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P2M

A Guidebook of Project & Program Management for Enterprise Innovation

Volume I

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(PMAJ)

Preface

This book is an English version of "A Guidebook for Project and Program Management for Enterprise Innovation" abbreviated as **P2M.** This is issued by the Project Management Professionals Certification Center (PMCC) of Japan, now renamed as Project Management association of Japan (PMAJ), and is intended to provide readers with an overview of the innovative program and project management guide.

PMAJ is the non profit organization, responsible for promotion of project management and it's Certification System for Project Professionals into a wide varieties of industries in Japan, and is also responsible for maintaining and upgrading of P2M

P2M is a 420-page document in the Japanese language, providing guidelines for enterprise innovation by way of program and project management. It is intended to serve as a guide to assist in enterprise growth and survival in the globally competitive business and public services environment, complementing other international project management bodies of knowledge and project management competency standards.

The Engineering Advancement Association (ENAA) of Japan has been contributing to development of Japanese project management by continuing research and study for over 20 years. The ENAA established a Committee for Introduction, Development, and Research on Project Management (Chairperson: Shigenobu Ohara, Adjunctive professor of University of Technology Sydney) in 1999, in response to a commission from the Ministry of Economy, Trade and Industry. Through this Committee, the ENAA has studied establishment of a new Japanese-type project management knowledge and a qualification system.

In order to respond to social change and increasingly complicated and sophisticated demands, there is need for capability to effectively solve complex problems and manage projects and programs to promote value creation activities. To meet such needs, A Guidebook for Project and Progam Management for Enterprise Innovation (P2M) was been developed, over a period of 30 months to November 2001, as a new PM knowledge and competency system.. In addition, a new qualification system for project management, based on the P2M, is proposed in order to foster development of project management personnel capable of creating and delivering value in a complex and changing environment.

Key words throughout P2M are **value creation to enterprises**, either commercial or public, with **a consistent chain from a mission, through strategies that embody the mission, to a program(s) of projects that implement strategies**.

P2M is intended not only to benefit Japanese organizations but to profitably apply to any organizations globally who seek a comprehensive guide to program and project management.

P2M is already widely used as a standard guide and, with its respect for other standards and innovative approach to sue of project and program management for value creation in enterprises, provides a sound foundation for further development and improvement of the project management.

We would like to express our deepest appreciation to many people including authors, cooperators and reviewers who took time from their busy schedules to contribute to the publication of this book .

CONTENTS

Introduction - What is Project Management Standard Guidebook, "P2M"?

This standard guidebook is called "P2M" and is prepared for students, businesspeople, managers, and professionals who have concern about project management. The term "P2M" is the abbreviation for "Project and Program Management for Enterprise Innovation." It reflects an intention to enlarge the scope of project and program management from the conventional focus on the immediate project or work front to the contribution of projects and programs to the overall organization including the general management level.

In contemporary society, various types of professionals such as lawyers, engineers and CPAs perform activities in their own fields, while people need professionals capable of solving issues that cross functional, discipline and enterprise boundaries. Particularly, in the knowledge information society where fusion across different fields such as hardware and software is accelerating, such mission-achievement-type professionals are expected to cover various fields of activities. The is urgent need to foster such human resources and certify their qualifications.. In P2M, these mission-achievement-type professionals are classified into the following three types according to their level of responsibilities: Project Management Specialist (PMS), Project Manager Registered (PMR), or Project Management Architect (PMA).

The section, 'I. Project Management Entry" in this Guidebook describes the relations between modern society and professionals, requirements for mission-achievement-type professionals, the history of project management and its application in modern society, and how to read this book.

In the section, 'II. Project Management," the definitions and basic frameworks of projects and project management are integrated based on the common view and relations between integration management and domain management where domain management is the management of specific functions or knowledge area of project management.

"III. Program Management" explains the definitions and basic frameworks for project and program management. Program management consists of project integration and the program integration management, aiming for optimization of programs.

"IV. Domain Management" interprets the management for individual fields or functions frequently required in project management and program management. The practical guidelines for management of the various domains, which are described in each chapter of Section **IV**, are intended for use in various phases at the appropriate time, place and opportunity to minimize risk and contribute to maintenance and improvement of value.

