in conjunction with the acquisition of hardware. If software is separately acquired, the costs are required to be amortized over a period of 36 months beginning with the date of acquisition. The provisions of Rev. Proc. 69-21, which had permitted cost recovery over 60 months or less, have been superseded by this provision. These rules apply to the acquisition of off-the-shelf software and to custom-developed software that is treated as purchased.

As discussed above, transactions for the acquisition of contract research services give rise to deductible research costs. Contractual arrangements that result in the creation of software but fail to meet the contract research requirements are treated as involving the purchase of software. Thus, a software company must treat its payments as involving the purchase of software if the company enters into a contract for the creation of software and is not at risk under the contract. This may occur where the software company’s obligation to the other party is limited to an amount stated in the

contract and the other party warrants that the software will perform to specifications. Similarly, if the contract for software services prevents the software company from marketing, sublicensing, or otherwise exploiting the software created under the contract, the software company may be treated as obtaining no rights in the underlying software and is therefore treated as purchasing the end result of research.

In Private Letter Ruling 9449003, the IRS applied these requirements to a set of arrangements between a computer software game publisher and several independent software developers. The IRS concluded that the payments made by the game publisher were for the purchase of software, because the independent software developers, not the software publisher, were at risk for the development of the software.

Under the facts of this ruling, the software publisher was responsible for the overall design of the games and acquired from outside developers all substantial rights in the software elements they created. In addition, all payments made to the developer were nonrefundable. These factors tended to indicate that the software publisher had entered into a software development arrangement with the independent developers. Nonetheless, on the crucial question of risk under the contract, the IRS held that the software publisher was not at risk under the contracts. The IRS characterized the contracts as minimizing the publisher's risk because they established milestones that included specifications for the software and because they required the developers to cure any defects in the software ultimately created.

The cost of software that is treated as part of an acquisition of hardware is not treated separately, but is instead taken into account with the costs of the hardware.

The 36-month amortization period under § 197 applies to software acquired in connection with the acquisition of a trade or business, but only if:

- The software company acquires nonexclusive rights in the software
- The software acquired is readily available for purchase by the general public
- The software acquired has not been substantially modified

The 36-month amortization provisions were enacted as part of a broader legislative effort to simplify the tax treatment of purchased intangibles. This legislation, including the portion applicable to software, applies to certain intangible assets—termed § 197 intangibles—after the Code section implementing these rules—acquired after August 10, 1993.

### **(b) Acquisitions Involving All Substantial Rights**

Acquisitions of all substantial rights in software also fall into two categories:

1. Under legislation enacted in 1993 and intended to provide uniform tax treatment for the acquisition of intangibles, acquisitions of all substantial rights in software are treated as any other purchase of software, provided that the software is not acquired in connection with the acquisition of a trade or business. In these situations, the acquired software is subject to the 36-month amortization provision discussed above.

2. Acquisitions involving all substantial rights in software made in conjunction with the acquisition of a trade or business fall within the general rules applicable to intangible acquisitions. Under these rules, the costs of the software must be amortized over a period of 15 years.

It is not clear when the acquisition of software will involve the acquisition of a trade or business. For example, it is not uncommon for individuals seeking to create enhancements to products sold by established software companies to approach the companies with the intent of selling their partially developed software to the software company rather than attempting to complete development and market the product on their own. In these situations, the software company will acquire the rights to the software and will retain the services of the individual inventor. Under § 197, this transaction might be treated as involving the acquisition of a trade or business and would require the software company to recover its costs over 15 years.

### (c) Payments for the Right to Use Software

Rev. Proc. 69-21 permits software licenses to be deducted ratably over the license term, following the authority in Treas. Reg. § 1.162-11 dealing with leases. In the common situation where the obligation to make software license payments arises as the software is used, this rule permitted the deduction as usage of the software occurs. In other situations where a software company licenses software and pays both an up-front payment and periodic payments based on usage, these rules permit the up-front payments to be deducted over the license term, while the periodic payments are deductible as usage occurs.

Proposed regulations issued in January 1997 concerning the amortization of certain intangibles appear to require capitalization and amortization over a 15-year period of all amounts paid pursuant to a license of intangibles. The author's firm and others submitted comments to the IRS and Treasury stating that this would be a radical departure from long-held income tax principles and was not envisioned by the drafters of this statute. If the proposed regulation is not changed, all royalty payments paid as a result of licensing transactions would have to be amortized over 15 years instead of being fully deducted in the year paid.

It is important to note that, in spite of these proposed regulations, Rev. Proc. 69-21 continues to be used to provide guidelines for deductibility of certain software costs and carries substantial precedential value since proposed regulations do not become law until they are issued as final regulations.

## 9.5 TAX PLANNING FOR FOREIGN OPERATIONS

### (a) Introduction

U.S.-based software companies planning a business expansion abroad face not only different opportunities, but also rules which differ significantly from those encountered by exclusively domestic businesses. Although an exhaustive discussion is not

within the scope of this chapter, the following discussion will address the more important tax issues to consider when planning for an overseas business expansion or investment.

Decisions must be made as to the form in which to operate (i.e., branch vs. subsidiary) and where to locate overseas operations. The choices are driven not only by tax considerations but also by a multitude of business and market requirements. The choice of alternatives is required when planning a new operation, but also must be continually reviewed as overseas and domestic situations change.

The net earnings ultimately available for the U.S. owner of the overseas business location can be substantially affected by the U.S. tax treatment of the operation. Management should therefore be aware that a U.S. shareholder of a foreign corporation is subject to different rules from those of a U.S. shareholder of a domestic corporation. The U.S. shareholder of a foreign corporation may be required to furnish notification to the IRS in order to organize the foreign corporation or to reorganize an existing structure, and must prepare a report annually summarizing all intercompany transactions. The U.S. shareholder may find that transactions which normally result in capital gains can give rise to ordinary income. The U.S. shareholder may be able to achieve foreign tax savings by locating in low-tax countries but may find that U.S. tax is imposed on undistributed income of such foreign subsidiary. The U.S. shareholder must also be aware that intercompany transactions are carefully reviewed by the IRS (and by foreign tax authorities) in order to determine that they follow the arm's length standards detailed in the regulations. Even in cases where no business is physically conducted outside the United States, payments for software made by foreign customers may be subject to foreign withholding taxes.

There are limited U.S. tax incentives to encourage export activity, and also provisions that allow full or partial recovery (in effect) of taxes paid to foreign countries.

Many software companies, especially newer ventures in their early years of existence, find that they can adequately service their customers without establishing a physical presence outside the United States. For these companies, the distribution channels, other types of third-party distributors, VARs (value added resellers) or SI (system integrator) relationships may be adequate to deliver their software products to foreign customers. In such cases, the relevant international tax issues are limited primarily to foreign withholding taxes and the potential tax benefits of using a foreign sales corporation (FSC).

### **(b) Foreign Withholding Taxes**

Most countries, including the United States, impose withholding taxes on certain income earned within their own borders but paid to a nonresident. But for the withholding tax, such income would otherwise be untaxed in the country of origin.

Cross-border taxation of software royalties is based on the treatment of such income items as book royalties, payments for the use of scientific processes, and the like. Because software products are protected by copyright laws, are generally subject to license rather than outright transfer, and because payments for use of copyrighted materials are normally viewed as "royalties" for legal purposes, it was natural



for tax authorities to first turn to existing rules governing other royalties when trying to decide how to characterize payments for software. This approach resulted in cross-border payments being subject to the withholding of income tax in the country of origin of the payment. Withholding tax rates around the world range from nominal (5 to 10 percent) to significant (25 percent or more) and are usually imposed on the gross royalty paid.

As the U.S. software industry developed, the pioneers encountered rather harsh treatment in a number of markets. The United States has negotiated income tax treaties with several foreign trading partner countries, and often such treaties provide for special reduced rates of withholding on payments to U.S. recipients. Despite the presence of these tax treaties, such “special” withholding rates were not always such a great deal.

Fortunately, through the 1980s and into the 1990s, there has been a significant improvement in the withholding tax landscape, for two principal reasons:

1. The release of an Organization for Economic Co-operation and Development (“OECD”) Commentary, suggesting that payments for software not dependent on use or productivity are more in the nature of the payment for a product, and should not be subject to royalty withholding tax
2. The activism of a number of software companies in approaching national tax authorities for relief from withholding tax on payments from the sale of standard products. As a result, some foreign tax authorities have granted favorable rulings exemption certain software payments from withholding taxes. The U.S. Treasury Department has been successful in negotiating further reduced rates in several tax treaties.

There remain a number of countries and/or types of software products that will incur foreign withholding taxes on payments from a foreign county destined for a U.S. recipient. In the case of software included in a complex sales agreement, it may be possible to reasonably reallocate consideration away from those elements subject to withholding tax in favor of other deliverables, consideration for which may not be subject to withholding tax.

U.S. tax law permits withholding taxes incurred to be deducted, or to be claimed as a credit against U.S. tax ultimately imposed on foreign source income. The so-called foreign tax credit generally leads to a better answer for a profitable, tax-paying company. The decision to claim a credit or deduct foreign taxes paid is made by including an election in a timely filed tax return.

### **(c) Foreign Sales Corporations**

The foreign sales corporation (FSC) is the primary means allowed by the IRC to encourage export activity. The FSC, and its predecessor, the domestic international sales corporation (DISC), allows U.S.-based companies with foreign customers to earn a federal (and sometimes state) tax reduction by complying with relatively complex rules. Based on the level and amount of export activity, there are several differ-

ent varieties of FSCs. Not surprisingly, the tax benefits available are proportional to the stringency of the rules governing each type.

The establishment and subsequent operation of a FSC is an exercise long on form and short on substance. To start, a U.S. taxpayer incorporates a new subsidiary under the laws of a U.S. possession or foreign country. (A list of jurisdictions that qualify for FSC formation is maintained and published by the IRS.) A local agent of the new subsidiary is appointed. Through a series of intercompany agreements and certain administrative rules, an analysis is prepared of the principal's export activity for the year. The result of the analysis, prescribed by statute and regulations, is that the FSC is assigned a portion of its related supplier's income from exports. A portion of the FSC's income so determined is exempt from U.S. tax.

The FSC tax break is granted for income from the sale, lease, or rental of export property (i.e. tangible personal property with greater than 50 percent U.S. content which is used or consumed outside the U.S.) and from services related to such sales, leases, or rentals. For purposes of the FSC rules, intangible property is generally excluded from the definition of export property; this exclusion applies to copyrights other than films, tapes, records, or similar reproductions. Prior to the Taxpayer Relief Act of 1997 (TRA 97), however, the statutory exclusion for intangible property did not contain any specific reference to computer software.

Under regulations promulgated as part of TRA 97, computer software licensed for reproduction abroad is now specifically *not excluded* from the definition of export property eligible for FSC benefits. Accordingly, computer software exported with a right to reproduce became eligible for FSC benefits in tax years beginning after 1997.

Many companies now utilize sophisticated computer programs to analyze each FSC transaction individually and file returns reflecting the maximum available FSC benefit.

#### (d) Establishing a Presence Overseas

Companies establish a new business site in a foreign country for many reasons, including a significant new contract, a major market opportunity, dissatisfaction with a local distributor, and customers asking for local technical support.

The most common driver for a foreign outpost is for sales and marketing enhancement. Companies typically choose to operate overseas using a locally incorporated subsidiary as opposed to a branch form. For foreign sales and/or marketing activities, the differences between the two forms of operation for foreign tax purposes are not significant. While a locally incorporated subsidiary may be more expensive to establish and keep in existence, the enhanced "local presence" may be viewed as justifying the added cost.

The world's market for software is principally restricted to the industrialized countries. Most of these countries have corporate tax rates approximately equal to or greater than the corporate rate in the United States. Accordingly, in developing a strategy for intercompany pricing, it is usually not advantageous to try to maximize the income earned by the foreign subsidiary. Most often, the opposite approach is used,

for the sake of simplicity, by establishing a relationship that will be viewed to allow the foreign subsidiary to earn a minimum return on its activities that will be acceptable to the local tax authorities.

A U.S. software company venturing abroad will not enjoy a significant tax advantage unless it is willing to undertake vital business functions overseas. Should the company view it feasible to establish a foreign R&D center, or a foreign manufacturing plant, then it may be possible to take advantage of low tax rate jurisdictions. The number of suitable locations for doing this is rather limited, but includes Ireland, Singapore, Hong Kong, and Switzerland.

### (e) U.S. Tax Considerations of the Foreign Operation

The United States has the most stringent rules governing the tax consequences of foreign operations of any country. First and foremost are the rules governing related party, intercompany transactions. Under IRC § 482, the IRS empowered to reallocate income and deductions between related parties, if necessary (in its view) to more properly reflect the income of the parties concerned. The purpose of these rules is for related party transactions to result in the same income split as if the parties concerned were unrelated. While this explanation may be overly simplistic, significant weight has been given to “comparable” third party transactions as a benchmark. In-depth analysis by outside experts of function and contribution (to the earnings process) and surveys of industry norms may also be required to justify intercompany prices and avoid statutory penalties for misstatement of intercompany prices.

Once the level of compensation of the foreign subsidiary is set, further statutory rules come into play. The rules of Subpart F of the IRC were originally designed to prevent the deferral of U.S. taxation on income derived by a foreign subsidiary incorporated in a tax haven doing business outside of its country of incorporation. It should be noted that the rules are not restricted to tax havens. In general, if any “controlled foreign corporation” sells property or renders services outside of its country of incorporation, and either its supplier or customer is a related party, the earnings of such foreign corporation are deemed distributed as a dividend to its U.S. Shareholders each year. Exceptions apply if the effective tax rate of the subsidiary is at or near par with the U.S. tax rate, or if the subsidiary is engaged in manufacturing. The Subpart F rules also prevent the establishment of a captive “shell” master distributor located in a tax-favored jurisdiction to act as a highly compensated middleman in transactions between a U.S. parent and customers in high tax rate jurisdictions.

Assume a situation where the product and service structure has been designed to avoid Subpart F, and intercompany pricing terms have been set using comparable third-party prices. Have we avoided being subject to U.S. tax on foreign earnings? The answer is no. There are more rules. The profitable foreign subsidiary will accumulate cash. If it is incorporated in a lower-than-U.S. tax jurisdiction, its shareholder will want to avoid repatriation of the cash, since doing so results in subjecting such earnings to U.S. tax.

If the money is loaned to the U.S. parent, made available for its use, or if the foreign subsidiary invests in U.S. assets, IRC § 956 will treat such amounts as having been paid out as a dividend. If more than a *de minimis* amount of the gross income of the foreign subsidiary is comprised of passive income (such as rents, royalties, interest, and dividends). Subpart F reaches in to treat this income as having been distributed to the U.S. shareholder.

Under current rules, the only way for a U.S. company to accumulate a meaningful amount of lower taxed earnings offshore is by establishing a manufacturing location in a foreign country. In this way, Subpart F income characterization is avoided for sales to third countries. Unfortunately for software companies, there remains some controversy over whether the normal manufacturing activities for software meet the definitions of “manufacturing” contained in the Subpart F regulations.

#### (f) Internet Taxation

In November 1996, the Treasury department issued a discussion paper on Internet taxation that covered many prospective tax issues related to Internet transactions. Tax neutrality was identified as the “guiding principle” of any Internet taxation policy. Income earned via electronic means should be treated similarly to income earned through existing channels of commerce.

Internet commerce also raises complex jurisdictional issues. The paper predicts that residence-based taxation, as opposed to source-based taxation, will grow more important for countries faced with tax base erosion. However, many questions will be raised regarding the concepts of permanent establishment and the level of U.S. contact required to constitute a U.S. trade or business. In general, the jurisdictional issue will turn on the situs of the underlying economic activity, rather than mechanical sourcing rules.

## 9.6 CONCLUSION

Although some guidance has been issued recently, the body of tax law still has not kept pace with the evolution of technology. This is true in the United States at both the federal and state tax levels and is also true under the laws of other countries. To make matters worse, the software marketplace is extremely dynamic; the means and methods used to sell, produce, and distribute software are changing rapidly. As a result, the proper tax treatment of many types of transactions involving software companies may be uncertain for many years because of the need to view the transactions in light of tax rules written for other industries.



## CHAPTER TEN

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# Legal Aspects of Software

David A. Weinstein, JD

### 10.1 GENERAL

It is important for anyone who is involved in the software industry to have an understanding of the legal rights and obligations associated with software and the legal aspects of the way the software industry does business. It is particularly important for accountants and auditors. This chapter provides a basic working knowledge about general legal considerations of the software industry.

### 10.2 COPYRIGHTS

#### (a) Nature of a Copyright

A copyright is a legal right to control specific uses of computer software and documentation, as well as art, books, music, motion pictures, videotapes, photographs, and many other kinds of creative material. Copyright is granted by law in most countries and in the United States by a federal statute called The Copyright Act of 1976 (Copyright Act). That statute governs who owns a copyright, what it consists of, how long it lasts, and how it is acquired, registered, transferred, and enforced. Key terms that are used in connection with copyrights include:

- *Copyright owner*—a person who possesses this legal right
- *Copyrightable or copyrighted material*—material to which this right applies
- *Copyright protection*—the right to legally restrain unauthorized uses of copyrighted material
- *Copyright registration*—a procedure for recording copyright ownership with the federal government

- *Copyright infringement*—when particular uses of copyrighted material are made without the copyright owner’s permission
- *Copyright Office*—the federal agency that registers copyright ownership claims

### (b) Control Given by a Copyright

A copyright consists of and gives a copyright owner the exclusive rights to do the following things with copyrighted material:

- Reproduce it by copying on floppy disks, hard drives, tape drives, and CD-ROM, as well as by scanning, photocopying, writing, drawing, photographing, audio or video recording, or by other means
- Prepare derivative material such as new versions, enhancements, translations, musical arrangements, condensations, and abridgments, and by varying, altering, adapting, or otherwise modifying copyrighted material
- Distribute it publicly by selling, giving away, renting, loaning, or leasing
- Perform it publicly by reading, performing, presenting, broadcasting, or by other means
- Display it publicly by showing it either directly or by means of photographs, film or videotape images, or by other means

The right to do these things exists and is enforceable throughout the United States, its territories, and possessions, subject to certain exceptions. A copyright gives its owner the power to control how, when, and where copyrighted material is used, who can do these things, and the number of times they can be done. It applies to all mediums.

### (c) Material that Can Be Copyrighted

To be copyrightable, material must satisfy the following three requirements:

- It must be original.
- It must be embodied in something tangible.
- It must fall within one or more copyrightable material categories.