P2M is intended only as a guide and is not intended to be fully comprehensive. Practical capability should be expanded according to developments in science and technology, and mission-achievement-type professionals should embrace lifelong learning to build their capabilities.

- P2M is a guide to acquire the project management knowledge necessary for mission-achievement-type professionals.
- P2M is intended as a basis for accreditation of mission-achievement-type professionals.
- P2M consists of three parts: Entry, Project Management, and Knowledge Package.
- P2M selects technical terms and pays attention to their interpretation and integration.

Part I. Project Management Entry

1. P2M and Mission-achievement Professionals

Project management entry is an introductory anatomy of project management for project professionals.

Project professionals overcome unknown and complex issues such as challenging plans, development projects, and new events in order to achieve the missions of societies and organizations. These integration-oriented mission-achievement professionals are therefore required to possess capability, attitudes and qualities to integrate knowledge and expertise of multiple disciplines, exercising functional authority to cut across the disciplines involved in a program or project from a total optimization viewpoint. Command of a systematic body of knowledge understanding of a range of related emerging technologies and techniques are indispensable ingredients. P2M sets forth the minimum baseline knowledge baseline for project management, program management and eleven domains of project management.

As projects affect, to a varying degree, not only sponsor organizations but also society, project professionals are required to maintain high ethics and commitment to contributing to the welfare of human beings and society through due diligence of their services. Such accountability to the profession and to society, required of project professionals, cannot be achieved without building capability. P2M is a practical guide that describes the knowledge and experience that mission-achievement professionals should master.

P2M, as a hybrid product of professional practice and practically applied science, incorporating recommended practices based on management science, systems science, information science, and human science. To develop capability, it is necessary for project professionals to satisfy three sets of requirements: systematic knowledge, practical experience, and attitude/qualities that include professional ethics. In addition, project professionals are required to continuingly enhance competence through learning and practice. P2M aims at presenting a "capability building baseline (CBB)."

● Mission-achievement professionals' role and professional accountability

The requirements, or role and professional accountability of mission-achievement professionals who realize project management are defined as follows:

- Mission-achievement professionals are integration-oriented professionals who perceive complex problems and issues from a high perspective and realize right and optimal solutions.
- Mission-achievement professionals are required to acquire a body of knowledge that provides a broad perspective.
- To develop professional capability of mission-achievement professionals, three sets of requirements must be satisfied: command of a body of knowledge, practical experience, and appropriate attitude/qualities.
- Mission-achievement professionals should fulfill their responsibility through continuing self improvement through learning and practice.
- P2M is based on proven knowledge and experience.
- P2M aims at providing the Capability Building Baseline (CBB) for mission-achievement professionals.

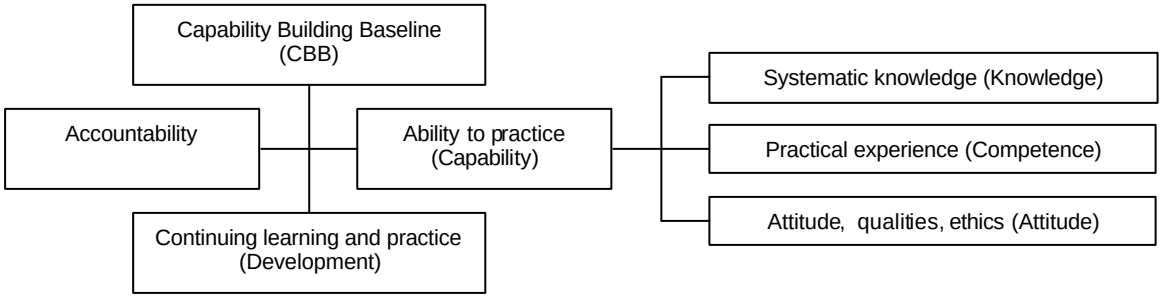

Figure 1-1: Requirements for Responsibility and Capability Development of Mission-Achievement Professionals

Case ◆ Broader Vision and Higher Viewpoint

Technological development for global environmental preservation is a typical case of a complex issue. Policy planners should recognize the issue with a broad vision, taking into account ecosystems, preservation technology, social agreements, legal frameworks and economic effects, and should launch a project with an effective policy plan from a higher viewpoint, which is acceptable to the society, industry and local community affected.