The following categories of material can be copyrighted:

- **Literary material**—words, numbers, or other verbal or numerical symbols, such as software programs, databases, books, advertising copy, catalogs, poetry, scripts, speeches, personal and business correspondence
- **Music, including any accompanying words**—combinations of varying melody, harmony, rhythm, and timbre with or without words such as vocal and instrumental songs, choral arrangements, and orchestral music
- *Dramatic material, including any accompanying music*—literary compositions that tell a story through actions with dialogue, performed on stage by actors with or without accompanying music, such as plays, operas, and melodramas

- *Pantomimes and choreography*—pantomimes consist of a drama presented by gestures and action without words; choreography consists of recorded or notated dance movements for performance before an audience
- *Pictorial, graphic, and sculptural material*—two-dimensional and three-dimensional works of fine, graphic, and applied art, photographs, prints and art reproductions, maps, globes, charts, technical and architectural drawings, diagrams, and models
- *Motion pictures and other audiovisual material*—audiovisual material consists of a series of related images that are intrinsically intended to be shown by the use of machines or devices such as projectors; motion pictures consist of audiovisual material in the form of a series of related images which, when shown in succession, impart an impression of motion
- *Sound recordings*—recorded musical, spoken, or other sounds (but not sounds accompanying a motion picture or other audiovisual material), such as recorded musical performances, lectures, and synthesized sounds as well as those found in nature
- *Architectural material created on and after December 1, 1990*—the overall form as well as the arrangement and composition of spaces and elements in the design of buildings, but not individual standard features

#### (d) Protection that a Copyright Does Not Provide

A copyright does not give the legal right to control use of an underlying idea for a software program or other copyrighted material. A copyright owner has the right to control only use of the particular way in which an idea is expressed in copyrighted material. For example, the idea for a software application drawing program cannot be protected by a copyright, but code to accomplish the drawing function can be copyrighted. Other ways of representing the same idea do not infringe the copyright for that program.

In addition to ideas, a copyright is not available for procedures, methods, systems, processes, concepts, principles, discoveries, or devices or for facts, basic plots, themes, and scenes that necessarily follow from certain plots. It is also not available for public domain material and material that lacks sufficient originality, such as book, motion picture, song, and other titles, product and business names, short phrases, catchwords, slogans and mottoes, typographic ornamentation, lettering, coloring, content, and ingredient listings.

A copyright is not available for blank forms designed for recording information, familiar symbols or designs, material consisting entirely of information that is common property, like standard calendars, sporting event schedules, height charts, and lists or tables taken from public documents or other common sources. It is not available for measuring and computing devices, like tape measures, rulers, and wheel dials.

#### (e) Obtaining a Copyright

A copyright is obtained by creating copyrightable material—nothing more needs to be done. It comes into existence on the date the material is created. Filing documents,



paying fees, or obtaining a certificate of registration from the Copyright Office is not required.

A copyright owner is a person who creates copyrightable material. However, there are two exceptions that fall under arrangements that include “work made for hire.” One exception refers to material that an employee creates within the scope of employment and the other to material that an independent contractor creates on commission, but it only applies to specific kinds of commissioned material.

- *Employer/employee relationship*—The employer obtains and is automatically the first owner of copyright for material that an employee creates.
- *Commissioned work*—A person who commissions another to create copyrightable material obtains and is the first copyright owner for the material, but only if the creator signs a written agreement to create it before the material is created.

If two or more persons create copyrightable material, they are automatically copyright co-owners and each has a right to use it without the need to obtain permission from the other(s).

#### (f) Term of a Copyright

There are three different time periods that a copyright can last:

- *Life plus 70 years*—For material an individual creates other than as an employee; protection lasts for the life of the creator plus 50 years after that person’s death. If two or more persons create copyrightable material, the term of protection ends 70 years after the death of the creator who dies last.
- *95 years from publication or 120 years from creation*—An exception to the life plus 50-year term applies to material created within the scope of employment. For such material, copyright lasts 95 years from the date it is first publicly available, or 120 years from its creation, whichever period is shorter.

#### (g) Registered Copyrights

Copyright registration is a procedure used to record a copyright with the federal government, namely the United States Copyright Office. This procedure involves filing an application for registration on a preprinted government-provided form, submitting copies of copyrighted material, and paying a filing fee.

Registration can occur any time during the life of copyright. However, there are advantages to registering a copyright soon after material is created. Although registration is not required to obtain a copyright, it is necessary for U.S. nationals as prerequisite to filing an infringement lawsuit.

#### (h) Copyright Notice

A copyright notice consists of three elements for visually perceptible material:

1. The symbol ©, or the word “Copyright” or the abbreviation “Copr.”
2. The year in which a copy of the material is first publicly available by sale, gift, lease, rental, lending or offer to sell or distribute
3. The copyright owner’s name

A different version of this notice is used for sound recordings. It consists of the last two elements mentioned with an encircled letter “P” as the first element rather than ©.

To obtain or to avoid the loss of a copyright, it is unnecessary to use a copyright notice. However, it is a good idea to use a notice so that all of the remedies available for an infringement can be obtained. If a notice is not used, it is possible an infringer may not have to pay the copyright owner’s attorney fees or statutory damages.

### (i) Copyright Protection in Foreign Countries

Under certain conditions, many countries will give legal protection to copyrighted material owned by U.S. citizens. The United States has signed various copyright treaties with countries, including the Berne Convention for the Protection of Literary and Artistic Works (signed by more than 75 countries) and the Universal Copyright Convention (signed by more than 50 countries).

### (j) Copyright Infringement

Subject to certain exceptions, unless permission is obtained from the copyright owner, everyone who reproduces copyrighted material or does anything with it that a copyright owner has the exclusive right to do, may be liable for infringement. The need to obtain permission applies to persons who own or have possession of copyrighted material. The absence of an intent to infringe and ignorance of the law are not necessarily defenses to infringement.

Under the “fair use” doctrine and in certain precisely defined circumstances, the Copyright Act permits persons other than the copyright owner to use copyrighted material in a variety of ways without requiring them to obtain the owner’s permission.

## 10.3 TRADEMARKS

### (a) General

Trademark protection is available for the names, wording, slogans, logos, art, (mark) and overall appearance of packaging (trade dress) software companies use to identify their products. It gives a software company the exclusive right to use its mark/trade dress, which is a basis for challenging unauthorized use of the same or confusingly similar mark/trade dress by someone else for products and/or services like or related to its products and/or services. This protection is not a basis for a software company to challenge a competitor’s creation and marketing of software that is the same as or substantially similar to its software if identified by a confusingly similar mark/trade dress. Furthermore, as is the case with copyright, it does not protect ideas for software.

### (b) Nature of a Trademark

A mark is a word, name, pictorial matter, symbol, or any of these in combination that a business uses to identify and distinguish its products and/or services from the products and/or services of others. A mark that identifies products is called a trademark (e.g., COMPAQ). One that identifies and distinguishes services is called a service mark (e.g., Computerland). The Trademark Act of 1946 (Lanham Act) is the federal statute that governs national registration of trademarks. Each state has a similar statute. Terminology relevant to this legal right includes the following:

- *Certification mark*—A mark used by a person other than its owner to certify: regional or other origin, material, mode of manufacture, quality, accuracy, or other characteristics of such person's products or services; or that the work or labor on products or services was performed by members of a union or other organization. The mark must be used for certification only.
- *Common law mark*—An unregistered mark.
- *Federally registered mark*—A mark registered in the United States Patent and Trademark Office, Washington, D.C.
- *State registered mark*—A mark registered in one or more states, usually by the Secretary of State.
- *Trade dress*—The overall design or appearance of a product or its packaging, which can include features such as size, shape, color, color combinations, texture, and graphics.
- *United States Patent and Trademark Office*—The federal agency that registers trademarks.

### (c) Legal Rights to Trademarks in the United States

Subject to a number of conditions discussed in the following sections, the owner of a mark possesses the exclusive right to use it for the products and/or services that it identifies. This right may be limited to the geographic area where the mark is used or it may be nationwide. This is possible whether a mark is federally registered in the U.S. Patent and Trademark Office or unregistered.

There is a dual system of protection for marks in the United States. Federal protection is one basis for protection and exists under the Trademark Act of 1946. The other basis for protection is under the common law which arises from court decisions developed through precedent.

Both kinds of protection depend on bona fide use of mark on or in connection with products or services. Therefore, use of a mark is critical to possess rights in it. Although rights in a mark in the United States can exist without registering it, a trademark owner gains certain benefits by federally registering a mark which are not otherwise available.

### (d) Geographic Scope of Exclusive Rights

A first user's exclusive rights to use a mark can be nationwide or limited to a particular geographic area, such as a state. This depends on both where it is used and when

it is first used there. This right also depends on whether the mark is federally registered as well as its priority date.

If a mark's first user does not federally register it, the first user's exclusive right is limited to where use occurs and can be enforced only against later users in that area. To be able to enforce it against a later user in a remote geographic area, it must be shown that before using it in that area the later user knew about the first user's mark.

If a mark's first user federally registers it, that person may be able to obtain the exclusive right to use it nationwide in connection with the products or services that the registration covers and perhaps related products or services, subject to certain exceptions.

### (e) Appropriate Items for Trademarks in the United States

Certain kinds of words, names, pictorial matter, and symbols are better to use as marks than others. Some cannot function as marks. To function as a mark, a word, name, or symbol must be *distinctive* when first used with the products or services with which it is used. Or the word, name, or symbol must be capable of becoming distinctive with respect to those products or services. A distinctive word, name, picture, or symbol is one that relevant members of the public readily associate with a particular product or service, such as QUARK with a desktop publishing program. It is not thought of as giving information about or describing a product or service.

An *inherently distinctive* word, name, picture, or symbol is one that does not describe a product or service. It can be protected immediately upon first use. A descriptive word, name, picture, or symbol may acquire distinctiveness through long and/or widespread advertising and use in connection with a product or service. At the time this happens, it is entitled to protection as a mark.

From a legal protection standpoint in the United States, the best mark is a word, name, picture, or symbol that conveys little or no information about the nature or features of the products or services with which it is used. This kind of mark is inherently distinctive, strong, and entitled to a broader scope of protection than a mark that conveys information or is commonly used. In terms of distinctiveness, U.S. courts have established five categories:

- *Generic*—The name for product or service by which everyone knows it (e.g., software, computer, hardware); it is not and can never become distinctive or be protected.
- *Descriptive*—Tells about or describes the features, function, uses, nature, qualities, or geographic origin of a particular product or service (e.g., Windows for a program that features windows; Paris for perfume); it is nondistinctive when first used and cannot be protected as a mark at that time although it is capable of protection later when it acquires distinctiveness. Surnames and geographic terms are considered descriptive.
- *Suggestive*—Does not immediately convey information about a product or service. Rather, it indirectly says something about the features or characteristics of a product

or service, which requires thought as well as imagination to know what it means (e.g., mouseseed for rat poison). This kind of mark is considered inherently distinctive and can be protected from the date of first use.

- *Arbitrary/fanciful*—A mark whose accepted meaning has no significance in reference to and does not convey any information about the product or service (e.g., Apple for computers). This kind of mark is considered inherently distinctive and can be protected from the date of first use.
- *Coined*—A mark that is created solely for use as a mark and has no known meaning (e.g., COMPUDYNE for a computer). This kind of mark is considered inherently distinctive and can be protected from the date of first use.

Surnames (GATES), alphabet letters (IBM), number (386), slogans (INTEL INSIDE), nonfunctional product and packaging configurations (Perrier Indian bottle), nonfunctional architectural features of a structure (McDonald's arch), and the overall appearance of a product or its packaging (Vuitton handbags), called "trade dress," can be protected as marks.

#### (f) Acquiring Ownership, Beginning, and Duration

Under state and federal law in the United States, ownership and the legal right to exclusively use a mark can be obtained simply by using it in good faith in the ordinary course of business on or in connection with products or services. There is no requirement that a mark be registered or that it be used everywhere. To assert and enforce this right there is no requirement that information about it be included in databases or other material directly or indirectly concerning marks.

The date this exclusive right begins is the date the mark is first used as noted above or it can be the application filing date for a federally registered mark, whichever date is earlier. In either case, this date is referred to as the *priority* date.

This right can last as long as a mark is properly used in good faith in the ordinary course of trade on or in connection with the products or services that it identifies. The term of a state or federal registration does not determine how long this right lasts.

Nonuse of a mark for two consecutive years with no intention to resume use is deemed to be an abandonment of rights in it. This is a basis for canceling a federal registration.

#### (g) Ownership

A mark's owner is the person who legitimately controls the nature and quality of the products or services that it identifies. Ordinarily, this means that a mark's owner is the person who uses it but the owner may be someone who licenses others to use it as long as that person has a right to control its use by others.

Ownership of a mark cannot be obtained by registering it, whether state or federal, or by creating it.

### (h) Federal Registration

The U.S. Patent and Trademark Office maintains two different registers for marks—the *Principal Register* and *Supplemental Register*. They differ in the procedural and legal advantages each offers a mark’s owner, the kind of marks eligible for registration on each, and the registration process itself. Marks that are inherently distinctive (i.e., arbitrary, fanciful, coined and suggestive marks, and trade dress) can be federally registered on the *Principal Register*. Similarly, a descriptive mark can be federally registered but not on the *Principal Register* until it acquires distinctiveness; before that happens it can be federally registered on the *Supplemental Register*.

Registration on the Principal Register is preferable because it gives the mark’s owner many procedural and legal benefits not available to a mark registered on the *Supplemental Register*. Also, an intent to use application cannot be filed for registration on the *Supplemental Register*.

To be eligible for registration on the *Principal Register*, a mark must *identify* and *distinguish* products or services (i.e., it must be distinctive). A mark that is *capable of distinguishing* (i.e., a mark that has potential to acquire distinctiveness) products or services can be registered on the *Supplemental Register*.

The process of registering on either register is essentially the same. However, after a mark is found registrable, the process differs. A *Principal Register* mark is published for opposition in the *Official Gazette of the United States Patent and Trademark Office*, which is issued every Tuesday. The opposition period is 30 days from the publication date unless an extension request is timely filed for additional time to oppose.

A *Supplemental Register* mark is not published for opposition, it is promptly registered and notice of registration given in the *Official Gazette*. Anyone wishing to challenge a *Supplemental Register* mark must petition to cancel the registration.

### (i) Trademarks that Cannot Be Federally Registered

The following types of trademarks cannot be federally registered:

- Marks that consist of immoral, deceptive, or scandalous matter
- Marks that may disparage or falsely suggest a connection with persons, living or dead, or with institutions, beliefs, or national symbols, or bring them into contempt or disrepute
- Marks that consist of or comprise the flag or coat of arms or other insignia of the United States, or of any state or municipality, or of any foreign nation, or any simulation thereof
- Marks that consist of a name, portrait, or signature identifying a particular living individual except by his or her written consent, or the name, signature, or portrait of a deceased president of the United States during the life of his widow, if any, except by the written consent of the widow

- Names and symbols protected by specific federal statutes, such as Smokey the Bear, American Legion, the Red Cross insignia, Olympic, Olympiad, five interlocking rings (i.e., the Olympic symbol), and Little League Baseball
- Marks that are confusingly similar to federally registered marks

### (j) Requirements of Filing for Federal Registration

An application for federal registration can be filed by satisfying one of the following conditions:

- Use of the mark on or in connection with products or services that are offered or transported in commerce between two states or commerce which the U.S. Congress can control (this includes commerce between the United States and foreign countries).
- A bona fide intention to use the mark in such commerce (*intent to use application*); if a mark has not been used or has not been used in the required commerce an application may be filed nonetheless. The application is based upon intent to use and is examined the same way in which a use-based or foreign-based application is examined. However, the mark will not be registered until the mark is used in the required commerce and an *Amendment to Allege Use or Statement of Use* (see below) and accompanying specimens are filed and accepted by the Patent and Trademark Office.
- A foreign application or registration (based upon treaty rights); a foreign applicant can rely upon a home country application filing date as the *priority* date for its mark in the United States (instead of the United States application filing date) if the U.S. Application is filed within six months of the home country application filing date.

A qualifying use-based application must be accompanied by three specimens (samples) showing use of the mark on or in connection with the products or services the mark identifies. For software, the specimens may be labels, print-outs of screen displays, packaging, or photographs showing the mark affixed to a disk or other item containing the software. For services, the specimens can be copies of advertising and/or promotional material that includes the mark and refers to the services. In either case, all three of the specimens can be the same. Specimens are not filed with an intent to use application.

For an *intent to use application*, after the applied-for mark is used in the required commerce, it is necessary to let the Patent and Trademark Office know the mark has met this requirement. This can be done by filing an *Amendment to Allege Use*, which can be filed at any time prior to completion of examination of the application. After that time only a *Statement of Use* can be filed. These documents are similar in content and format. Both must be accompanied by three specimens showing the mark's use and a filing fee.

### (k) Registration Approval, Opposition, and Cancellation

A mark can be approved for registration in as brief a period as seven months from the filing date or two years or more depending upon the particular application. When approved, it is published for opposition in the *Official Gazette*.

If registration of a mark is refused, the applicant can file an appeal with the *Trademark Trial and Appeal Board*, which is an administrative hearing board within the Patent and Trademark Office.

Anyone who opposed registration can file an *Opposition*, which is an adversary proceeding before the Trademark Trial and Appeal Board. Or, when a mark has been registered, anyone who wished to challenge the registration can file a *Petition to Cancel*. However, after five years from the registration date, it may not be possible to cancel a registration.

### (l) What to Do Before Filing Application for Federal Registration

Unlike many countries, in the United States, proprietary rights in a mark can be acquired simply by using it. Registration is not required to have rights. Accordingly, after selecting a mark, in addition to learning whether anyone has filed to federally register or has federally registered it or a similar mark, it is important to learn whether anyone uses it. That is, it is important to learn whether the selected mark is confusingly similar to an existing or earlier filed mark.

To avoid potential conflicts that may arise from use or registration of a mark, an investigation, called a *trademark search*, should be conducted to obtain information that will indicate whether use of the selected mark can be challenged by another person. This information can also be used to evaluate the possibility of registering the mark.

A search involves reviewing the U.S. Patent and Trademark Office records, state trademark registration files, and other information sources concerning unregistered marks.

### (m) Rights to Prevent Others from Using a Trademark

When two or more persons use the same mark to identify the same or related products or services, the first user may be able to successfully challenge all later users. This depends upon where the first user's rights exist geographically.

Under certain circumstances, the first user does not have the right to stop others from using the same mark. This occurs when someone else uses the mark to identify products or services that are different enough from the first user's products or services to present no likelihood of confusion.

### (n) Registered Trademarks

Each state has and maintains a registry of marks as does the U.S. Patent and Trademark Office (USPTO) in Washington, D.C. A registered mark is entered in one or more of



these registries. An unregistered mark is not. If a mark is entered in the USPTO registry, it is called a federally registered mark.

### **(o) Advantages of Registering a Trademark**

Among other advantages, federal registration gives a mark's owner: automatic jurisdiction in a federal court for an infringement lawsuit; a basis to bar importation of products bearing an infringing mark; an opportunity to make the right to exclusively use a mark incontestable; and a nationwide priority date on the application filing date. The importance of the last two mentioned advantages should not be overlooked.