In addition, policy planners cannot fulfill their accountability as professionals without a confident attitude and ethics to achieve sustainable growth, e.g., never to generate waste as byproduct of the policy that places priority on economy.

● Value Creation by Mission-achievement-type Professionals

Professionals should contribute to value creation. The value of project professionals lies in giving satisfaction to sponsors. The degree of satisfaction depends on a balance between the benefits that a sponsor enjoys and costs expended to realize the benefits.

For instance, lawyers offer services and create values for clients through legal consultation and lawsuits defense. Mission-achievement professionals should likewise satisfy sponsors by offering highly professional services for projects including their conception, planning, implementation and management, and by enhancing efficiency. Efficiency means the productive use of resources without waste, unreasonableness and inconsistency.

What is stressed in the activities of mission-achievement professionals is the solution of complex issues that are difficult to tackle independently by professionals, requiring an integrating, cross boundary approach. Management of complex issues requires close collaboration among experts in specialist areas. Effectiveness of mission-achievement professionals in solving complex issues means not only enhancement of satisfaction by clients but also coordinated balancing of interests for a wide range of parties from those concerned with the project to the society that is potentially affected by the project. This means that projects should not only meet the objectives and expectations of direct sponsors but should also be compatible with the needs and interests of other stakeholders and with the society affected by the project. A questions raised is "Are the project and its management acceptable to the society and will the project enhance the value of the society?"

P2M aims at fostering mission-achievement professionals who are capable of providing sponsors with quality satisfaction by solving overall, not partial, issues. In solving overall issues, attention should be paid not only to domains but also to their interrelation, mutual influence, and synergy..

- Project professionals should offer high quality professional services and contribute to value creation with efficiency.
- Project professionals should focus on solution of complex issues and demonstrate the effectiveness of solutions.
- Project professionals should perform value creation activities to enhance project acceptability by coordinating interests of a broad range of relevant parties.

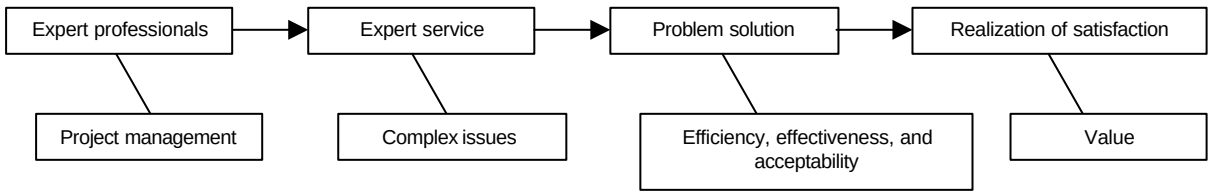

Figure 1-2: Value Creation by Expert Professionals

Case ◆ Roles of Project Management Professionals

When a company needs a sales information system, neither system engineers nor marketing experts can handle the case alone. Accordingly, an expert team consisting of planning staff, marketing persons and system analysts has to be formulated under the functional direction of a project manager. Then a project manager confirms an investment budget, expected results and delivery timeline with the sponsor executive. Based on the executive charter, he/she would have sales experts study ways to improve the repeated order ratio and order volume increase, and have the information technology section design the information system to support such marketing initiative. The project manger solves complex issues in the project by profiling the intent of the sponsor executive, namely, by clarifying the mission of the proposed project, its objectives and goals, asking a question "Why are we developing a sales information system?" A solution is worked out by effectively combining technical expertise of planning staff, marketing experts and systems analysts. The project manager is a new type of professional who offers the capability to coordinate the expertise of specialist contributors.

Case ◆ Systematic Knowledge

For instance, in the consultation for an improvement of poor product sales, marketing experts would often address the issue from the perspective of their own expertise. However, project management would solve the issue by drawing on multiple perspectives and expertise, setting a due time for solution and approaching the task as a complex issue of supply chain, involving customer information data, speed and service. In this case, the systematic knowledge of project management is required.