### **(p) Timing of Eligibility for Registration**

In most cases, a mark is eligible for state registration immediately after its first use. But this is not necessarily the case with respect to federal registration. A federal application can be filed after a mark has been used on products or services available in interstate commerce, or before a mark is used based upon an intent to use it. A federal application cannot be filed for a mark that will be used only in intrastate commerce.

Because of the legal and procedural advantages that a federal registration offers, a federal application should be filed as soon as possible after selecting a mark and determining that its use appears to be okay. This approach applies equally to a proposed mark not yet used and to a mark that is used locally but which will be used in interstate commerce.

### **(q) Use of a Particular Symbol with a Trademark**

Until a mark is federally registered, there is no special symbol or designation that should be used in association with it. However, after federal registration, it is important to use ® to avoid losing some federal registration benefits. The symbol ™ or something other than the federal registration symbol can be used with unregistered or state registered marks. But there is no legal requirement that this be done.

### **(r) Trademark Infringement**

Trademark infringement occurs when a mark so resembles another that it is likely to cause confusion, mistake, or deception. It is not necessary for the marks' similarity to cause actual confusion, mistake, or deception, and it is not enough if only a possibility of this exists.

The relevant confusion, mistake, or deception is that which exists in the minds of persons who are or may be customers for the products or services that the marks identify. Arguably, infringement occurs if an appreciable number of persons of average intelligence and experience buying under the usual conditions and exercising ordinary care are likely to believe that the products or services of one person are made,

offered, sponsored by, or in some other way connected with those of another person because of the mark that is used.

### (s) Preventing Imports that Infringe

By federally registering a trademark and recording the registration with U.S. Customs, a trademark owner may be able to bar importation of products that bear an infringing mark. U.S. Customs will withhold delivery of any item it has reason to believe may infringe a registered and recorded trademark.

### (t) Trademark Protection in Foreign Countries

The right to exclusively use a mark in the United States does not automatically extend to foreign countries to insure its availability for use everywhere by the U.S. owner.

In certain countries, legal protection for a mark is dependent solely on its registration in the country without regard to its use status there or in the United States. In these countries, the first person to register a mark obtains the exclusive right to use it, not the first user. For this reason, in these countries, it is important to file for registration as soon as practical because, as in the United States, the application filing date is the priority date. This is especially important to do when a U.S. federal application has been filed for the mark.

The United States and approximately 100 other countries are parties to an international treaty covering the registration and protection of marks. It is called the Paris Convention and gives U.S. nationals the right to register their marks in all signatory countries. Of significance is the provision that allows a U.S. federal applicant to rely on the application filing date as the priority date for rights in a foreign country. This is possible if a foreign application for the mark is filed within six months from the U.S. federal application filing date.

In some foreign countries, using a mark is the only way to acquire the right to exclusively use it in the country. Use and registration in the United States do not count. As in the United States, in these countries the first user acquires this right. Therefore, it is important to use a mark in these countries as soon as practical or to file an application for registration based on a U.S. federal application, as noted above.

### (u) Guidelines for Usage of a Trademark

Following are some general guidelines for usage of a trademark:

- A mark should always be used as an adjective, not as a noun.
- The generic name for the products/services the marks identifies should be used in close association with it and at least once at the mark's most prominent appearance on the product, labeling, and/or in advertising; the generic name should be short and in lower case or other non-distinctive lettering.
- The mark should not be used in the plural or possessive form.

- The mark should be used in a manner that distinguishes it from surrounding text by depicting it in italics, capital letters, or bold-face type, or by using initial capital letters, by underlining, or placing quotations around it.
- If federally registered, the registration notice (®) should be used in close association with it; if unregistered, the designation <sup>TM</sup> may be used.

## 10.4 PATENTS

### (a) General

A patent gives a software company the ability to control who makes, uses, and sells software without regard to whether it is copied or independently created and regardless of the mark that identifies it. Like copyright, this kind of protection does not extend to the idea underlying a software program but the way an idea is manifested. However, unlike copyright, it is a basis for a software company to challenge the way someone else's software works. This kind of protection is broader and stronger than copyright and trademark protection, but more difficult to obtain and lasts for a much shorter time.

### (b) Nature of a Patent

A patent is a federally granted exclusive right to prevent making, using, and selling an invention. The U.S. Patent and Trademark Office is responsible for granting this right. Terminology relevant to this right includes the following:

- *Patentable invention*—an invention eligible for patent protection
- *Patented*—indicates an invention is the subject of a patent
- *Patent Pending*—indicates an invention is the subject of a pending patent application but not yet protected by patent
- *Shop right*—an employer's right to use an employee's invention developed on company time, using company resources, or by reason of an employee's implied grant of a license

### (c) Inventions that Can Be Patented

To qualify for a patent, an invention must be within one or more of the classes of patentable subject matter designated by the Federal Patent Act. This subject matter must be a (a) process, (b) machine (i.e., mechanical device or apparatus), (c) product, (d) composition of matter, or (e) an improvement of these things.

Furthermore, the invention must be (a) conceived (b) useful (c) novel (i.e., not previously known, used, or patented, or described in a printed publication) and (d) nonobvious to someone possessing ordinary skill in the area of the invention.

In addition to the foregoing, there must be some proof conception has occurred. This is referred to as reduction to practice and can take one of two forms. It can exist

in a physical embodiment that is operable, or it can be described in a manner that is sufficiently instructive so it can be applied in practice by a person skilled in the art.

For computer software, the biggest hurdle to get over to obtain patent protection is satisfying the statutory subject matter requirement. The law continues to evolve on this topic.

Years ago, software was unpatentable because it was characterized as being directed to the functions of a machine or a process that could be performed mentally. Generally, the courts and U.S. Patent and Trademark Office say a program in the nature of a mathematical algorithm may be patentable if it controls a physical process or apparatus. However, a program that consists principally of an algorithm is likely to be viewed as nonstatutory subject matter and nonpatentable. Similarly, programs that constitute methods or processes not involving specific apparatus would not qualify for patent protection.

#### (d) Obtaining a Patent

A patent is granted only by the federal government and only if the U.S. Patent and Trademark Office determines an invention is sufficiently inventive to qualify for the exclusive right noted earlier. This involves that agency's examination and evaluation of a patent application for the invention. This kind of application consists of a written detailed disclosure of the invention including drawings and specific claims that define the invention's scope.

Generally, a patent search is conducted as a first step in seeking a patent and before preparing and filing a patent application. This is done by reviewing the U.S. Patent and Trademark Office patent records with the objective of learning whether someone has already patented the invention or if has been disclosed by information already known.

#### (e) Ownership of a Patent

Generally, in the United States the first person to make the invention is entitled to a patent for it, not the first person to file a patent application for the invention. There are some exceptions. If an earlier inventor abandoned, suppressed, or concealed an invention, a later inventor of the same invention may be entitled to a patent for it.

Only the inventor, or someone the inventor authorizes, can file a patent application. If someone other than the inventor files, the patent will be issued to the inventor nonetheless.

To qualify as an inventor, an individual must develop the conception of the invention. When two or more individuals do this, they become co-inventors and can be joint owners of the resulting patent.

An employee can assign an invention and patent to his/her employer. However, there may be no duty to do so in the absence of a signed written agreement providing for assignment or he or she has no fiduciary obligation to the employer that requires assignment. An employee hired to invent has such an obligation and so may a corporate director or officer.

If an employer wants to own an employee's invention and resulting patent, the employer should require employees to sign an agreement to this effect. However, some states have statutes that limit the kind of inventions subject to such an agreement.

The U.S. government can own inventions a federal employee makes during working hours or with government materials, funds or information or at government facilities, or which bear a direct relation to or as part of the employee's official duties.

Similarly, the U.S. government may require an ownership transfer or automatically acquire an irrevocable royalty-free license for an invention developed by persons who are not federal employees when this happens under federal grants or funding.

#### (f) Term of Patent Protection

A patent can last 20 years from the filing date. This is possible if the patent owner makes periodic maintenance fee payments to the U.S. Patent and Trademark Office, at intervals of 3.5, 7, 11, and 14 years from issuance. If a maintenance payment is missed, the patent will lapse.

#### (g) Patent Notice

A patent notice consists of wording that should appear on a patented item or on packaging for it. It can be in the form of the word *Patent* or abbreviation *Pat.* followed by a number of U.S. Patent and Trademark Office assigns to the patent.

*Patent Pending* and *Patent Applied For* can be used on items covered by a pending patent application. This is done to give notice that making, using, or selling the item will be infringing after a patent is granted.

Failure to use a patent notice will not result in the loss of rights although this can prevent a patent owner from receiving certain remedies for infringement. On the other hand, there is a statutory penalty for falsely marking an item with a patent notice when a patent or pending patent application does not cover it.

#### (h) Patent Infringement

Whoever makes, uses, or sells a patented invention within the United States during the patent term without the patent owner's authority, infringes the patent. However, there is a limitation on the *use* or *sale* exclusivity right. Someone who purchases a patented item from an authorized seller has a right to use and resell it without infringing the patent.

Inducing someone to infringe a patent can also be patent infringement.

#### (i) Patent Protection in Foreign Countries

Like a trademark, ownership of a U.S. patent does not automatically extend protection to foreign countries or insure that a patent can be obtained for the invention outside the United States. Patent protection must be obtained on a country by country basis in accordance with applicable laws, rules, and practices where protection is desired.

## 10.5 PROTECTION OF TRADE SECRETS

### (a) Overview

Trade secret protection is available for software information and material that is not known publicly. As long as it is maintained, confidential and/or secret information and material can be protected as such. However, protection does not prevent its independent discovery, or learning about it by decompiling, reverse engineering, or by other legitimate means. This protection gives a software company the right to prevent other persons from making unauthorized uses and disclosures of information and material it treats and maintains confidential and/or secret. But unlike copyright and patent trade secret protection applies to and covers ideas, not merely how they are expressed or the way they are embodied in tangible formats or processes.

Furthermore, there is no specific period of or federal statute that grants protection or the exclusive right to use as with copyright and patent, although both those kinds of protection may also apply to information and material protected as confidential and/or secret. But once a patent issues, the information it discloses is no longer secret and cannot be protected as such. State law and case precedent govern this protection, not federal law.

### (b) Nature of a Trade Secret

A trade secret is something that is kept confidential and not a matter of public knowledge or of general knowledge in an industry. It has actual or potential independent economic value because it is not generally known or readily ascertainable by proper means by persons who can obtain economic value from its disclosure or use. A key and critical factor that determines whether a trade secret exists is whether a business treats and maintains it as secret.

A trade secret may consist of any formula, pattern, device, or compilation of information used by a business and which gives it an opportunity to obtain an advantage over competitors who do not know or use it. For instance, it can be: customer and supplier names, addresses, and telephone numbers; the whole or any portion or phase of any scientific or technical information, design, process, procedure, and/or formula; business and financial information; product specifications; the contents of a pending patent application; tolerances; testing procedures; equipment a business uses including, among other things, computer software and hardware; market studies; drawings; flow charts; pricing information; know-how; and research a business conducts.

### (c) Eligibility for Trade Secret Protection

Factors courts consider in connection with determining whether trade secret protection applies to particular information and/or material include the following:

- Whether a business has a policy that covers trade secret protection and the extent of measures it takes to safeguard the secrecy of its information, including a requirement

that employees sign a nondisclosure agreement, limiting access to it, marking material that contains it with the wording *Trade Secret* or *Confidential*

- The extent to which information is known outside a business and whether it discloses it to outsiders (e.g., consultants, suppliers, customers, and others) under the terms of a non-disclosure agreement
- The value of the information to the business and its competitors
- The ease or difficulty with which the information could be properly acquired or duplicated by others fairly (e.g., do products themselves completely disclose the information)
- The amount of time, energy, effort, and cost a business expends to develop the information

Although many concepts and ideas may be public knowledge, courts have upheld trade secret protection for (1) specific ways to implement ideas and, (2) combinations of known concepts and ideas.

Absolute secrecy is not required and novelty or invention are unnecessary, which is not the case for patent protection. On the other hand, after secret information becomes publicly available, protection is lost.

#### **(d) Nature of Trade Secret Protection**

This kind of protection does not give the owner the exclusive right to use qualifying information and material. Simply, it is the right to prevent use and disclosure by persons who obtain it improperly, by misappropriation, or as a result of the breach of a confidential relationship concerning it with the owner. Improper means includes theft, bribery, misrepresentation, breach or inducement of a duty to maintain secrecy, or espionage through electronic or other means.

Misappropriation means obtaining another person's trade secret by someone who knows or has reason to know the secret was acquired by improper means. Similarly, misappropriation can occur when a person acquires information under circumstances giving rise to a duty to maintain its confidentiality or limit its use, or when it is derived from or through someone who was under a duty not to disclose.

A confidential relationship can exist between two or more persons through agreement, as a result of employment or a partnership, or in other instances when there is an understanding information is disclosed in confidence.

#### **(e) Obtaining Trade Secret Protection**

A software company desiring protection for its information as secret acquires it merely by treating and maintaining qualifying information secret. There is no requirement, state or federal, to record or file documents concerning the information anywhere. Everyone who has information that qualifies for this type protection can claim it.

### (f) Term of Trade Secret Protection

Information and material can be protected as trade secrets as long as it is maintained secret. Trade secret protection is not necessarily limited to a specific geographic region or the United States. Its existence depends upon the law of the state and/or country where protection is desired and can vary in terms of what can be protected and the degree of protection.

### (g) Unavailability of Trade Secret Protection for Information

Persons who independently develop or learn about information a business treats as secret, without getting it from the business or someone who has an obligation to keep it secret, can use it and not violate anyone's trade secret rights.

Similarly, persons who learn about information through fair and proper means (e.g., reverse engineering, decompiling, analyzing) can use it without violating a trade secret owner's rights covering it.

In addition to the foregoing, a statute of limitations defense may prevent a business from stopping another person's unauthorized use or misappropriation of its information. This may be the case if the owner does not file a lawsuit concerning the use or misappropriation of its information. This may be the case if the owner does not file a lawsuit concerning the use or misappropriation within the time period the applicable statute specifies. This period varies from state to state and can range from one to six years or more.

Finally, if a business does not maintain or keep information confidential, or it is generally known publicly, it is arguable there is no right to legally limit its use by other persons.

### (h) Use of Notice or Agreement to Protect Information

There is no requirement that specific wording or any symbol be used on or in connection with information and material for which trade secret protection is desired. Nonetheless, many businesses mark material with the designation *Confidential*, *Proprietary Information*, or words of similar import to let people know it is protected.

A **Non-Disclosure Agreement** can provide for specific protection and limit the information-recipient's right to use or tell other people about information without permission. It can say the owner is entitled to injunctive relief prohibiting unauthorized use and disclosure plus a money payment to the owner and attorney fees to enforce the agreement, if the information recipient breaches. Oftentimes, this kind of agreement will also entitle an owner to a temporary restraining order and preliminary injunction without need to post a bond with the court.

### (i) Trade Secret Violations

Improper or wrongful appropriation of information protected as secret violates the owner's rights, as does breach of an agreement prohibiting unauthorized use and



disclosure. Enforcing rights can involve filing a lawsuit to obtain injunctive relief and damages. However, these remedies may be applicable only to the information-recipient. Thus, if that person wrongfully uses or discloses secret information to other persons without the owner's permission, the owner may be unable to prevent their use unless there exists a contractual relationship between the owner and those persons or there is some legal obligation on their part not to use it without the owner's permission.

Some statutes say an owner can recover the misappropriator's unjust enrichment resulting from use of the information in addition to injunctive relief and the owner's actual losses. Also it is possible a court may award punitive damages.

## 10.6 SOFTWARE AGREEMENTS

### (a) General

Many software businesses routinely engage in transactions involving software products and related services without considering or giving proper attention to legal issues that may affect them. For whatever reason this happens, this practice has some inherent and potentially serious risks that can be avoided by using appropriate written agreements, including purchase orders that contain terms and conditions and non-disclosure agreements.

Often these risks exist because of the possibility a party to the transaction or someone else will unexpectedly but legitimately assert an applicable legal right not discussed or thought about. A consequence might be undesirable restrictions or absolute prohibitions upon use of software, which is something a written agreement could have prevented. In other instances, these risks arise because the parties to such transactions have not provided for known or unforeseen contingencies that can arise in their dealings with each other. For example, the extent of maintenance and support services, the costs, and whether they are available are left to ad hoc dealings when there is no existing agreement to refer to that could have covered this.

By learning applicable legal rights (discussed in earlier chapter subsections) and how they can affect many software-related transactions as well as by reviewing the software agreements in this chapter and reading descriptions of them below, the reader should be equipped with a fundamental understanding about some of the legal issues associated with developing, purchasing, licensing, and distributing software.

### (b) Software Development Agreements

A properly drafted software development agreement contemplates the design development and delivery of software for specific identified needs. To a certain degree it can be used like a road map giving direction to accomplish a desired result. This type of agreement is frequently used to contract for the creation of custom software when existing software is not suitable as is or cannot be modified (i.e., *customized*) for a particular function, activity, or project.

This kind of agreement should define the software to be delivered by setting forth a detailed design specification and general functional description as a framework for what the developer must do. Preferably, this description will be in terms that are easily understood and not technical. In addition, among other developer representations it should contain an assurance by the developer the software will be error-free for a certain time.

Among other provisions, a software development agreement should cover are those that concern a timetable for implementation, periodic written developer progress reports, the extent of user involvement in developing the software, terms and conditions for change orders, payment schedules, an acceptance test procedure, rights ownership and the extent of the user's right to use the software, data conversion responsibility, programming language, training, documentation, source code delivery or access, updates and revisions, confidentiality, and the usual representations, warranties, indemnity, assignment, and notice provisions.

### (c) License Agreements

A software license establishes the terms and conditions for one person's use of software owned by someone else and generally controls the relationships between them regarding the software. A license can be for off-the-shelf software (i.e., *shrink-wrap license*), custom software, customized software, and designated sites (i.e., *site license*).

A shrink-wrap license is enclosed with shrink-wrapped packaged software and contains what appear to be unnegotiable terms and conditions a purchaser is said to agree to by opening the package. A site license provides volume discounts for multiple copy users at a site or can authorize such users to duplicate software and documentation for the site for a flat fee.

In a license relationship, ownership of the legal rights applicable to software remains with the person who authorizes use (i.e., *licensor*), even though the user (i.e., *licensee*) may own or possess disks and documentation and may have paid substantial amounts to obtain and use it. The licensor may be the software developer or someone who acquired rights ownership from the developer. Alternatively, the licensor may be someone who the developer authorizes to license the software to others (e.g., a *distributor*).

A license can be exclusive, which means the licensor cannot authorize persons other than the licensee to use the software for those uses and in those areas the license covers. Or a license can be nonexclusive, which means there is no restriction on the licensor's right to authorize the same uses by many licensees at the same time and throughout the same area. Whether exclusive or nonexclusive, a license can specify the kinds of hardware as well as hardware locations where the software can be used.