- Mission-achievement professionals should provide customers with satisfaction by solving complex issues.
- Mission-achievement should be able to define sponsors' ambiguous yet profound requirements as a concrete project and lead the project to value creation.
- Mission-achievement should approach complex issues with reference to their context.
- Mission-achievement handle complicated and uncertain relationships.

2. Project Management History and P2M

● Project Management History and Global Trend

Project management has been studied and consciously practiced since the 1940's: it was initially deployed by the U.S. Department of Defense in the military systems and space development fields. The Project Management Institute (PMI®) in the U.S.A. published its prototype body of knowledge of project management for the first time and pioneered the certification of project management professionals in the 1980's. PMI® issued it's first "Project Management Body of Knowledge (PMBOK™)" in 1987 and revised it to "A Guide to the Project Management Body of Knowledge (PMBOK™ Guide) " in 1996, publishing an updated edition in 2000..

In 1994, the number of PMI® members was only 12,000 but membership reached 80,000 in 2001. PMI® started the certification of "Project Management Professionals (PMP®) in 1984 [?]. The PMP® certification system until early 1997 was rigorous, mainly targeting North American project managers, and evidence of academic qualifications, professional experience dedication to the project management profession mainly in terms of membership and professional activities with PMI® or PMI® designated project management associations, before PMP® candidates could sit for examinations on project management knowledge. In 1997, PMI® reengineered the certification system in line with requirements of U.S. accreditation bodies, and a new certification system was put in place in 1998 which is providing a more ample opportunity for PMP® certification to not only North American but global project management practitioners by providing computerized knowledge examination in nine languages.

For some years after the foundation of PMI® in 1969, its members were mainly from the engineering and construction industry as well as defense industry but now the PMI® membership mix has shown a drastic change: members from IT/information management/information movement, financial and services industry are reported to account for some 75%.

In Europe, the International Project Management Association was established in 1967 with "INTERNET" being its common name, as an international umbrella project management association to which national associations belong. In 1997 the name INTERNET was dropped due to potential for confusion with the now ubiquitous Internet, and it was decided to revert to the abbreviation of its original name, IPMA. IPMA includes 29 national associations in Europe and Egypt, India and China with combined worldwide members of some 20,000. The United Kingdom, France, Germany and Switzerland, which are leading members of IPMA, commenced development of the IPMA Competence Baseline (ICB) in 1993, with final publication in 1998, and the ICB has been developed into various National Competence Baselines (NCB), or guidelines for standard project management competency baselines reflecting each member country's project management development status and national cultures and practices. The professional certification system based on both bodies of knowledge and NCBs was started in 1997. There are four ranks of qualification certificates (from the lowest to the highest) : Project Management Practitioner based on certification of knowledge; Project Management Professional; Certified Project Manager; and Certified Program or Projects Director, the last three based on the certification of knowledge, proven capability and attitude.

The Australian National Competency Standard for Project Management (NCSPM) is a government endorsed standard, recognised and used by the Australian Institute of Project Management (AIPM) as the basis for it's professional registration progam. The Australian NCSPM defines specific competency criteria for project managers generally using the framework of nine knowledge areas of PMBOK® Guide but treating them more as functional areas. The focus is upon what project managers are able to demonstrate that they are able to do, supported by underpinning knowledge and understanding. Both nationally recognised qualifications and professional registration are available, based on the NCSPM, based on on work-place assessment by registered assessors. The AIPM offers three certification levels (from the lowest to the highest): Qualified Project Practitioner (QPP), Registered Project Manager (RPM) and Master Project Director (MPD). These three levels correspond to a Certificate IV, Diploma and Advanced Diploma respectively, of the Australian Qualification Framework (AQF) sponsored by the government, which is the generic standard for professional performance capability in Australia.

Project management was introduced in Japan first into the engineering and construction industry in the early 1960's for building modern oil refineries and petrochemical plants based on American process (production) technologies to cater to the Japanese industry in full swing to attain post-World War II recovery. As the production technology was from the US, project management was imported in parallel. Project management was then implanted into the general construction, heavy industry and heavy electricals companies. Lately since around 1995, thanks to the IT revolution, project management has been

attracting more interest in the fields of information systems/solutions industry, manufacturing industry, as well as in business process reengineering and restructuring endeavors and financial circles.

● Evolution of PM Required by Social Changes

Changes in social environments create chances to innovate the mechanisms or systems that underlie societies. Innovation can be a threat if no measures are taken for it, but adequate actions would produce chances for growth. Patterns to provoke such proactive actions are expressed as visions or strategies and their context depends on profound insight of top persons such as politicians, top executives and entrepreneurs. Insight signifies the interpretation of the total picture of complex issues and right orientation to deal with such and is a source to give birth to future values.

Involvement of mission-achievement professionals is required to ensure that the context of strategy generated from the insight of such top persons is understood and translated into a project to achieve given mission and objectives. For example, launching of new business, business model structuring, development of new products, plant construction, mergers and acquisitions (M & A) and organizational innovation or restructuring are all projects with mission and objectives to be attained that need the capability of project managers.

Some of these projects may be independent from each other but many are interrelated as a complex project or program of projects. Quite often, Customer Relationship Management (CRM) projects for enhanced response to customers with the 3S factors i.e., speed, service and satisfaction are launched, coupled with Supply Chain Management (SCM) projects pursuing cost-effective business logistics. In the zero-emission operation policy triggered by the Law for Promotion of Utilization of Recyclable Resources, the total cycle of product development, design, manufacturing, and facility decommissioning are dealt with as a once-through project or program.

An organization embraces both operation type activities that are characterized by repetitive business activities producing stable returns or client satisfaction utilizing existing production facilities, infrastructure or service systems, and projects that are intended to add new value to an organization through adding new production facilities, commercial or public service systems, social infrastructure, IT solutions or new business models. Such projects are triggered by organizational recognition that existing systems are unable to cope effectively with market changes, no longer guarantee continuing returns or client satisfaction, or, without proactive project investment would leave the organization behind the competition. Operation type activity has to date accounted for 90 percent of the activities of business firms in general in Japan. However, a trend is that the share of project activities is increasing recently, with projectized businesses emerging as a majority.

For instance, in engineering and construction companies, solution or services divisions of IT companies and research institutes, projects are the basis of their businesses so projectized operations are common. They manage their organizations and resources to suit projects and their business systems are tailored for project type business running. In the current, drastically changing social environments, in order to stay in business or to continue to be a reliable and efficient public service provider, private and public enterprises are recognising that many of their activities or operations are projects and that there is pressing need for "management by project" in which all echelons of enterprises have a project mindset and produce and implement projects to implement changes. P2M finds its value where the guidebook is wisely used as a change agent and where mission-achievement professionals certified through the mastery of P2M, act as pilots for change.

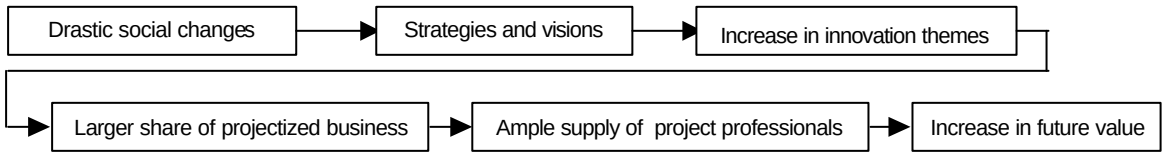

Figure 1-3: Corporate Innovation vs. Supply of Project Professionals

- Social changes invite chances for creation of strategic projects for changes based on sharp insights and visions.
- Projects include launching of new business, business model structuring, development of new products, plant construction, M&A, and organizational innovation or restructuring.
- Projects are undertakings pursuing future value and are either independent or interrelated.

- Management by project, or projectized operation of enterprises for innovation require mission-achievement professionals.

Case ◆ Construction of a New Business Model

In the environment where the world is connected real-time through the Internet, technological information exchange on some electronic parts is conducted using CAE/CAD/CAM on the global standard. A high-performing automobile company demonstrates its cost competitiveness by procurement using an Internet marketplace. Many agile top executives foresaw an economic advantage of network technology and smartly utilize it for innovative business models. The success of such companies in implementing new technology depends on availability of smart project professionals.