Among other provisions a software license should cover are those that concern the license period, renewal options, permitted uses, the geographic area throughout which use can occur, who can service the software, training, whether the licensee can make copies, who can modify, rights ownership for modifications, fees and payment

schedules, accounting provisions for royalty payment obligations, source code access, confidentiality, right to assign and sublicense, maintenance and support, updates and revisions, and the usual representations, warranties, indemnity, assignment, and notice provisions.

#### (d) Distribution Agreement

A software distribution agreement comes into play when a software developer or other software rights owner is willing to authorize marketing and licensing of that person's software by someone else, such as a software distributor. Ordinarily, this happens, but not always, when the rights owner lacks sufficient financial resources, staff, interest, or ability to make the software available to end users.

By means of this relationship, the rights owner can be insulated from end users and shift responsibility to the distributor for handling most, if not all, aspects of dealing with them. A result is licensing agreements are between the distributor and end users, not the software rights owner and end users. Under these circumstances the distributor is the rights owner's licensee and becomes a sublicensor who grants sublicenses to end users who are sublicensees.

Many distribution relationships give the distributor the right to modify and enhance software and/or integrate it with equipment as well as package it with third-party software, in connection with sublicensing its use. By doing this, the distributor can become a value-added reseller who is a source for a variety of software and equipment or only for specific products.

Typically, a distributor will want an exclusive right to license software nationwide or for particular territories with minimum quotas and no best efforts obligation or requirement to spend a certain amount of time, effort, and money marketing the software. In some cases, these objectives may be contrary to those of the rights owner.

Often, instead of acquiring disks and documentation from the rights owner, a distributor will obtain the right to duplicate both items using masters the rights owner provides for this purpose.

Among other provisions, a software distribution agreement should cover are those that concern the agreement term, renewal, scope of rights granted, manner of distribution, advertising and promotional obligations, pricing, distributor payments to the rights owner, accounting and bookkeeping requirements, confidentiality, source code access, maintenance and support responsibilities, modifications and revisions, termination, disclaimers, and the customary representations, warranties, indemnity, assignment, and notice provisions.

#### (e) Maintenance Agreements

Maintenance agreements are intended to provide for correcting software defect (i.e., *bugs*) that may arise long after software is believed fully developed. Representative of ways this can be done are by providing on-site service, delivering corrected software for user installation, or through telecommunications equipment.

In addition, a maintenance agreement can cover software modifications in the form of updates and minor enhancements as well as telephone support to correct software problems by telephone conference. Telephone support is also for answering user questions and/or providing instruction about software, during specified time periods and on certain days of the week (e.g., 9:00 A.M. to 5:00 P.M. EST, Monday through Friday).

Some maintenance agreements cover training, software installation, replacement disks and/or documentation, custom programming services, and revisions, as well as hardware and related supplies.

Among other provisions, a maintenance agreement should cover are those that describe the scope of services to be provided and applicable charges, kinds of defects covered and excepted, response time, facility access, user responsibilities regarding defect notification, availability of updates and revisions, and the usual representations, warranties, indemnity, assignment, and notice provisions.

#### (f) Software Escrow Agreements

In many cases, access to software source code is important and may be critical to a licensee so it can be used to modify software if the rights owner or vendor is unavailable to do this, goes bankrupt, or for in-house maintenance purposes. On the other hand, a competing interest of the rights owner is to make the licensee dependent on the owner or vendor for maintenance and modifications, to prevent unauthorized duplication of the software, and to prevent the loss of any trade secret protection for the code.

A middle ground to these somewhat opposite positions is to place the source code in trust by giving it to an independent preferably neutral third party, such as a bank, lawyer, or anyone else who will and can act as an escrow agent. This can be accomplished by means of a software escrow agreement. This type of agreement establishes the framework and criteria for the licensee's access to the code through the escrow agent and can require the rights owner to continually provide the escrow agent with all updates and code revisions.

An owner's concern about this arrangement is the escrow agent's ability to safeguard the code. Similarly, a licensee has concerns that may arise from uncertainty whether the escrowed code is the same as that for the licensed software, is current, or complete. Examination of the code by an escrow agent familiar with and skilled in analyzing software can relieve any licensee anxiety in this regard.

Another licensee concern is associated with the consequences of a rights owner bankruptcy and a trustee's ability to reject the source code agreement and remove the code from the escrow agent. A possible way around this is to have the rights owner transfer ownership to the escrow agent, which would allow the agent to deal with the code in the event of a rights owner bankruptcy.

In accordance with specified conditions in the escrow agreement, the escrow agent is authorized to provide a licensee access to the code. Usually, this will happen if the rights owner stops maintaining or is unable to maintain the code, goes out of business or bankrupt, or otherwise does not make the code available for the licensee's benefit.

Among other provisions a software escrow agreement should include are those that concern code updates and testing, triggering events for access by a licensee, escrow agent obligations, compensation to the escrow agent, confidentiality, rights ownership, dispute resolution, and the usual representations, warranties, indemnity, assignment, and notice provisions.

## 10.7 SOFTWARE LIABILITY ISSUES

### (a) General

Software defects, failure to conform to specifications, confidentiality breaches, and unauthorized usage seem to be the most common bases for liability claims concerning software. To deal with them, it is necessary to look at the provisions of written agreements, if any, concerning the software in question and applicable statutes. Usually, this involves an evaluation of warranty and representation clauses, disclaimers, and software descriptions and/or specifications, among other agreement provisions. Regarding statutes it requires reviewing those that cover the sale of goods, as well as those that govern deceptive trade practices, trade secrets, copyright, trademarks, and patents.

### (b) Warranties and Representations

Liability claims relating to warranties and representations can be based upon agreement provisions, case law precedent, and/or upon state and federal statutes.

General contract law can apply to breach of agreement warranties and/or representations. Typically, a breach occurs when software is not timely or completely delivered, is installed improperly, infringes proprietary rights, is not maintained or supported, or does not work properly, or fails to perform despite agreement language that promises otherwise. Defenses to such claims can be based upon implied warranty disclaimers in agreements, conditions not satisfied by the claimant, the statute of limitations (delay in filing suit beyond an applicable statutory period), or on other grounds.

Sometimes, tort (i.e., wrongful act subject to civil action) law based upon case law precedent can be the grounds for a claim without regard to a contractual breach. For instance, this might be a claim alleging negligence (i.e., failure to exercise a duty of care), misappropriation, strict liability, misrepresentation, fraud, or professional malpractice (applicable to computer consultants).

From a statutory perspective, the Uniform Commercial code adopted in varying formats by states, state consumer product warranty law, state deceptive trade practice acts, state software theft statutes, state trade secret statutes, and federal laws like the Magnuson-Moss Act, and the Trademark Act of 1946 are representative of laws that apply to warranties and to representations concerning software.

### (c) Infringement

The widespread availability of software as well as ease, speed, and low cost of reproducing it combined with the ability to do so in a secluded manner results in a very high incidence of unauthorized copying, more accurately referred to as infringement.

This is occurring with increasing regularity at the consumer as well as business level and something that confronts the software industry daily. In 1991, losses attributed to infringement approximated \$1.2 billion.

With knowledge of such activity and the objective of substantially reducing losses caused by it, the software industry, through the Software Publishers Association (SPA) and Business Software Association (BSA) among other organizations, began its efforts in the mid-1980s to eliminate this problem. This is being done by an educational campaign to make people aware unauthorized copying of software is illegal. In addition, these efforts involve an active litigation program that has resulted in more than 100 lawsuits by the SPA alone within a three year period, some resulting in seizure orders and settlements of more than \$500,000.

A large number of infringements these organizations learn about is the result of information disgruntled employees provide them about their employers' unauthorized copying. Others become known through verified tips that lead to surprise visits by industry representatives approved by court order and accompanied by federal marshals.

This kind of action and litigation relies primarily upon copyright protection, with trade secret misappropriation and patent rights as a basis in many cases. Information given in preceding chapter subsections explains how these kinds of protection work. Of equal importance, it indicates that knowledge about the legal rights applicable to software is critical not only from an offensive standpoint but also from the perspective of avoiding expensive litigation and penalties that can be imposed for unauthorized copying or the misappropriation of trade secrets.

#### (d) Remedies and Penalties

The consequences for breaching warranties, misappropriation, misrepresentation, and other wrongful acts, as well as infringement, vary depending upon the particular facts of each situation. However, some of the remedies that can be awarded and penalties imposed are: temporary restraining orders; preliminary and permanent injunctions; court orders for impoundment and destruction of infringing software as well as the equipment and supplies used to produce it; statutory damages ranging from \$500 to \$100,000; treble damages; fines and imprisonment; an infringer's profits plus rights owner's damages; attorney fees and court costs; as well as consequential, compensatory, and punitive damages.

It is also possible to bar importation of infringing software and related items into this country through action the U.S. Customs Service takes.

## 10.8 REVERSE ENGINEERING

### (a) General

Notwithstanding copyright and trade secret protection for software, case and statutory law recognize the right to use the software in "reverse engineering" under specific circumstances without the rights owner's authorization or permission and without

liability. Generally, *reverse engineering* is using software for the purpose of learning the processes used in the development of the software to facilitate interoperability and/or create competitive product. This right exists unless contractual limitations prohibit or limit the right.

### (b) Copyright Exception

If the nature of a work requires intermediate copying to understand the ideas and processes in copyrighted software, that nature supports a fair use for intermediate copying. Thus, reverse engineering object code to discern the unprotectable ideas in a computer program can be without liability. In other words, if disassembly is the only way to gain access to the ideas and functional elements embodied in a copyrighted computer program, and if there is a legitimate reason for seeking such access, disassembly is a fair use of the software, as a matter of law.

To invoke the fair use exception, an individual must possess an authorized and lawfully made copy of the software.

### (c) Trade Secret Exception

Trade secret law does not forbid the discovery of a trade secret by fair and honest means, such as by independent creation. There would be no liability for reverse engineering of software to learn and use information about it that is protected as trade secret so long as certain conditions are satisfied. The person doing so must use a lawfully obtained and authorized copy and should not be party to a nondisclosure, confidentiality, or trade secret agreement that precludes such activity. Furthermore, such person must not have obtained the information from someone known to be bound by such an agreement or who misappropriated it.

### (d) Semiconductor Chip Exception

The legal protection applicable to software that may be embodied in the form of a mask work protected by a federal statute is known as *the Semiconductor Chip Protection Act of 1984*. Nevertheless, it is not an infringement of the exclusive rights of the owner of the mask work for someone to reproduce the mask work solely for the purpose of teaching, analyzing, or evaluating the concepts or techniques embodied in the mask work or the circuitry, logic flow, or organization of components used in the mask work. However, this is so only if the person who performs the analysis or evaluation incorporates the results in an *original mask work* which is made to be distributed.

A *mask work* is a series of related images, however fixed or encoded (i) having or representing the predetermined, three-dimensional pattern of metallic, insulating, or semiconductor material present or removed from the layers of a semiconductor chip; and (ii) in which series the relation of the images to one another is that each image has the pattern of the surface of one form of the semiconductor chip product.

A *semiconductor chip* is a product having two or more layers of metallic, insulating, or semiconductor material, deposited or otherwise placed on, or etched away, or otherwise removed from, a piece of semiconductor material in accordance with a predetermined pattern and intended to perform electronic circuitry functions.

### (e) Contractual Exception

Inclusions of provisions such as the following in agreements concerning software can restrict the right to reverse engineer that would otherwise exist:

Licensee shall not: (i) reverse engineer, decompile, disassemble, modify, or make any attempt to obtain the source code for the system or create derivative works from the system or documentation, or (ii) modify, adapt, or translate, or copy, duplicate, or otherwise reproduce all or any portion of the system or documentation, except as expressly provided herein.

Licensee acknowledges and agrees that the Licensed Software and all of the Licensor's information and material disclosed to Licensee has substantial monetary value and shall be maintained by Licensee in strict confidence. Consequently, Licensee shall (i) not reverse engineer, decompile, copy, modify, or distribute the Licensed Software or any part thereof or permit any third party to take any such action; (ii) ensure that the Licensed Software, the trade secrets, the confidential, and the proprietary information shall not be disclosed, divulged, or delivered by Licensee's offices, employees, agents, or other representatives to any persons other than Licensee's employees, or agents (if any), who have a need for access in order to use them as permitted by this Agreement and who agree to and clearly understand their obligation to maintain the confidentiality thereof and to restrict use solely for the purposes designated under this Agreement.





## APPENDIX 10-A

# Illustrative Software License Agreement

This Software License Agreement (“Agreement”) is entered into between \_\_\_\_\_ (“Licensor”) and \_\_\_\_\_ (“Customer”).

### 1. Definitions

- a. *Software*. The Term “Software” shall mean the computer program in object code only and use manuals described in the specifications set forth in Exhibit A. The term “Software” includes any corrections, bug fixes, enhancements, updates or other modifications, including custom modifications, to such computer program and user manuals.
- b. *Certificate of Installation*. The term “Certificate of Installation” shall mean a written notice, signed by Licensor, certifying that the Software has been installed and that the Software substantially complies with the specifications set forth in Exhibit A.

### 2. License

- a. *Grant of License*. Licensor grants Customer, pursuant to the terms and conditions of this Agreement, a perpetual, nonexclusive, nontransferable license to use the Software.
- b. *Authorized Equipment and Site*. Customer shall use the Software only on the computer equipment (“Authorized Equipment”) at the location (“Site”) listed below:

Authorized Equipment (Manufacturer, Model and CPU):

Site:

Customer may temporarily transfer the Software to back-up computer equipment at a location different from the Site if the Authorized Equipment is inoperative for more than twenty-four (24) hours and Customer provides Licensor advance notice, in writing, identifying the new computer equipment and its location.

- c. *Restrictions on Use.* Customer agrees to use the Software only for Customer's own business. Customer shall not (i) permit any parent, subsidiaries, affiliated entities or third parties to use the Software, (ii) process or permit to be processed the data of any other party, (iii) use the Software in the operation of a service bureau, or (iv) allow access to the Software through any terminals located outside of Customer's Site.
- d. *Copies.* Customer, solely to enable it to use the Software, may make one archival copy of the Software's computer program, provided that a copy shall include Licensor's copyright and any other proprietary notices. The Software delivered by Licensor to Customer and the archival copy shall be stored at Customer's Site. Customer shall have no right to copy, in whole or in part, the software. Any copy of the Software made by Customer is the exclusive property of Licensor.
- e. *Modifications, Reverse Engineering.* Customer agrees that only Licensor shall have the right to alter, maintain, enhance or otherwise modify the Software. Customer shall not disassemble, decompile, or reverse engineer the Software's computer program.
- f. *Material Terms and Conditions.* Customer specifically agrees that each of the terms and conditions of this Section 2 are material and that failure of Customer to comply with these terms and conditions shall constitute sufficient cause of Licensor to terminate this Agreement. The presence of this subsection 2.f shall not be relevant in determining the materiality of any other provision or breach of this Agreement by either party.

### 3. Delivery, Installation, Data Conversion, Testing, and Acceptance

- a. *Delivery.* Licensor shall deliver the Software to Customer's Site designated in Subsection 2.b within twenty (20) days of the effective date of this Agreement.
- b. *Installation.* Within ten (10) days after the effective date of this Agreement, Customer shall (i) provide the Site the computer equipment and all required peripherals identified in Exhibit A to this Agreement, and (ii) obtain and install thereon all required third party software identified in Exhibit A to this Agreement. Customer agrees that such computer equipment, peripherals and third party software shall be installed and fully operational before Licensor begins installation of the Software. Licensor shall install the Software at the Site within the next ten (10) days. Any installation time incurred by Licensor as a result of Customer's delay or failure to comply with this Agreement shall be charged to Customer at Licensor's then-current hourly rates. Customer shall grant Licensor access to the Site and the computer system for the period of time required for such installation and shall give Licensor priority use of such system during installation. Upon completion of installation, Licensor shall deliver to Customer a Certificate of Installation.
- c. *Data Conversion.* Customer shall be solely responsible for data conversion, data entry, and verification of data.

- d. *Testing.* Customer shall have thirty (30) days, commencing upon delivery of the Certificate of Installation, to test the Software for substantial compliance with the specification set forth in Exhibit A (the “Testing Period”). During the Testing Period, Customer shall immediately provide notice to Licensor of any failure of the Software to substantially comply with such specifications. Upon receipt of such notice, Licensor shall use its best efforts to remedy the failure and install a fix within fourteen (14) days. If such notice is provided by Customer to Licensor, the Testing Period shall be extended through the thirtieth (30th) day after Licensor’s last receipt of notice of a failure of the Software or ninety (90) days after the delivery of the Certificate of Installation, whichever occurs first.
- e. *Acceptance.* Acceptance shall occur (i) upon Customer’s delivery of notice to Licensor that the Software substantially complies with the specifications set forth in Exhibit A, or (ii) if Customer does not provide notice of a failure of the Software within thirty (30) days of the close of the Testing Period, then upon the close of the Testing Period.

#### 4. License Fee

- a. *In General.* In consideration for the license granted by Licensor under this Agreement. Customer shall pay Licensor a fee as set forth in Exhibit B (the “License Fee”).
- b. *Payment Terms.* Each installation of the License Fee shall be due and payable in accordance with the Payment Schedule set forth in Exhibit B. All amounts not paid within ten (10) days of the due date shall bear interest at the rate of \_\_\_\_\_ percent (\_\_\_\_\_% ) per month, or at the highest rate allowed by law, whichever is less, from the date due until paid. Failure of Customer to pay any amounts when due shall constitute sufficient cause for Licensor to terminate this Agreement.
- c. *Taxes.* Customer shall, in addition to the other amounts payable under this Agreement, pay all sales, use, value-added or other taxes, federal, state or otherwise, however designated, which are levied or imposed by reason of the transactions contemplated by this Agreement.

#### 5. Ownership

- a. *Title.* Customer and licensor agree that Licensor owns all proprietary rights, including patent, copyright, trade secret, trademark, and other proprietary rights, in and to the Software and any corrections, bug fixes, enhancements, updates or other modifications, including custom modifications, to the Software, whether made by Licensor or any third party.
- b. *Transfers.* Under no circumstances shall customer sell, license, publish, display, distribute, or otherwise transfer to a third party the Software or any copy thereof, in whole or in part, without Licensor’s prior written consent.

## 6. Confidential Information

Customer agrees that the Software contains proprietary information, including trade secrets, know-how, and confidential information, that is the exclusive property of Licensor. During the period this Agreement is in effect and at all times after its termination, Customer and its employees and agents shall maintain the confidentiality of this information and not sell, license, publish, display, distribute, disclose or otherwise make available this information to any third party nor use such information except as authorized by this Agreement. Customer shall not disclose any such proprietary information concerning the Software, including any flow charts, logic diagrams, user manuals and screens, to persons not an employee of Customer without the prior written consent of Licensor.