● P2M—Third-Generation Project Management Originating from Japan

Japan has seen full-scale research of project management in the latter half of the 1990s. In Japan, a dedicated project management department was inaugurated in the Chiba Institute of Technology in 1997, and the Japan Project Management Forum (JPMF) was founded in 1998 as a community for cross-industry networking and cross-fertilization for project management professionals, practitioners, educators and vendors. JPMF, in cooperation with ENAA, hosted Japan's first global project management conference "International Project Management Congress 2001 (IPMC2001)" in November 2001 with 460 delegates from 23 countries and P2M was announced to the world from the platform of IPMC2001.

In 1997, the first PMI® PMP® examination was administered in Japan by pioneering Japanese PMI® members. Also, the Society of Project Management (SPM) was established in 1999 as a unique academic project management society that is the hub of scientific research and development of project management; SPM's membership is not confined to Japanese but is open to the world. SPM hosted its first global symposium in Singapore in July of 2002.

With the advent of ever-increasing pursuit of project management, in 1999, the Ministry of Economy, Trade and Industry (METI) proposed that the Japanese experience, knowledge and wisdom on project and program management embedded in Japanese industry should be intelligently collected and translated into a unified body and practical guide for the revitalization and enhancement of competitiveness of Japanese industry. Subsequent managerial technology transfer to other interested counties was envisioned and the Engineering Advancement Association (ENAA), a non-profit project industry initiative was commissioned with the realization of this vision. With this vision and research budget, ENAA formed the Committee for Innovative Project Management Model Development which has been headed by Professor Shigenobu Ohara of Chiba Institute of Technology and staffed with industry's leading project management visionaries, knowledgeable academia, management consultants with project business background, and business strategists. The committee, after three years of continuing research and development activities, has given birth to this P2M.

- Project management (PM), rooted in the defense and engineering/construction industry, is finding dramatically expanding application areas since the middle of 1990's and is now one of the most widely acknowledged business management systems.
- PMI®, a global PM association headquartered in the U.S.A., maintains its proprietary PMBOK® Guide as a PM body of knowledge and IPMA, dominant in Europe, maintains the ICB competency baseline.
- PMI® confers PMP® certificates to those who have passed both career verification and a knowledge examination; PMP® examinations are administered in Japan..
- IPMA grants four levels of qualifications for project professionals based on knowledge and proven capability.
- AIPM in Australia grants three levels of project management certification based on work-place project management competency.

Following is a brief analysis of P2M's features.

Project management practices, over generations, have contributed significantly to the efficient development and execution of social infrastructures, capital investments and lately business process improvement.

Modern project management, in the first generation, focused on scope management and management of the triangle of Q-T-C or quality, time and costs.. Project management, in this form, is project

implementation or delivery focused, and sets standards for how to most efficiently accomplish given unique tasks, meeting a given or set cycle time by defining the scope via WBS (Work Breakdown Structure), i.e., decide and allocate resources to be utilized for each work package and plan-execute-monitor/control-feedback cycle..

Project management of the second generation, while still emphasizing the features of the project management of the first generation, which may be classified as hard processes of project management as it is rich in planning and control processes, also focuses on soft processes such as organization and communications management. This second generation project management takes on a balanced process structure for wider applicability and envisions use for organizational competitiveness projects in addition to meeting external sponsor requirements such as capital investment and systems development. As a result, project management has dramatically expanded its application areas: it is being applied to national policies development and agency productivity enhancement, IT/information services, and product and services development using the F-B-C (faster-better-cheaper) concept

While P2M should still go through evolution, P2M targets opening up the third generation. What is needed now in Japan is the restructuring of total systems from a holistic viewpoint, whether company business structures, public works and public services that need to adapt to changes in environment. The concept needed for breakthrough is not analytical ability, but broad visions, value consciousness, and rich insights that enable one to grasp the totality and envisage the future. The philosophy of project management embodied in P2M lies in deciphering complex issues, developing or interpreting missions for breakthroughs, and paving roads to optimal solutions through programs, which in turn consist of organically interrelated projects..