## 7. Use of Training

Customer shall limit the use of the Software to its employees who have been appropriately trained. Licensor shall provide, at a mutually convenient time, a \_\_\_\_\_ (\_\_\_\_\_) day training program at no charge at Customer's Site for up to \_\_\_\_\_ (\_\_\_\_\_) employees of Customer.

## 8. Warranty

- a. *Scope of Warranty.* Licensor warrants to Customer that for a period of ninety (90) days commencing upon Acceptance, the Software will substantially comply with the specifications set forth in Exhibit A. During this warranty period, Licensor shall also provide Customer the support and maintenance services set forth in the Maintenance Agreement appended hereto as Exhibit C. After expiration of the warranty period, Licensor shall provide support and maintenance for the Software pursuant to the terms of such Maintenance Agreement.
- b. *Disclaimer of Any Other Warranty.* THE LIMITED WARRANTY SET FORTH IN SUBSECTION 8.a IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANT ABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

## 9. Limitations Period

No arbitration or other action under this Agreement, unless involving death or personal injury, may be brought by either party against the other more than one (1) year after the cause of action arises.

## 10. No Consequential Damages

Licensor shall not be liable to Customer for indirect, special, incidental, exemplary, or consequential damages (including, without limitation, lost profits) related to this Agreement or resulting from Customer's use or inability to use the Software, arising from any cause of action whatsoever, including contract, warranty,

strict liability, or negligence, even if Licensor has been notified of the possibility of such damages.

### 11. Limitation on Recovery

Under no circumstances shall the liability of Licensor to Customer exceed the amounts paid by Customer to Licensor under this Agreement.

### 12. Indemnification

Licensor shall indemnify and hold harmless Customer from and against any claims, including reasonable legal fees and expenses, based upon infringement of any United States copyright or patent by the Software. Customer agrees to notify Licensor of any such claim promptly in writing and to allow Licensor to control the proceedings. Customer agrees to cooperate fully with Licensor during such proceedings. Licensor shall defend and settle at the sole expense all proceedings arising out of the foregoing. In the event of such infringement, Licensor may replace, in whole or in part, the Software with a substantially compatible and functionally equivalent computer program or modify the Software to avoid the infringement.

### 13. Term and Termination

- a. *Effective Date.* This Agreement and the license granted hereunder shall take effect upon the date that the last party executes this Agreement.
- b. *Termination.* Each party shall have the right to terminate this Agreement and the license granted herein upon the occurrence the following events (an “Event of Default”):
  - (i) In the event the other party violates any provision of this Agreement; or
  - (ii) In the event the other party (A) terminates or suspends its business, (B) becomes subject to any bankruptcy or insolvency proceeding under Federal or state statute, (C) becomes insolvent or subject to direct control by a trustee, receiver or similar authority, or (D) has wound up or liquidated, voluntarily or otherwise.
- c. *Notice and Opportunity to Cure.* Upon the occurrence of an Event of Default, a party shall deliver to the defaulting party a Notice of Intent to Terminate that identifies in detail the Event of Default. If the Event of Default remains uncurled for thirty (30) days, the party may terminate this Agreement and the license granted herein by delivering to the defaulting party a Notice of Termination that identifies the effective date of the termination, which date shall not be less than thirty (30) days after the date of delivery of the Notice of Intent to Terminate.
- c. *Procedure.* Within ten (10) days after termination of the license, Customer shall return to Licensor, at Customer’s expense, the Software and all copies thereof, delete or destroy all other copies of the Software, and deliver to Licensor a certification, in writing, signed by an officer of Customer, that the software has been returned, all copies deleted or destroyed and its use discontinued.

#### 14. Assignment

Customer shall not assign or otherwise transfer the Software or this Agreement to anyone, including any parent, subsidiaries, affiliated entities, or third parties, or as part of the sale or any portion of its business, or pursuant to any merger, consolidation, or reorganization, without Licensor's prior written consent.

#### 15. Force Majeure

Neither party shall be in default or otherwise liable for any delay in or failure of its performance under this Agreement if such delay or failure arises by any reason beyond its reasonable control, including any act of God, any acts of the common enemy, the elements, earthquakes, floods, fires, epidemics, riots, failures or delay in transportation or communications, or any act or failure to act by the other party or such other party's employee, agents or contractors; provided, however, that lack of funds shall not be deemed to be a reason beyond a party's reasonable control. The parties will promptly inform and consult with each other as to any of the above causes which in their judgment may or could be the cause of a delay in the performance of this Agreement.

#### 16. Arbitration

The parties shall settle any controversy arising out of this Agreement by arbitration in \_\_\_\_\_ in accordance with the rules of the American Arbitration Association. A single arbitrator shall be agreed upon by the parties or, if the parties cannot agree upon an arbitrator within thirty (30) days, then the parties agree that a single arbitrator shall be appointed by the American Arbitration Association. The arbitrator may award attorneys' fees and costs as part of the award. The award of the arbitrator shall be binding and may be entered as a judgment in any court of competent jurisdiction.

#### 17. Notices

All notices under this Agreement are to be delivered by (i) depositing the notice in the mail, using registered mail, return receipt requested, addressed to the address below or to any other address as the party may designate by providing notice, (ii) telecopying the notice by using the telephone number set forth below or any other telephone number as the party may designate by providing notice, (iii) overnight delivery service addressed to the address below or to any other address as the party may designate by providing notice, or (iv) hand delivery to the individual designated below or to any other individual as the party may designate by providing notice. The notice shall be deemed delivered (i) if by registered mail, four (4) days after the notice's deposit in the mail, (ii) if by telecopy, on the date the notice is delivered, (iii) if by overnight delivery service, on the date of delivery, and (iv) if by hand delivery, on the date of hand delivery.

LICENSOR: \_\_\_\_\_

Attention: \_\_\_\_\_

Telecopy No.: \_\_\_\_\_

CUSTOMER: \_\_\_\_\_

Attention: \_\_\_\_\_

Telecopy No.: \_\_\_\_\_

**18. General Provisions**

- a. *Complete Agreement.* The parties agree that this Agreement is the complete and exclusive statement of the agreement between the parties, which supersedes and merges all prior proposals, understandings, and all other agreements, oral or written, between the parties relating to this Agreement.
- b. *Amendment.* This Agreement may not be modified, altered, or amended except by written instrument duly executed by both parties.
- c. *Waiver.* The waiver or failure of either party to exercise in any respect any right provided for in this Agreement shall not be deemed a waiver of any further right under this Agreement.
- d. *Severability.* If any provision of this Agreement is invalid, illegal, or unenforceable under any applicable statute or rule of law, it is to that extent to be deemed omitted. The remainder of the Agreement shall be valid and enforceable to the maximum extent possible.
- e. *Governing Law.* This Agreement and performance hereunder shall be governed by the laws of the State of \_\_\_\_\_.
- f. *Read and Understood.* Each party acknowledges that it has read and understands this Agreement and agrees to be bound by its terms.

AGREED:

LICENSOR: \_\_\_\_\_

CUSTOMER: \_\_\_\_\_

Signature \_\_\_\_\_

Signature \_\_\_\_\_

Name \_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_

Address \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_





## APPENDIX 10-B

# Illustrative Shrink-Wrap Software License Agreement

### NOTICE—READ BEFORE OPENING THIS PACKAGE

CAREFULLY READ THE TERMS AND CONDITIONS OF THIS AGREEMENT BEFORE OPENING THIS PACKAGE. OPENING THIS PACKAGE INDICATES YOUR ACCEPTANCE OF THESE TERMS AND CONDITIONS. IF YOU DO NOT AGREE WITH THE TERMS AND CONDITIONS OF THIS AGREEMENT, PROMPTLY RETURN THIS PACKAGE UNOPENED TO THE PLACE OF PURCHASE FOR REFUND OF THE AMOUNT YOU PAID.

#### 1. Definitions

The Software Product is licensed (not sold) to you, and Vendor owns all copyright, trade secret, patent, and other proprietary rights in the Software Product. The term “Software Product” includes all copies of the \_\_\_\_\_ computer program and its documentation.

#### 2. License

- a. *Authorized Use.* Vendor grants you a nonexclusive license to use the Software Product on a single computer. You may make one copy of the Software Product’s computer program for back-up purposes only.
- b. *Restrictions.* You may not: (1) copy (other than once for back-up purposes), distribute, rent, lease, or sublicense all or any portion of the Software Product; (2) modify or prepare derivative works of the Software Product; (3) use the Software Product in a computer-based services business or publicly display visual output of the Software Product; (4) transmit the Software Product over a network, by telephone, or electronically using any means; or (5) reverse engineer, decompile, or disassemble the Software Product. You agree to keep confidential and use your best efforts to prevent and protect the contents of the Software Product from unauthorized disclosure or use.

- c. *Transfer.* You may transfer the Software Product, but only if the recipient agrees to accept the terms and conditions of this Agreement. If you transfer the Software Product, you must transfer all computer programs and documentation and erase any copies residing on computer equipment. Your license is automatically terminated if you transfer the Software Product.

### **3. Limited Software Product Warranty**

For 90 days from the date of shipment, we warrant that the media (for example, diskette) on which the Software Product is contained will be free from defects in materials and workmanship. This warranty does not cover damage caused by improper use or neglect. We do not warrant the contents of the Software Product or that it will be error free. The Software Product is furnished “AS IS” and without warranty as to the performance or results you may obtain by using the Software Product. The entire risk as to the results and performance of the Software Product is assumed by you. To obtain warranty service during the 90-day warranty period, you may return the Software Product (postage paid) with a description of the problem to Vendor. The defective media in which the Software Product is contained will be replaced at no additional charge to you.

### **4. Remedy**

If you do not receive media which is free from defects in materials and workmanship during the 90-day warranty period, you will receive a refund for the amount you paid for the Software Product returned.

### **5. Disclaimer of Warranty and Limitation of Remedies**

- a. THE WARRANTIES IN THIS AGREEMENT REPLACE ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. WE DISCLAIM AND EXCLUDE ALL OTHER WARRANTIES. IN NO EVENT WILL OUR LIABILITY OF ANY KIND INCLUDE ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, EVEN IF WE HAVE KNOWLEDGE OF THE POTENTIAL LOSS OR DAMAGE.
- b. We will not be liable for any loss or damage caused by delay in furnishing a Software Product or any other performance under this Agreement.
- c. Our entire liability and your exclusive remedies for our liability of any kind (including liability for negligence except liability for personal injury caused solely by our negligence) for the Software Product covered by this Agreement and all other performance or nonperformance by us under or related to this Agreement are limited to the remedies specified by this Agreement.
- d. Some states do not allow the exclusion of implied warranties, so the above exclusion may not apply to you. This warranty give you specific legal rights, and you may also have other rights which vary from state to state.

## 6. Termination

This Agreement is effective until terminated. You may terminate it at any time by destroying the Software Product, including all computer programs and documentation, and erasing any copies residing on computer equipment. This Agreement also will terminate if you do not comply with any terms or conditions of this Agreement. Upon such termination, you agree to destroy the Software Product and erase all copies residing on computer equipment.

## 7. U.S. Government Restricted Rights

The Software Product is provided to the Government only with restricted rights and limited rights. Use, duplication, or disclosure by the Government is subject to restrictions set forth in FAR Sections 52-227-14 and 52-227-19 or DFARS Section 52.227-7013(C)(1)(ii), as applicable. Contractor/Manufacturer is \_\_\_\_\_ [insert name and address].



## APPENDIX 10-C

# Illustrative Software Escrow Agreement

This Software Escrow Agreement (“Escrow Agreement”) is entered into and effective as of this \_\_\_\_\_ day of \_\_\_\_\_, 199\_\_, by and among \_\_\_\_\_, the owner of certain Software (“Owner”), \_\_\_\_\_ (“Escrow Agent”). And \_\_\_\_\_, a licensee of the aforementioned Software (“Licensee”), with reference to the following facts:

- A. Licensee has entered into a Software License Agreement, a copy of which is attached hereto as Exhibit A and the terms of which are made a part hereof, whereby Licensee has the right to use Owner’s computer programs identified therein (“Software”).
- B. Licensee has entered into a Software Maintenance Agreement, a copy of which is attached hereto as Exhibit B and the terms of which are made a part hereof, whereby Owner will support Licensee in the use of Owner’s Software (hereinafter “Software Maintenance”).
- C. The uninterrupted availability of the Software is critical to the Licensee in the conduct of its business.
- D. As a consequence of the foregoing, Owner has agreed to enter into this Escrow Agreement to provide for the availability of the source code, as well as any corrections, changes, modifications, and enhancements to such source code, in accordance with the terms and conditions hereinafter set forth.

NOW, THEREFORE, based upon the premises and respective promises and obligations contained herein, the parties agree as follows:

### 1. Deposits in Escrow

Upon signing this Escrow Agreement and every six months thereafter, Owner shall deposit with Escrow Agent the source code for the Software, including all

relevant commentary, explanations, and other documentation, as well as instructions to compile the source code, plus all revisions to the Software source code encompassing all corrections, changes, modifications, and enhancements made to the Software by Owner (the "Escrow Material"). Within seven (7) days after such deposit with Escrow Agent, both Owner and Escrow Agent shall give written notice of receipt to Licensee. The Escrow Agent is empowered to return to Owner, seven (7) days after the issuance of the written notice of receipt, all previous versions of the Escrow Material. The cost of preparation of the escrow material shall be borne by Licensee, such cost not to exceed \$ \_\_\_\_\_ per deposit.

## 2. Term

This Escrow Agreement shall remain in effect during the term of the Software License Agreement, attached as Exhibit A. The Escrow Agreement, however, shall terminate automatically upon delivery of the Escrow Material to Licensee in accordance with the provisions herein.

## 3. Access to Escrowed Material

Licensee may obtain the Escrow Material upon either of the following conditions:

- (i) Owner is deemed to be in default, as defined herein; or
- (ii) Licensee pays \$ \_\_\_\_\_ to Owner.

## 4. Default by Owner

A default by Owner shall be deemed to have occurred under this Escrow Agreement upon the occurrence of any of the following:

- (i) if Owner has availed itself or, or been subjected to by any third party, a proceeding in bankruptcy in which Owner is the named debtor; an assignment by Owner for the benefit of its creditors; the appointment of a receiver for Owner; or any other proceeding involving insolvency or the protection of or from creditors, and same has not been discharged or terminated without any prejudice to Licensee's rights or interests under the Software License Agreement within thirty (30) days; or
- (ii) if Owner has ceased its on-going business operation, or the sale, licensing, maintenance, or other support of the Software; or
- (iii) if any other event or circumstance occurs which demonstrates with reasonable certainty the inability or unwillingness of Owner to fulfill its obligations to Licensee under the Software License Agreement, this escrow Agreement, or the Software Maintenance Agreement between Owner and Licensee, including, without limitation, the correction of defects in the Software.

Licensee shall give written notice by certified mail to the Escrow Agent and Owner of the occurrence of a default hereunder. Unless within fifteen (15)

days thereafter, Owner files with the Escrow Agent its affidavit executed by a responsible executive office clearly refuting each area of claimed fault or showing that the default has been cured, then Escrow Agent shall upon the sixteenth (16th) day deliver to Licensee the Escrow Material and all revisions and additions thereto.

## 5. Obligations of Escrow Agent

- a. Storage. The Escrow Material shall be placed and maintained in a vault located at \_\_\_\_\_.
- b. Control. Control over access to the Escrow Material shall rest with Escrow Agent.
- c. Delivery. Escrow Agent shall make delivery of the Escrow Material to the appropriate party or individual in accordance with the provisions of this Escrow Agreement.
- d. Disclosure. Except as provided in this Escrow Agreement, Escrow Agent agrees that it shall not disclose or otherwise make available to any third party, or make any use of, the Escrow Materials without Owner's prior written consent.

## 6. Owner of Escrow Material

In all events, Owner or its successors or assignees, shall remain the owner of the Escrow Material. Licensee's right to and interest in the Escrow Material shall be as a licensee only.

## 7. Confidentiality

Licensee shall at all times to maintain the confidentiality of the Escrow Material and shall be liable for any breach of confidentiality for which Licensee is responsible. In no event shall Licensee be liable for incidental or consequential damages, including lost profits.

## 8. Compensation of the Escrow Agent

- a. Initial Fee. Upon execution of this Escrow Agreement, Licensee shall make payment to Escrow Agent of reasonable compensation for the escrow service in accordance with Escrow Agent's published fee schedule then in effect. The current fee is \$ \_\_\_\_ per year minimum, and is due and payable at the initial set-up of the Escrow Agreement and escrow service for the first year.
- b. Annual Fee. Thereafter, an annual fee at the then-published rate shall be payable by Licensee on the anniversary date of each succeeding year for which the Licensee seeks to extend this Escrow Agreement. In the event of nonpayment of Escrow Agent's fees by Licensee, Escrow Agent shall give both parties sixty (60) days' notice thereof. If the sixty (60) day notice period elapses without Escrow Agent having received payment from either party, Escrow Agent shall then have the option, without further notice to either party, to terminate this Escrow Agreement and to return to Owner all Escrow Material.



### 9. Indemnification of Escrow Agent

Escrow Agent shall not, by reason of its execution of this Agreement, assume any responsibility or liability for any transactions between Owner and Licensee other than for the performance of Escrow Agent's obligations with respect to the Escrow Material held by it under this Agreement. The party on whose behalf, or pursuant to whose directions the Escrow Agent acts, shall indemnify and hold harmless Escrow Agent from any and all liability, damages, costs, or expenses including reasonable attorneys' fees, which may be sustained or incurred by the Escrow Agent as a result of the taking of such action.

### 10. Testing

Upon written notice to Owner and Escrow Agent, Licensee may conduct tests of the Escrow Material, under Owner's supervision and at a location other than Licensee's facilities, to confirm the conditions of the Escrow Material. Any direct costs associated with the testing of the Escrow Material, including expenses incurred by Owner, shall be borne by Licensee.

### 11. Resolution of Dispute

Should Owner and Licensee disagree on whether a default has occurred, the disagreement shall be decided immediately by arbitration in \_\_\_\_\_ in accordance with the rules of the American Arbitration Association. The award of the arbitrator shall be binding and may be entered as a judgment in any court of competent jurisdiction.

### 12. Notices

All notices required by the Escrow Agreement shall be sufficiently given by mailing the same by certified or registered mail, return receipt requested, to the parties at their respective addresses as follows:

Owner:

Licensee:

Escrow Agent:

### 13. Succession; Entire Agreement; Amendment

The rights and obligations hereunder shall inure to the benefit of and become the responsibility of the heirs, successors, and/or assigns of the parties hereto. This Escrow Agreement and the documents marked as Exhibit A and Exhibit B hereto constitute the entire understanding of the parties. This Escrow Agreement and the documents marked as Exhibit A and Exhibit B hereto constitute the entire understanding of the parties. This Escrow Agreement may be amended or altered only by an instrument in writing signed by all parties hereto.

AGREED:

OWNER:

LICENSEE:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

\_\_\_\_\_  
Address

\_\_\_\_\_  
Address

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

ESCROW AGENT:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Date



## APPENDIX 10-D

# Illustrative Software Maintenance Agreement

This Software Maintenance Agreement (“Agreement”) is entered into between \_\_\_\_\_ (“Vendor”) and \_\_\_\_\_ (“Customer”).

### 1. Scope of Agreement

During the term of this Agreement, as set forth in Section 2, Vendor agrees to provide Customer standard maintenance, custom enhancement, on-site support, and training services, as set forth in Sections 3, 5, 6, and 7, for the computer programs and user manuals listed in Exhibit A to this Agreement (collectively “Software”).

### 2. Term

- a. Effective Date. This Agreement shall take effect upon the Effective Date set forth in Exhibit A.
- b. Termination Date. This Agreement shall terminate upon the earlier to occur of (i) the Termination Date set forth in Exhibit A, (ii) the effective date of a subsequent agreement concerning maintenance services entered into between Customer and Vendor, or (iii) an event listed in Section 12 below.

### 3. Standard Maintenance Services

- a. Scope of Services. During the term of this Agreement, Vendor will provide Customer the following Standard Maintenance Services for the Software:
  - i. Corrections of substantial defects in the Software so that the Software will operate as described in the user manuals listed in Exhibit A, as modified by the Customer’s Requirements Document. The term “Customer’s Requirements Document” means the statement of customer-specific specifications that is attached as Exhibit B.

- ii. Periodic updates of the Software that may incorporate (A) corrections of any substantial defects, (B) fixes of any minor bugs, and (C) at the sole discretion of Vendor, enhancements to the Software.
  - iii. Telephone support, including dial-up support via Carbon Copy, between the hours of 9:00 A.M. and 5:00 P.M., Eastern Time, Monday through Friday, excluding federal holidays, to assist Customer in using the Software.
  - iv. Maintenance at Vendor's office of a test version, including a test data base, for the most recent version of Customer's Software.
- b. Services Not Included. Standard Maintenance Services do not include:
- i. Charged-for-Enhancements that are offered, at Vendor's sole discretion, to Customers upon payment of a license fee.
  - ii. Custom Programming Services.
  - iii. On-site support.
  - iv. Training.
  - v. Hardware and related supplies.

#### **4. Charged-For-Enhancements**

From time to time, at Vendor's sole discretion, Vendor will make available to Customer Charged-for-Enhancements to the Software that Customer may license from Vendor upon payment of the license fee established by Vendor.

#### **5. Custom Programming Services**

Vendor will provide Custom Programming Services to Customer, as agreed to in a written addendum to this Agreement, signed by both parties, that specifies the Custom Programming Services to be provided by Vendor and the fee for the services. Custom Programming Services shall include, but are not limited to, development of custom computer programs and installation, training and maintenance with respect to such computer programs.

#### **6. On-Site Support**

Vendor, upon receipt of a written request from Customer, will provide Customer On-Site Support at a mutually agreed time. Customer agrees to pay Vendor all costs associated with the provision of on-site support, including charges for (i) Vendor's personnel, (ii) charges for travel, lodging, and miscellaneous charges, and (iii) taxes pursuant to Section 9 below.

#### **7. Training**

Upon receipt of a written request from Customer, Vendor will provide Training at a mutually agreed time at the offices of Vendor, unless Vendor agrees to conduct the Training elsewhere. Customer agrees to pay Vendor all costs associated with

this Training, including (i) charges for Vendor's personnel, which may include a surcharge for training conducted at Customer's location, (ii) charges for travel, lodging, and miscellaneous expenses, and (iii) taxes pursuant to Section 9 below.

## 8. Maintenance Fee

- a. **Warranty Period.** Vendor will not charge Customer any Maintenance Fee for the Warranty Period, as defined in Customer's Software License Agreement for the Software.
- b. **Amount of Fee.** Customer agrees to pay Vendor a Maintenance Fee, in the amount set forth in Exhibit A, plus taxes pursuant to Section 9 below, for Standard Maintenance Services provided by Vendor pursuant to this agreement.
- c. **Discontinuance.** Customer understands that if Customer discontinues and then resumes purchase of Standard Maintenance Services, Customer will be required to pay Vendor the entire Maintenance Fees for the period of discontinuances, plus the Maintenance Fee for the term of Standard Maintenance Services then commencing.
- d. **Other Charges.** Customer agrees to pay Vendor for Charged-for Enhancements, Custom Programming Service, On-Site Support, and Training in the amount and pursuant to the terms set forth in the invoice for the services.

## 9. Payment Terms

- a. **Due Date.** Customer agrees to pay the Maintenance Fee to Vendor on or before the Maintenance Fee Due Date set forth in Exhibit A. Customer agrees to pay all other amounts due Vendor for services under this Agreement in accordance with the payment schedule set forth on the invoice for the services.
- b. **Payment Terms.** Payment shall be in United States currency. In the event Customer fails to pay any amount when due, Customer agrees to pay interest on the unpaid amount at a rate equal to the prime rate plus one percent (1%) or the highest rate allowed by law, whichever is less, plus all collection costs including attorneys' fees.
- c. **Taxes.** "Taxes" means all federal, state, local, and other taxes, including sales, use, and property taxes, related to this Agreement, Customer's use of the software, or any services provided by Vendor to Customer related to the Software, excluding taxes based on Vendor's net income.

## 10. Obligations of Customer

- a. **Customer Contact.** Customer shall notify Vendor of Customer's designated Customer Contact. To the maximum extent practicable, Customer's communications with Vendor will be through the Customer Contact.
- b. **Installation.** Customer agrees to install all correction is of substantial defects, minor bug fixes, and updates, including any enhancements, for the Software in accordance with the instruction and in order of receipt from Vendor.

- c. Facility and Personnel Access. Customer agrees to grant Vendor access to Customer's facilities and personnel concerned with the operation of the Software to enable Vendor to provide services.
- d. No Modification of Software. Customer agrees not to modify, enhance, or otherwise alter the Software, unless and only to the extent specifically authorized in the user manual identified in Exhibit A or the prior written consent of Vendor is obtained.
- e. Error Documentation. Upon detection of any error in the Software, Customer, as requested by Vendor, agrees to provide Vendor a listing of output and any other data, including databases and backup systems, that Vendor reasonably may request in order to reproduce operating conditions similar to those present when the error occurred.

#### 11. Limitations

No arbitration or other action under this Agreement, unless involving death or personal injury, may be brought by either party against the other more than one (1) year after the cause of action arises. Neither party shall be liable to the other for lost profits or indirect, special, or consequential damages arising out of this Agreement even if the party has been notified of the possibility of such damages. Under no circumstances will liability exceed the amounts paid by Customer to Vendor under this Agreement.

#### 12. Termination

- a. Event of Termination. Vendor shall have the right to terminate this Agreement and all services provided pursuant to this Agreement (i) upon termination of the Customer's Software License Agreement by either party for any reason, and (ii) if Customer or its employees or agents violate any provision of this Agreement and Customer fails to cure such violation within fifteen (15) days after receipt of written notice from Vendor.
- b. Procedure. Within ten (10) days after termination of this Agreement, Customer will return to Vendor, at Customer's expense, the Software and all copies thereof, delete or destroy all other Software copies, and certify, in writing by an officer of Customer, that the Software has been returned, all copies deleted or destroyed, and its use discontinued.

#### 13. Ownership

Customer acknowledges that Vendor owns all proprietary rights, including patent, copyright, trade secret, and other proprietary rights, in and to the Software and any corrections, bug fixes, enhancements, updates, or other modifications, including custom modifications, to the Software.

#### 14. General Provisions

- a. Notices: All notices under this Agreement are to be sent by registered mail to the address below or to any other address as the party may designate:

VENDOR:

CUSTOMER:

- b. Assignment. Customer will not assign or sublicense, in whole or in part, any of its rights or obligations under this Agreement without the prior written consent of Vendor, which consent shall not be unreasonably withheld.
- c. Complete Agreement; Amendment. This Agreement and Exhibit A set forth the entire understanding of the parties with respect to the subject matter of this Agreement. Any amendment to this Agreement must be in writing and signed by both parties.
- d. Waiver. The waiver or failure of Vendor to exercise in any respect any right provided for in this Agreement shall not be deemed a waiver of any further right under this Agreement.
- e. Severability. If any provision of this Agreement is invalid, illegal, or unenforceable under any applicable statute or rule of law, it is to that extent to be deemed omitted. The remainder of the Agreement shall be valid and enforceable to the maximum extent possible.
- f. Governing Law. This Agreement is to be construed in accordance with the law of the State of \_\_\_\_\_.
- g. Arbitration. The parties shall settle any controversy arising out of this Agreement by arbitration in \_\_\_\_\_ in accordance with the rules of the American Arbitration Association. A single arbitrator shall be agreed upon by the parties or, if the parties cannot agree upon an arbitrator within thirty (30) days, then the parties agree that single arbitrator shall be appointed by the American Arbitration Association. The arbitrator may award attorney’s fees and costs as part of the award. The award of the arbitrator shall be binding and may be entered as a judgment in any court of competent jurisdiction.

AGREED:

VENDOR:

LICENSEE:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

\_\_\_\_\_  
Address

\_\_\_\_\_  
Address

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date





## APPENDIX 10-E

# Illustrative Software Development Agreement

This Software Development Agreement (“Agreement”) is entered into this \_\_\_\_\_ day of \_\_\_\_\_, 199\_\_, by and between \_\_\_\_\_ (“Developer”), and \_\_\_\_\_ (“Customer”).

### WITNESSETH:

WHEREAS, Customer is desirous of retaining Developer to perform the services described in this Agreement; and

WHEREAS, Developer desires to perform these services in accordance with the terms and conditions of this Agreement;

NOW, THEREFORE, Customer and Developer hereby agree as follows:

#### 1. Term

The term of this Agreement shall commence on the date set forth above, and continue until completion of the services provided for in this Agreement or termination pursuant to Sections 2 or 3.

#### 2. Termination

- a. *In General.* This Agreement may be terminated by either party upon written notice if the other party breaches any material term or condition of the Agreement and such breach remains uncorrected for thirty (30) days following written notice from the non-breaching party specifying the breach.
- b. *Failure to Meet Milestone.* Customer may terminate this Agreement immediately upon notice to Developer at any time that Developer fails to meet a milestone within ten (10) days of the date set for such milestone by the parties.
- c. *Obligations upon Termination.* Upon termination of this Agreement for any reason, the parties shall have no further obligations pursuant to the terms of this Agreement except as set forth in Sections 6, 7, 8, 17, and 19.

### 3. Services and System Development

- a. *In General.* In consideration of the fees described in Section 4 of this Agreement, Developer will provide the services and complete the work described in this Agreement (“Services”) in order to develop and deliver the system, including user and technical documentation (“System”), as described in Exhibit A attached hereto. Developer shall meet with Customer monthly, or more often if requested by Customer, to discuss and report on the progress on the System.
- b. *Technical System Design.* Developer shall develop the technical design for the System in accordance with the System Functional Specifications in Exhibit A attached hereto. The technical System design shall include hardware and software specifications, performance specifications, a narrative description of the System, a description of all input data (such as type, size, range of expected values, and relationship to other data), a description and pictures of all screens, including sequence diagrams, and definitions and descriptions of all outputs and reports to be generated and the process for generating them. Developer shall deliver the completed technical System design to Customer no later than \_\_\_\_\_, and Customer shall have ten (10) days thereafter in which to accept or reject it in writing. If Customer rejects it, Customer shall specify in writing its grounds for rejection and Developer shall use its best efforts to revise the design to make it acceptable to Customer within the following ten (10) days. If Customer rejects the technical System design a second time, Customer shall have the option of repeating the procedure in this Section 3.b or terminating this Agreement upon written notice to Developer.
- c. *Milestones and Completion Dates.* Upon Customer’s acceptance of the technical System design, Customer and Developer shall set milestones and completion dates for the development of the System. Unless such milestones and dates are set forth and agreed to in writing by both parties, they shall not supersede any provisions of this Agreement.
- d. *Acceptance.* Developer shall deliver the completed System to Customer and install it at Customer’s location no later than \_\_\_\_\_, and Customer shall have thirty (30) days thereafter in which to accept or reject it in writing. If Customer rejects it, Customer shall specify in writing its grounds for rejection and Developer shall use its best efforts to make the System conform to the technical System design as soon as possible. Developer shall continue to use its best efforts to make the System conform to the technical system design until Customer accepts the System or terminates this Agreement upon written notice to Developer.
- e. *Training.* Developer shall provide Customer a total of \_\_\_\_\_ (\_\_\_\_\_) months after delivery of the System.
- f. *Maintenance.* Developer shall perform remedial and preventive maintenance for the System after its acceptance so that the System continues to perform in accordance with the technical system design. Customer and Developer shall negotiate the terms and price of such maintenance services, but Developer shall not charge Customer more than \$ \_\_\_\_\_ per year for the first two years of maintenance

services after acceptance of the System. Customer shall have the right to terminate such maintenance services at any time upon thirty (30) days written notice to Developer. Developer shall have the right to terminate such maintenance services upon thirty (30) days written notice to Customer if Customer is in material breach of such maintenance agreement between Customer and Developer and remains in material breach for thirty (30) days following such notice.

Fees

- a. Amount and Dates. Customer shall pay Developer fees upon the event and in the amounts as set forth below:

Date	Payment
Upon execution of this Agreement	\$ _____
Sixty (60) days after execution of this Agreement	\$ _____
Acceptance of technical System design pursuant to Section 3.b	\$ _____
Sixty (60) days after the payment upon Acceptance of technical System design	\$ _____
Acceptance of completed System	\$ _____

- b. Additional Payment. If the verifiable, actual cost of developing the system exceeds \$ \_\_\_\_\_, developer shall invoice Customer for half of such cost exceeding \$ \_\_\_\_\_, up to a maximum of \$ \_\_\_\_\_, upon Customer’s acceptance of the System. Customer shall pay such invoiced amount within ten (10) days after receipt of Developer’s invoice, provided that Customer has accepted the System. Customer shall not be liable for such invoiced amount if it does not accept the System.
- c. Reports. Developer shall deliver to Customer monthly reports of Developer’s progress on the system and Developer’s expenses incurred in connection with the System. Such reports shall be due on the fifteenth day of each month for the prior month. Each report shall contain a description of the current status of the System, the time spent on the System, the tasks on which it was spent, the estimated progress to be made in the next month, and the problems encountered, the proposed solutions to them and their effect, if any, on the milestones.

5. Change of Scope

At any time during the term of this Agreement, should Customer desire Developer to provide any additional services in the form of a modification or a change to the Services, Developer and Customer shall comply with the following:

- a. Submission of Request. Customer shall submit to Developer in writing all requests by Customer for any such additional services which alter, amend, enhance, add to,

or delete from the Services and/or time and/or place of performance (hereinafter referred to as “Modification/Change Request” or “Request”).

- b. *Acceptance Procedure.* Developer will evaluate such Modification/Change Request at no additional charge to Customer as soon as possible but not later than ten (10) working days following Developer’s receipt of the Request. Developer’s written response shall include a statement of the availability of Developer’s personnel and resources, the impact, if any, on the completion date and the change in costs, if any. Developer in its sole discretion may refuse to accept the Modification/Change Request. Developer shall charge Customer for any accepted Modification/Change Request no more than \$ \_\_\_\_\_ per hour plus materials charges. Should Customer elect to authorize such Request, Customer will, as soon as possible but not later than ten (10) working days, authorize Developer to perform the requested Modification/Change Request by returning a duly authorized copy of the Request to Developer.
- c. *Performance.* Upon such authorization by Customer of the Modification/Change Request by returning a duly authorized copy of the Request, Developer will commence performance in accordance with such Request immediately. Developer shall not be obligated to perform any additional services in advance of written authorization from Customer. In the event that Developer commits resources to the performance of a Modification/Change Request without such prior written authorization, it shall be presumed that performance of such Modification/Change Request will have no effect on the completion date.
- d. *Binding Agreement.* For the purposes of this Agreement, each Modification/Change Request duly authorized in writing by Customer and agreed to by Developer shall be deemed incorporated into and part of this Agreement and each such Request shall constitute a formal amendment to this Agreement adjusting fees and completion date as finally agreed upon for each authorized Modification/Change Request. In no event shall the Services be deemed altered, amended, enhanced, or otherwise modified except through written authorization by Customer of a Modification/Change Request and acceptance by Developer, all in accordance with this Section 5.

## 6. Non-Exclusive Agreement; Confidentiality

- a. *Non-Exclusivity.* Customer acknowledges that Developer may be and could be performing services for businesses other than Customer including, without limitation, other computer software companies. This Agreement shall not prohibit Developer from representing or performing programming services for such other businesses.
- b. *Confidentiality.* Each party acknowledges that it will receive confidential information and trade secrets (“Confidential Information”) from the other party in the course of performing the Services and developing the System. The Confidential Information shall be deemed to include all the information one party receives from the other, except in performing the Services of developing the system and

not to disclose it to anyone outside Developer or Customer or anyone within Developer or Customer who does not have a need to know it to perform under this Agreement. "Confidential Information" shall not include any information which is publicly available at the time of disclosure or subsequently becomes publicly available through no fault of the recipient party or is rightfully acquired by the recipient party from a third party who is not in breach of an agreement to keep such information confidential.

- c. *Nondisclosure Agreements.* Developer hereby represents and warrants that it has and, as of the date of acceptance, it will have and will (and does hereby) assign and transfer to Customer the right to prevent unauthorized disclosures concerning the System by past or present agents or employees of, or consultants to, Developer or any other persons or entities to whom Developer has or shall have communicated Confidential Information relating to the system. Developer agrees to avoid and prevent, and to take such action as Customer may reasonably request to prevent, any and all disclosures of any Confidential Information relating to the System which have not been specifically authorized in writing by Customer.

## 7. Ownership of Completed System

- a. *Deliverables.* Developer agrees that upon completion or termination of this Agreement, for whatever cause and without regard to whether the System has been completed, one copy of all notebooks, data, information, and other material acquired or compiled by Developer in respect to the Services or the System, including source code, object code, and technical documentation, shall be delivered to Customer.
- b. *Ownership.* Full and exclusive rights and ownership in the System and in any and all related letters patent, trademarks, copyrights, trade secrets, Confidential Information, and any other proprietary rights which Developer possesses or is entitled to shall vest in and is hereby assigned to Customer as of the date of acceptance. Except as provided in this Agreement, Developer shall retain no right, ownership or title in the System or in any related letters patent, trademarks, copyrights, trade secrets, Confidential Information, or any other proprietary rights. The parties agree that the System and all such rights are being sold in their entirety to Customer for whatever use it desires, and nothing contained herein shall be deemed to constitute a mere license or franchise in Customer.
- c. *Cooperation by Developer.* Should Customer or any of its agents or representatives seek to obtain letters patent, trademarks or copyrights in any country of the world on all or part of the System, Developer agrees to cooperate fully without compensation in providing information, completing forms, performing actions and obtaining the necessary signatures or assignments required to obtain such letters patent, trademarks or copyrights. In the event Customer shall be unable for any reason to obtain Developer's signature on any document necessary for any purpose set forth in the foregoing sentence, Developer hereby irrevocably designates and appoints each of Customer and its duly authorized officers and agents

as Developer's agent and developer's attorney-in-fact to act for and in Developer's behalf and stead to execute and file any such document and to do all other lawfully permitted acts to further any such purpose with the same force and effects as if executed and delivered by Developer.