In other words, P2M expands the existing project management bodies of knowledge or competency standards to the total management of projects, or cradle to grave of projects, viz., from program conception for value creation, through flexible and modular development of programs or projects, and ongoing projectized management of operation and maintenance (O&M), utilizing value and knowledge created on programs or projects. This is also the rationale for certifying mission-achievement project professionals based on P2M.

It should be noted that this grand vision does note negate delivery-focused project management that readers with less experience should perform day to day; owing to the modular nature of P2M, those readers can focus on Parts 1, 2 and 4. Part 4 alone offers many elements of project management that have either not been covered or are dealt with briefly in the existing project management bodies of knowledge.

Application Areas of P2M

Project management is even applied in daily lives, such as travel plans, school festivals, local festivals, concerts, social services activities and all sorts of events. Project management is increasingly deployed in ordinary business firms, introduced in colleges and government offices. Recent applications cover government policies, public services, corporate innovation, business model development, product development and education reform.

Project management application areas are can be categorized into the following groups by way of illustration:

Social infrastructure projects ----------Energy systems, environmental preservation, civil infrastructures, transportation systems, defense systems, urban development, regional development, national industrialization programs, public information systems

Engineering projects ----------Engineering-procurement-construction of production plants and facilities, commercial facilities, consulting services

Information infrastructure projects ----IT-based solutions, systems integration, software development, information networks, e-businesses

Management innovation and reform projects ---Management reform, restructuring, reengineering, mergers and acquisitions of enterprises

New business creation ----------Research and development, creation of new business, creation of new business models, venture incubation, partnership development

Government initiatives ----------Official Development Aid (ODA) planning and management, technology transfer, international development consortium

Innovation of manufacturing system --Automation, Artifical Intelligence (AI) application systems, Computer Integrated Manufacturing (CIM), virtual factories

Shift from Projects to Programs

As seen in the above generic application areas of project management, a salient trend is that generally projects are evolving to be more sophisticated in complexity and mission and to be larger in investment costs and resource utilization volumes. They are implemented in an environment of increasing uncertainty due to the rapid technical innovation and market changes. Yet, traditional project management is used on projects of all sizes from hundreds of thousands to billions dollars. Apart from investment costs, many contemporary projects face high uncertainty. For instance, the development of leading-edge bio technology or electronic technology involves many uncertainty factors, which makes such development projects risky. Traditional project management can contribute very little to raising a success probability of such projects. Senior management of corporations may, for instance, mandate realizing a scheme for materials procurement on a global scale, developing state-of-the-art management information systems coupling Enterprise Resource Planning (ERP), Supply Chain Management (SCM) and Customer Relationship Management (CRM) systems, and carrying out organizational structure innovation all at the same time to respond in a timely manner to the so-called service economy. In this reality, principles and methods of traditional project management are valid in developing detailed plans for projects and for controlling the implementation of the plans but are not as effective to guide the mission and strategy formulation of projects and to manage interrelated component projects as an organic total program. Here comes the importance of program management.

For program management, P2M first elaborates the concept and features of program management that can rarely be found in an integrated manner in the existing literature, and proposes a modular approach to a program in which component projects are structured to be modular to enable combination or contraction, if warranted, commensurate with changes in the program so that the strategy side and the management controls side of program management balance.

Figure 1-4 indicates that the complementary nature of project and program management.