- d. Developer's Proprietary Software Programs. Notwithstanding the provisions of Subsections 7.a and 7.b above, it is understood and agreed that Developer may in its sole discretion use its proprietary software programs in providing Services. If Developer uses any such proprietary software programs and so notifies Customer, Customer shall not market or in any way use such software programs as independent "stand-alone" programs without the express written consent of Developer, and Customer shall not acquire any proprietary rights to such programs.

## **8. Representations and Warranties**

Developer represents and warrants to Customer that neither Developer, in connection with performing the Services, nor the completed System will infringe any patent, copyright, trademark, trade secret or other proprietary right of any person. Developer further represents and warrants to Customer that it will not use any trade secrets or confidential or proprietary information owned by any third party in performing the Services or developing the System. Developer further represents and warrants to Customer that neither Developer nor any other company or individual performing Services pursuant to this Agreement is under any obligation to assign or give any work done under this Agreement to any third party.

## **9. Independent Contractor**

Developer is and shall at all times be an independent contractor and shall not be deemed an employer or agent of Customer. Nothing in this Agreement is intended to, or shall be deemed to, constitute a partnership or joining venture between the parties.

## **10. Other Agreements**

This Agreement, including Exhibit A, contains the complete agreement between the parties and shall, as of the effective date hereof, supersede all other agreements between the parties relating to the development of the System. The parties stipulate that neither of them has made any representation with respect to the subject matter of this Agreement or the execution and delivery hereof except such representations as are specifically set forth herein. Each of the parties hereto acknowledges that they have relied on their own judgment in entering into this Agreement.

## **11. Modification or Agreement**

No waiver or modification of this Agreement or of any covenant, condition, or limitation herein contained shall be valid unless in writing and duly executed by

both parties, and no evidence of any waiver or modification shall be offered or received in evidence in any proceeding, arbitration, or litigation between the parties hereto arising out of or affecting this Agreement, or the rights or obligations of the parties hereunder, unless such waiver or modification is in writing and duly executed by both parties. The parties further agree that the provisions of this Section may not be waived except as herein set forth.

#### **12. Forbearance—No Waiver**

Forbearance or neglect on the part of either party to insist upon strict compliance with the terms of this Agreement shall not be construed as or constitute a waiver thereof.

#### **13. Choice of Law**

It is the intention of the parties hereto that this Agreement and the performance hereunder and all suits and special proceedings hereunder be construed in accordance with and pursuant to the laws of the State of \_\_\_\_\_.

#### **14. Arbitration**

Any controversy or claim arising out of or relating to this contract, or the breach thereof, shall be settled by arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof.

#### **15. Agreement Binding on Successors**

This Agreement shall inure to the benefit of and be binding upon the successors and permitted assigns of the respective parties.

#### **16. Assignment Restricted**

Neither party may assign this Agreement in whole or in part without the written consent of the other party, provided that Developer may contract with other parties to provide services hereunder subject to Customer's prior written approval.

#### **17. Indemnification**

Developer shall indemnify Customer and hold it harmless from any loss, claim or damage to persons or property, arising out of this Agreement, the System or the Services provided, including attorney's fees, to the extent that such loss, claim, or damage is caused by the intentional acts of Developer or from Developer's breach of any term of this Agreement. This indemnity survives any termination of this Agreement.



**18. Failure to Perform**

Developer shall not be liable for any delay in performance due to force majeure, including strikes, accidents, acts of God, or other delays beyond the control of Developer. If timely completion of the System is prevented by any cause of force majeure, or any act of Customer, then such failure or delay shall not constitute default.

**19. Limited System Warranty**

- a. In general, Developer warrants that the Services will be performed in a workmanlike manner and that for a period of ninety (90) days following Customer’s acceptance of the System, the System will perform according to the technical System design agreed upon by Developer and Customer. Developer will repair or replace the System during such ninety (90) days as soon as possible after Customer informs Developer of any breach of this warranty.
- b. Exclusions. This warranty excludes any claims based on defects in the System caused by Customer, other parties beyond the control of Developer, or the hardware. EXCEPT AS PROVIDED IN SUBSECTION 19.a ABOVE, THERE ARE NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, RESPECTING THIS AGREEMENT, THE SYSTEM AND SERVICES.

AGREED:

CUSTOMER:

DEVELOPER:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

\_\_\_\_\_  
Address

\_\_\_\_\_  
Address

**EXHIBIT A**

- I. System Functional Specifications
- II. Deliverables

Developer shall deliver to Customer, as part of the completed System:

1. A System description, giving an overview of how the System works, a flow diagram indicating the input, flow, processing and output of information, and specifications for the System, both hardware and software, including minimum requirements.
2. Complete user documentation, including a description of how to access and use the application, screen prints of menus and input/output screens, data input descriptions, sample output/report forms, error code descriptions and solutions where appropriate, and explanations of all necessary disks and data used by the System.
3. Complete program/technical documentation, including program source code listings with comments, technical information about files and their locations, file names, file/database structures, record structures, and layout and data elements.
4. Description of backup and recovery procedures, including process, medium for backup, and number of diskettes or tapes to do a complete backup.
5. Master copy of System on magnetic media, including all programs, on-line documentation, and any documentation developed on a computer.

- III. Milestones



## CHAPTER ELEVEN

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# Software Industry Associations

Douglas C. Jerger, MBA  
Jerger Associates

### 11.1 INDUSTRY ASSOCIATIONS IN GENERAL

#### (a) Early History

A trade (or industry) association was once described by the late C. Jay Judkins, who from 1930 to 1963 was Chief of the Trade Association Division of the U.S. Department of Commerce. Chief Judkins's description appeared in the Introduction to *National Trade and Professional Associations of the United States*, 1994, 29th ann. ed., Columbia Books, Inc.

... a nonprofit cooperative, voluntarily-joined organization of business competitors designed to assist its members and its industry in dealing with mutual business problems in several of the following areas: accounting practice, business ethics, commercial and industrial research, standardization, statistics, trade promotion, and relations with government, employees and the general public.

Industry associations are not a new idea. People and organizations with common backgrounds and needs have always united this way. The Bible refers to a "street of bakers" and Josephus's *War of the Jews* refers to a "valley of the cheese makers," showing that this practice existed even 3,000 years ago. Ancient China, Egypt, Japan, and India had trade groups for the benefit of their members. Ancient Rome had groups that set wages and prices and also fostered training of apprentices.

In the Middle Ages, there were many powerful European craft and merchant guilds that developed strict regulations and provided many services to its members. Craft and merchant guilds established monopolies with strict entrance requirements and limited the training of apprentices. Cooperation, fellowship, and mutual interest were the original foundations underlying the guilds but, as they became more established, they

became tools for rigid maintenance of the status quo. In the eighteenth century, the rising tide of invention, nationalism, and the industrial revolution doomed the efforts of the old guilds to oppose economic and social change and they gradually declined. Despite their suppression of individual initiative, they did accomplish some useful things, such as encouraging and protecting the growth of new industries, improving technical processes, and promoting individual skills and training.

There were little or no significant regional trade or industry associations in colonial America. There is record of a Spermaceti Candles group in Rhode Island as early as 1762. The New York Chamber of Commerce, the oldest trade association in existence in North America, was formed by 20 merchants in 1768. These two were either quite small or in only one city. The widespread development of national trade associations did not begin in the United States until the nineteenth century.

In 1835, Alexis de Tocqueville wrote the following in *Democracy in America*:

Americans of all ages, all conditions, and all dispositions constantly form associations. They have not only commercial and manufacturing companies, in which all take part, but associations of a thousand other kinds, religious, moral, serious, futile, general or restricted, enormous or diminutive. The Americans make associations to give entertainments, to found seminaries, to build inns, to construct churches, to diffuse books, to send missionaries to the antipodes; in this manner they found hospitals, prisons, and schools. If it is proposed to inculcate some truth or to foster some feeling by the encouragement of a great example, they form a society. Wherever at the head of some new undertaking you see the government of France, or a man of rank in England, in the United States you will find an association.

Before the Civil War, industry associations in the United States were generally local or regional, although there were exceptions. In 1854, the National Association of Cotton Manufacturers was established and in 1855 the American Iron and Steel Association was established. Today, these organizations are the Northern Textile Association and the American Iron and Steel Institute, respectively. In the latter part of the nineteenth century, rapid industrial development led to the establishment of some of today's most prominent national industry associations, including thousands of local Chambers of Commerce of the United States, making up the largest and most influential of all industry associations.

The 1994 edition of *National Trade and Professional Associations of the United States* indicates that in the United States, there are about 40,000 industry and trade associations, local chapters of industry or trade associations, and independent local or regional groups.

## **(b) Activities of Industry Associations**

Industry associations are established by parties who join together to address and solve common issues and problems through concerted action. There are differences

between industry associations and professional societies and also scientific or learned societies. A professional society is an organization of parties with a common background in a profession or occupation, such as medicine, law, accounting, or engineering. Professional societies focus on establishment of professional standards and enhancement of knowledge and technical and other skills in the profession or occupation, generally for monetary gain. A scientific or learned society is an organization of parties with a common background in a subject, who are primarily concerned with expanding knowledge of the subject.

Industry associations generally engage in broad and diverse activities. The activities of an industry association could include, for example, promoting research on new products and improved methods of manufacturing, research on new uses for byproducts, developing market statistics, and sponsoring industry quality and certification standards and parts interchangeability.

Industry associations often have annual conferences or conventions at which members meet and exchange ideas. At these gatherings, industry associations usually sponsor contests and awards that are given to members in recognition of industry achievements. Most associations issue one or more periodicals to keep members informed about association activities and important industry developments. One of the most important functions of the professional staffs of many associations, particularly those headquartered in Washington, DC, is reporting to members on governmental developments that affect the industry and presenting industry viewpoints to legislators and other government parties.

## **11.2 SOFTWARE INDUSTRY ASSOCIATIONS IN GENERAL**

The establishment of the first significant software industry associations paralleled some of the significant developments in the software industry discussed in Chapter 1. Meetings were held in 1960 by companies serving clients through data processing centers to determine if they had enough common issues and problems that could be addressed by an industry association. In 1961, a non-profit association with membership of the leading data processing service bureaus in the United States, Canada, and abroad, was formed and named the Association of Data Processing Organizations (ADAPSO). In 1968, ADAPSO changed its bylaws to allow full member status for software companies. However, most software companies instead joined the then newly-established Association of Independent Software Companies. In 1972, those two associations merged and carried forward the ADAPSO name. In 1992, the ADAPSO name was changed to Information Technology Association of America (ITAA).

In 1984, the Software Publishers Association (SPA) was established as an industry association to represent the personal computer industry. It offered a full range of services to its personal computer company members.

SPA merged with the Information Industry Association (IIA) on January 1, 1999, to form a new trade association known as the Software & Information Industry Asso-

ciation (SIIA). The IIA represented 550 companies involved in creating, distributing, and facilitating the use of information in print and digital formats—the *information content* providers. SPA represented software publishers—the *software-code* providers. Hence, this merger represents a bringing together of the interests of the providers of information (content) and the publishers of such information in digital form (code).

In 1988, the Business Software Alliance (BSA) was established by several companies to aggressively pursue improving international markets through vigorous anti-piracy campaigns. It has maintained a relatively narrow focus and has included ten or fewer companies in its alliance for most of its existence.

The American Electronics Association (AEA) was formed over fifty years ago to help emerging West Coast electronics companies in efforts to obtain wartime government contract awards. It has grown to one of the largest associations in the electronics industry. During the early 1990s, the AEA became interested in software companies. Through its software committee, the AEA has developed specific programs for the software industry.

As indicated in Appendix 11-A, the 1994 edition of *National Trade and Professional Associations of the U.S.* lists 136 national associations that could be considered software-related. BSA, ITAA, the Software Committee of the AEA, and SPA provide the broadest representation of the software industry and have had the most influence of the industry. Information about these four associations is provided in the following sections. Many of the other software industry associations meet important specific needs of the industry of the specific subgroups within the industry.

## 11.3 BUSINESS SOFTWARE ALLIANCE (BSA)

### (a) Mission

BSA was established in 1988 to increase the market for legitimate software through campaigns involving public policy, enforcement, and marketing efforts.

### (b) Organizational Structure

BSA is organized as an alliance of specific companies that joined together to engage in anti-piracy activities, largely in the international arena. BSA is targeted as the largest software publishers and operates more like a consortium than a traditional industry association.

There have generally been few participating companies, with each contributing significant financial support. Worldwide companies that are members of BSA include Adobe Systems, Apple Computer, Inc., Autodesk, Inc., Bentley Systems, Compaq, Corel, File Maker (Europe), IBM, Inprise (Asia), Intel, Intuit, Lotus Development Corp., Macromedia (Asia), Microsoft Corp., Network Associates, Novell, Inc., Sybase, Symantec and Visio. Six of those companies act as the BSA Policy Council, which addresses global policy issues affecting software.

(c) Special Characteristics

The original purpose of BSA was to address software piracy problems in other countries of the world. That continues to be its primary focus.

In the early 1990s, BSA became linked with SPA in its anti-piracy efforts. Because the two organizations had overlapping memberships, it was expected that there could be benefits from combining their efforts. SPA had been aggressive in anti-piracy programs in the United States and BSA had been aggressive internationally. There was probably further anticipation of sharing other association-wide programs of SPA. However, the relationship was terminated after about two years. Since then BSA has focused on public policy, domestic piracy issues, and encryption regulation in the international marketplace. BSA maintains an Anti-Piracy Hotline (1-888-NO-PIRACY), to which software piracy or outlets selling counterfeit software products can be reported.

(d) Information About BSA

Locator Information

Business Software Alliance  
Suite 700  
1150 18th Street, NW  
Washington, DC 20036  
Phone: 202-872-5500  
Fax: 202-872-5501  
E-mail: software@bsa.org  
Web site: <http://www.bsa.org>

BSA Europe  
79 Knightsbridge  
London SW1X7RB England  
Phone: 441-71-245-0304  
Fax: 441-71-245-0310

BSA Asia  
300 Beach Road  
#32-07 The Concourse  
Singapore 199555  
Phone: 65-292-2072  
Fax: 65-292-6369

Head of Association

Robert W. Holleyman, II, President  
and CEO

Number of Members

19 worldwide, 6 BSA Policy Council

Number of Staff

35

Annual Budget

\$15 to \$20 million



Major Programs	Anti-piracy campaigns Public policy issues: Export controls Encryption issues Copyrights Licensing—UCC Job retraining Trade—Customs Valuation
Publications	<i>Guide to Software Management</i> (an outline to help comply with laws protecting software) <i>Software Review</i> (a quarterly newsletter detailing BSA activities) <i>BSA Worldwide Review</i> (a summary of BSA activities involving public policy, enforcement, and marketing)
Conferences and Seminars	Periodic seminars

## 11.4 INFORMATION TECHNOLOGY ASSOCIATION OF AMERICA (ITAA)

### (a) Mission

ITAA seeks to foster an environment that is conducive to the health, prosperity, and competitive nature of the information technology industry and to help its members succeed in delivering the benefits of information technology to their customers. The organization embraces computers, software, telecommunications products and services, Internet and online services, systems integration, and professional services companies. The association's industry development programs include advocacy on legislative and regulatory issues, studies and statistics, domestic and international market development, and industry promotion.

### (b) Organizational Structure

As one of the oldest and largest associations serving the software and services industry, ITAA has expanded its constituency over the years to include companies in many aspects of the industry. Prior to 1992, ITAA was known as ADAPSO and was perhaps the earliest broad-based association in the industry. ITAA has about 300 direct members, who may belong to one or more of the following divisions:

<i>Division</i>	<i>Part of Software Industry Served</i>
Software	Software products
Information Technology Services	Professional services
Information Services and E-Commerce	Telecommunications and data services
Enterprise Solutions Division	Systems integration

Through its relationships with regional software associations, ITAA maintains affiliate memberships with over 6,400 other software companies in the United States. This is formalized through the council of Regional Information Technology Association (CRITA), which includes over 20 regional software associations and has an established relationship with ITAA, including a representative on the ITAA Board of Directors, CRITA is discussed in Section 11.7(b).

**(c) Special Characteristics**

Because of its history and development, ITAA is able to address most software and services issues through its members from the mainframe, mid-range, and personal computer portions of the industry, while the preponderance of members come from the mainframe and mid-range companies, all of those companies have significant personal computer components as well. In the early 1980s, any software company interested in joining an industry association probably came to ITAA.

In 1983, ITAA developed a brochure on software protection, *Thou Shalt Not Dupe*. With updates, over a million copies have been distributed through the years. A version aimed at university students and faculty has generated requests for over 750,000 copies.

In the mid-1980s, disagreements arose within ITAA about how aggressive to become on the software piracy issue and many of the microcomputer companies withdrew from ITAA. Concurrently, SPA was getting started, aimed at personal computer companies in the entertainment and education fields, and some of the companies that left ITAA joined that organization or became part of the group of companies that subsequently founded the BSA. At this point, ITAA represents software companies selling to businesses, including those within the client-server realm of business software and systems. These software companies probably have the most interest in alliances and partnering, in order to be responsive to customer needs.

ITAA represents the software industry’s interests in such matters as intellectual property protection, government procurement, telecommunications policy, taxation, and privacy. In addition to its own public affairs initiatives, ITAA is an active participant in such organizations as the International Intellectual Property Alliance, the International Coalition on Technology Transfer, the Electronics Roundtable, and the World Information Technology and Services Alliance (WITSA), which is discussed in Section 11.8(b).

Currently, there is increased focus on the Internet, electronic commerce and the Year 2000 issues.

**(d) Information About ITAA**

Locator Information	Information Technology Association of America Suite 1300 1616 North Fort Myer Drive Arlington, VA 22209 Phone: 703-522-5055 Fax: 703-525-2279 Web site: <a href="http://www.ita.org">http://www.ita.org</a>  Western region office 333 Ravenswood Ave. Building AG 104 Menlo Park, CA 94025 Phone: 650-859-3469 Fax: 650-859-3466
Head of Association	Harris N. Miller, President
Number of Members	300 direct and 9,000 through affiliated regional associations
Number of Staff	35
Annual Budget	\$3 to \$8 million
Major Problems	Global Internet project Government procurement Immigration policies Intellectual property protection Telecommunications policy Taxation—federal, state, local Year 2000 Year 2000 Vendor Directory ITAA* 2000 certification program
Publications	Divisional publications Monthly Y2K Report  For others, lists available; general types listed here: Industry surveys Immigration guidelines Software protection brochures

Conferences and Seminars

Conferences (twice a year)  
Seminars (periodically)  
Hosted the 1998 World Congress on  
Information Technology

## 11.5 SOFTWARE COMMITTEE OF AMERICAN ELECTRONICS ASSOCIATION (AEA)

### (a) Mission

AEA is a member-driven organization dedicated to supporting the efforts of U.S. electronics and information technology companies to be world-class competitors.

AEA's vision is to increase the global market share of U.S. companies, while increasing the U.S.-based share of global technology research and development and production. To achieve this, AEA intends to pursue the following industry objectives: total quality commitment, leadership in technology and manufacturing, a competitive financial environment, global market participation and access, a world-class American workforce and workplace, and government excellence in procurement and development of infrastructure.

### (b) Organizational Structure

AEA has a 35-person board of directors and is supported by 18 local councils. There are steering committees, with supporting committees, for five key areas: National Competitiveness Steering Committee, International Competitiveness Steering Committee, Total Quality Commitment Steering Committee, Membership and Council Affairs Advisory Committee, and the Advisory Committee on Public Affairs.

The 18 local chapters or councils meet monthly, with the agenda set locally. They are spread throughout the United States. Each Council office has at least one staff person.

### (c) Special Characteristics

AEA's target audience is the electronics industry, ranging from systems, hardware, software, and semiconductors to telecommunications equipment, computers, medical instrumentation, and defense electronics. AEA staff has indicated that approximately one-third of AEA's members are California-based.

AEA has been primarily focused on the hardware aspects of the electronics industry for most of the 50 years it has existed. It became quite interested in the software industry during the early 1990s and, because of its size, AEA is able to provide effective services to the software industry.

## (d) Information about the Software Committee of AEA

Locator Information	American Electronics Association North Building, Suite 600 601 Pennsylvania Avenue, NW Washington, DC 20004 Phone: 202-682-9110 Fax: 202-682-9111 Web site: <a href="http://www.aeanet.org">http://www.aeanet.org</a> and Suite 520 5201 Great American Parkway Santa Clara, CA 95054 Foreign Offices: Brussels and Tokyo
Head of Association	Bill Archey President & Chief Executive Officer
Number of Members	3,000
Number of Staff	150 worldwide
Annual Budget	Over \$50 million
Major Programs	Affinity Programs/Business Support Service (group services for small companies) Industry Surveys and Statistics (including benchmarks for compensation, benefits, and operating ratios) International Marketing (through foreign offices, locally-created directories and other publications) Management Education Programs (global finance, manufacturing strategy) Human Resource Management <i>Software Industry Focus</i> (targets at software, including special programs and brochures)
Publications	<i>Update</i> (monthly newsletter describing key industry developments) Membership Directory

Publications ( <i>continued</i> )	<i>Software Summary</i> (monthly briefing) Other Publications (an extensive list of additional publications is available)
Conferences and Seminars	Financial Conferences for Publicly-held Companies (annually, for members to meet investor and the financial community) Financial Conferences for Privately-held Companies (several times each year, for members to meet venture capitalists and investment bankers) AEA/Stanford Executive Institute (a two-week “mini MBA” for executives of technology-based companies)

**11.6 SOFTWARE AND INFORMATION INDUSTRY ASSOCIATION (SIIA) [FORMERLY SOFTWARE PUBLISHERS ASSOCIATION (SPA)]**

**(a) Mission**

SIIA’s stated mission is to provide its members benefits through their membership in an association dedicated to addressing issues and providing solutions to the specific concerns of its members. As discussed in more detail in Section 11.2 of this chapter, the SIIA was formed from a merger of the Software Publishers Association (SPA) and the Information Industry Association (IIA) and represents the interests of software-code and information-content providers on public policy issues such as: intellectual property, privacy, encryption, taxation, and electronic commerce.

**(b) Organizational Structure**

SIIA has a 21-member board of directors comprised of chief executive officers of member companies. Board committees include a Chief Financial Officer Committee, Government Affairs Committee, and a Membership Committee. SIIA holds meetings in which members participate in research into development and marketing of software products in three areas: (a) business software, (b) consumer-oriented software, such as entertainment and home-use software, and (c) software for use in both the curriculum and administration aspects of the education field. In addition, SIIA has seven special interest groups that meet, develop specialized publications and education materials, and conduct separate tracks at annual conferences. The groups focus on the

areas of Compact Disk (CD), International, Marketing, Pen and Mobile Computing, Workgroup Computing, Software Production Services, and Public Relations.

### (c) Special Characteristics

SPA's target audience has been the personal computer software industry and to a lesser extent their key business partners—distributors, retailers, and hardware manufacturers.

In the early 1980s software companies that were interested in joining an industry association probably joined ITAA. In the mid-1980s, disagreements arose within ITAA about how aggressive to become about the software piracy issue and many of the member microcomputer companies left ITAA. SPA was getting started at that time, aimed at companies in the entertainment and education fields, and some of those companies joined SPA. A result of that shift was an outstanding program for SPA—anti-piracy in the U.S. The effort has been quite successful and has increased awareness that the unauthorized use of software is not proper.

BSA is also quite aggressive in conducting anti-piracy outside the U.S. and as discussed in Section 11.3(c), during the early 1990s, there were efforts to link the efforts of BSA and SPA. However, after about two years, each organization went its own direction and SPA now focuses more heavily on domestic piracy campaigns. SPA maintains an Anti-Piracy Hotline (1-800-388-PIR8), to which software piracy or outlets selling counterfeit software products can be reported.

Industry statistics and surveys are another specialty of SPA. Under the SPA data collection program, 150 participating firms report software sales information in 31 categories, providing market trend information, which is free to participating members only. A similar international program is conducted with 30 companies in 12 countries.

As a result of the merger of SPA with IIA on January 1, 1999, the perspectives of information content providers will also be represented when industry issues are addressed.

### (d) Information About SPA

Locator Information	Software Publishers Association Suite 700 1730 M Street, NW Washington, DC 20036 Phone: 202-452-1600 Fax: 202-223-8756 Web site: <a href="http://www.spa.org">http://www.spa.org</a>
Head of Association	Ken Wasch, President
Number of Members	1,800
Number of Staff	50
Annual Budget	Over \$10 million

Major Programs	Anti-piracy Industry surveys and statistics World Wide Web education programs Internet in the Workplace course
Publications	<i>SPA News</i> (monthly, covers SPA activities and also includes articles by SPA members) Information Industry News Membership Directory Other Publications (an extensive list of additional publications is available, including): Anti-piracy materials Educational software reports Government affairs briefing papers Research reports Resource guides
Conferences and Seminars	U.S. Conferences (twice each year) SIIA Europe Conference (annually) Seminars (throughout the year)

## 11.7 REGIONAL SOFTWARE INDUSTRY ASSOCIATIONS

### (a) Start of Regionals

Regional software industry associations, or “regionals,” do not claim a national charter. Most regionals have names of states in their association name and serve companies within that state. Others serve software companies in a certain geographic area within a state. The author is not aware of any regionals that cover geographic areas in more than one state.

Regional software industry associations evolved as the population of small companies in the software industry increased dramatically. Many small software companies consist of as little as one or two people, who often are not able to spend the time in and incur the cost of attending multiple-day national conferences and seminars. However, such individuals are well aware of the benefits of networking with others in the software industry. One reason that regional software industry associations evolved was in response to the need for short, local gatherings for networking among smaller software companies.

In addition to the important need of small software company personnel for networking, regionals continue to serve an ever-growing array of other needs of software companies. For example, the aggregations at the regionals of software professionals



with start-ups and small software companies, who are often developing fresh and innovative ideas, became a good source of alliance opportunities for software companies of all sizes.

There are many regional software industry associations that are not well known. Various lists of regional associations prepared by different parties are quite different. Appendix 11-B is a list of state and regional associations developed by ITAA. Many listed are members of CRITA, the association of regional associations that is affiliated with ITAA, which is discussed in Section 11.7 (b)(iv).

## **(b) Notes on Selected Regionals**

**(i) General.** The following sections discuss three prominent regional software industry associations: Massachusetts Software Council (MSC), Utah Information Technology Council (UITA), and Council of Regional Information Technology Associations (CRITA).

California's Silicon Valley now rivals the concentration of software companies on Route 128 in Massachusetts. However, there are no prominent software industry associations in California. California's software industry associations generally serve narrow industry interests or operate within narrow geographic boundaries.

**(ii) Massachusetts Software Council (MSC).** MSC represents the interests of an enclave of software and technology companies located along technology-dense Route 128 near Boston, Massachusetts. MSC was established in the mid-1980s and has become aggressive in promoting views of the Massachusetts software industry on issues being addressed by legislative representatives of Massachusetts.

MSC holds many breakfast or morning meetings and seminars for its members, with almost all gatherings limited to a one-half day maximum so that members from small software companies will be away from their businesses for only short periods. MSC works with several private organizations in developing industry surveys and other useful information for small software companies.

**(iii) Utah Information Technologies Association (UITA).** Since it was founded in the early 1990s, UITA has been successful in attracting the attention of its state to the importance of information technology and in obtaining funding for support of selected programs. Its largest in-state members are concentrated in Provo and Orem, Utah. UITA has been aggressive in supporting its mission to strengthen and represent the approximately 1,350 Utah information technology industry enterprises.

**(iv) Council of Regional Information Technology Associations (CRITA).** CRITA, which is also discussed in Section 11.4(b), is an association of regional associations that have agreed to work with ITAA in addressing mutual needs. CRITA has a representative on ITAA's board of directors.

Although the regionals concentrate heavily on state issues, they also seek to promote members' interests on a national level. Conversely, national associations have

a need for grassroots support in dealing with Congressional members and their staff. In 1993, these needs led to the formation of CRITA, which is an affiliate of ITAA.

## 11.8 INTERNATIONAL SOFTWARE INDUSTRY ASSOCIATIONS

### (a) Responses to the International Nature of Software

The U.S. software industry is the largest developer and marketer of software in the world. Many small and medium size companies market software in international markets. For many, international markets provide significant percentages of their revenue—typically 30 percent to 50 percent. Many large software companies realize 50 percent or more of their revenue from international markets, for example, over 60 percent of Microsoft's revenue is realized from international markets.

As international markets became aware of the growing importance of software, industry associations were established in many countries to foster growth of the software industries in those countries and to some extent try to build defenses against the waves of software exports from the United States.

Another response to the emergence of software industries in other countries was that the U.S. software industry became interested in developing cooperative relationships with them to encourage the development of appropriate intellectual property legislation and enforcement to protect software from international piracy. As benefits from partnering became a reality in the U.S. software industry, it also became clear that international partnering might also work. The associations grew in many countries and eventually they formed relationships among themselves.

### (b) Formation of the World Information Technology and Services Alliance (WITSA) and Current Activities

In 1994, the information technology and services industries of 18 countries announced the formation of a new international information technology organization, the World Information Technology and Services Alliance (WITSA).

WITSA replaced a predecessor organization, the World Computing Services Industry Forum. The new organization assumed the responsibility for planning the biannual World Congresses that have been held every two years since 1978. The World Congresses provide opportunities for information technology and services companies from around the world to meet and forge business relationships. Such business-to-business networking and partnering is particularly important in the information technology industry, where the solutions for customer needs often vary across a wide spectrum. Highly specialized technical expertise is often necessary and few vendors, regardless of size, are able to supply the complete set of products and services that may be required to develop complex systems.

Appendix 11-C is a list of members of WITSA. New organizations are added as they are established in other countries and when they comply with WITSA requirements.

The current president of the WITSA is Harris Miller, who also heads ITAA. In 1998, the World Information Technology Forum was held at George Mason University in Fairfax, Virginia and was hosted by the ITAA.

## APPENDIX 11-A

# National Software Industry Associations

Following is a list of the principal broad-based software industry associations serving segments of the software industry or somehow relate to the software industry. A primary source of information about such associations is the directory, *National Trade and Professional Associations of the United States*, published by Columbia Books, Inc., Washington, DC.

Because the software industry is still relatively new, software is often not found as an identifiable category in various government and private information sources. Such is the case in the Columbia Books directory, in which software industry associations can be found in the categories of *Computers and Data Processing*. Following are 136 national organizations related to the software industry that are listed under those two categories in the Twenty-ninth Annual Edition of the Columbia books directory. The directory contains selected facts and information about each organization listed.

### Listed Under Computers

Association for Automated Reasoning  
Association for Computer Operations Management  
Association for Intelligent Systems Technology  
Association for the Development of Electronic Publishing Technique Business Software Alliance  
CD-I Association of North America  
Computer Users in Speech and Hearing  
Computing Research Association  
CUMREC  
Digital Publishing Association  
IMAGE Society  
Independent Computer Consultants Association  
Independent Service Network, International  
Information Systems Consultants Association

Information Systems Security Association  
Institute for Computer Capacity Management  
Intelligent Vehicle Highway Society of America  
Interactive Multimedia Association  
International Association for Computer Information Systems  
International Association for Computer Systems Security  
International Disk Drive Equipment and Materials Association  
International Neural Network Society  
Library and Information Technology Association  
Multimedia Publishers Group  
National Association of Computer Consultant Businesses  
National Computer Security Association  
Semiconductor Safety Association  
Society for Machine Intelligence  
Society for Software Quality  
Special Interest Group for Forth Programming Language  
Special Interest Group on Applied Computing  
Special Interest Group on Hypertext  
Transaction Processing Performance Council  
United States Association for Computational Mechanics

### Listed Under Data Processing

AFSM International  
AM/FM International  
American Association for Artificial Intelligence  
American Association of Public Welfare Information Systems Management  
American Electronics Association  
American Medical Informatics Association  
American Payroll Association  
American Society for Information Science  
American Society of Computer Dealers  
Association for Computational Linguistics  
Association for Computers and the Humanities  
Association for Computing Machinery  
Association for Federal Information Resources Management  
Association for Systems Management  
Association for the Development of Computer-Based Instructional Systems  
Association for Women in Computing  
Association for Work Process Improvement, The  
Association of Agricultural Computer Companies  
Association of Human Resource Systems Professionals  
Association of Information and Dissemination Centers  
Association of Management

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Association of Public Data Users  
Association of Rehabilitation Programs in Data Processing  
Association of Small Research, Engineering, and Technical Service Companies  
Automated Procedures for Engineering Consultants, Inc.  
Business Software Alliance  
CAUSE  
CDLA: The Computer Leasing and Remarketing Association  
Center for Computer/Law  
Classification Society of North America  
Computer-Aided Manufacturing—International  
Computer and Automated Systems Association of SME  
Computer and Business Equipment Manufacturers Association  
Computer and Communications Industry Association  
Computer Assisted Learning and Instruction Consortium  
Computer Law Association  
Computer Measurement Group  
Computer Press Association  
Computer Security Institute  
Computer Use in Social Services Network  
Computerized Medical Imaging Society  
Computing Technology Industry Association  
Corporation for Open Systems, International  
CUMREC  
Data Administration Management Association International  
Data Interchange Standards Association  
Data Processing Management Association  
EDP Auditors Association, The  
EDUCOM  
Electronic Data Interchange Association  
Electronic Funds Transfer Association  
Electronic Publishing Special Interest Group  
Equipment Leasing Association of America  
Federation of Government Information Processing Councils  
Financial Management for Data Processing  
Geoscience Information Society  
Government Management Information Sciences  
IEEE Computer Society  
Independent Computer Consultants Association  
Information Industry Association  
Information Systems Consultants Association  
Information Technology Association of America  
Institute for Certification of Computer Professionals  
Instructional Systems Association  
Interactive Services Association

International Association of Knowledge Engineers  
International Council for Computer Communication  
International Disk Drive Equipment and Materials Association  
International Health Evaluation Association  
International Information Management Congress  
International Interactive Communication Society  
International Society for Technology in Education  
ITA  
LANDA  
MEMA Information Services Council  
MicroComputer Investors Association  
NaSPA: National Systems Programmers Association  
National Association of Bank Servicers  
National Association of Computerized Tax Processors  
National Association of Health Data Organizations  
National Association Professional Word Processing Technicians  
National Association of Secretarial Services  
National Association of State Information Resource Executives  
National Computer Graphics Association  
National Federation of Abstracting and Information Services  
National Training Systems Association  
Newspaper Systems Group  
North American Computer Service Association  
North American Fuzzy Information Processing Society  
Office Automation Society International  
Online Audiovisual Catalogers  
Pattern Recognition Society  
Personal Computer Memory Card International Association  
Society for Applied Learning Technology  
Society for Computer-Aided Engineering  
Society for Computer Simulation  
Society for Conceptual and Content Analysis by Computer  
Society for Information Display  
Society for Information Management  
Society for Management of Professional Computing  
Software Management Association  
Software Publishers Association  
Special Interest Group for Algorithm and Computation Theory  
Special Interest Group for Architecture of Computer Systems  
Special Interest Group for Biomedical Computing  
Special Interest Group for Computer-Human Interaction  
Special Interest Group for Computer Personnel Research  
Special Interest Group for Computer Science Education  
Special Interest Group for Computer Uses in Education

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Special Interest Group for Computers and Society  
Special Interest Group for Computers and the Physically Handicapped  
Special Interest Group for Data Communication  
Special Interest Group for Information Retrieval  
Special Interest Group for Management of Data  
Special Interest Group for Measurement and Evaluation  
Special Interest Group for Microprogramming and Microarchitecture  
Special Interest Group for Simulation and Modeling  
Special Interest Group for Symbolic and Algebraic Manipulation  
Special Interest Group for University and College Computing Services  
Special Interest Group on ADA Programming Language  
Special Interest Group on APL Programming Language  
Special Interest Group on Artificial Intelligence  
Special Interest Group on Business Information Technology  
Special Interest Group on Computer Graphics  
Special Interest Group on Design Automation  
Special Interest Group on Documentation  
Special Interest Group on Numerical Mathematics  
Special Interest Group on Office Information Systems  
Special Interest Group on Operating Systems  
Special Interest Group on Programming Languages  
Special Interest Group on Security, Audit, and Control  
Special Interest Group on Small and Personal Computing Systems and Applications  
Special Interest Group on Software Engineering  
Technology Transfer Society  
Urban and Regional Information Systems Association  
World Computer Graphics Association





## APPENDIX 11-B

# Regional Software Industry Associations

The following is a list of state and regional software industry associations encouraged and initiated by ITAA starting in 1996. Many listed are members of CRITA, the association of regional associations that is affiliated with ITAA. For changes in this listing and for information about recent activities of these groups, refer to the ITAA Web site at <http://www.ita.org>.

### **Alaska High-Tech Business Council**

507 E Street  
Suite 212  
Anchorage, AK 99501  
Contact: Ms. Sally Suddock  
Title: Administrator  
Voice: 907-276-4822  
Fax: 907-279-1037  
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For changes to this listing and for information about recent activities of these groups, refer to the ITAA Web site at <http://www.ita.org>.

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