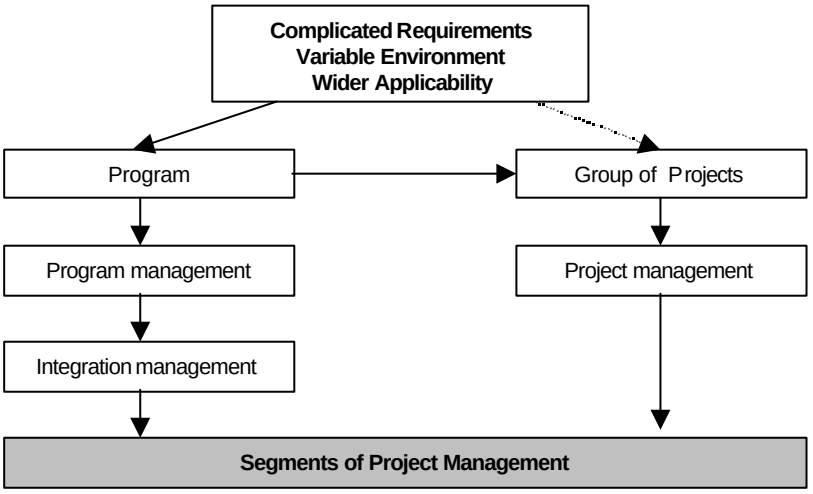

Figure 1-4: Relationship between Program and Project

Case ◆ A New Target of Project Management

We are in an era where virtual enterprises perform activities on networks across borders without time constraints. P2M is expected to support corporate planning and state policy-making for the next generation to accommodate futuristic business transactions and public services. Administrative reform and one-stop public services that citizens desire, demand the integration, as a program, of traditional discrete projects of national competitiveness strategy formulation, rational legal system, e-government utilities, recycling promotion system, technology development structure, to mention a few. The value of public agencies is likely to be assessed against alignment to this global trend.

Japan's Certification System for Project Professionals Based on P2M

Mission-achievement professionals should possess professional capability backed by sound knowledge, practical experience and attitude. The first step to becoming a project professiona; is learning a systematic body of relevant knowledge, as a prerequisite for becoming a specialist. Knowledge, however, is not the whole picture. Defining a problem, breaking it down into tasks, designing how to implement tasks and coordinating and controlling inter-related activities to meet project objectives requires practical experience. Moreover, project professionals are responsible for their professional performance toward society and project stakeholders and must abide by ethical codes.

Japan's Project Management Professionals Certification Center, an NPO, started certification in 2002. The entrance level, the Project Management Specialist (PMS) certificate is granted to those who have demonstrated the mastery of knowledge as outlined in P2M. The intermediate level is the Project Manager Registered (PMR), which requires demonstration of higher capability and evidence of practical experience. The highest level is the Program Management Architect (PMA). PMR is more or less equivalent to certified project manager qualifications according to qualifications systems such as IPMA and AIPM while PMA is a unique certificate for program management. For these two certificates, holding the PMS qualification is a prerequisite.

Abbreviation	Name	Qualification for Test, Effective period, Test type	Level
PMS	*PM Specialist* Project Management Specialist	Paper examination, renewal required every 5 years,	Primary
PMR	*Project Manager* Project Management Registered	PMS + PM experience in at least one project, renewal required every 5 years, thesis + interview	Practical
PMA	*PM Architect* Project Management Architect	PMS + experience in at least three projects, renewal required every 5 years, thesis + interview	High

Figure 1-5: Japanese Project Management Certification Systems

The introduction of the certification system is expected to bring the following positive effects:

- The qualification of PMS will accelerate the promotion of P2M education and learning towards development of project management capability.
- The qualification of PMR will increase the chance for project managers to be socially recognized and enhance their employability.
- The qualification of PMA will increase the chance for revitalization or innovation through the re-creation of projectized businesses and public undertakings.
- The certification system will significantly improve the competence of project Mission-achievement professionals to deal with complex issues, both in the private and public sectors.

3. How to Learn the Structure and Design in P2M

● Project Management Tower

The "Project Management Tower" in Figure 1-9 shows the Overview of P2M. This can be compared with the use by PMI® of the abbreviation "PMBOK®" to popularize its body of project management knowledge and depiction by IPMA of the overview of its competency base , ICB, in a "Sunflower" format.

I. Project Management Entry of P2M describes how to make a first step as a Mission-achievement professional. II. Project Management explains the basic definition and framework of project management. III. Program Management introduces program management that organically combines multiple projects. IV. Project Domain Management offers 11 domains of project management. Project management domains are used in a standalone or combined manner for individual tasks and challenges of project management and program management.

In Japan, the history of project management is not long and its practical capability system is hereby published for the first time. In P2M, technical terms are selected and attention is paid to their interpretation and integration for future development.

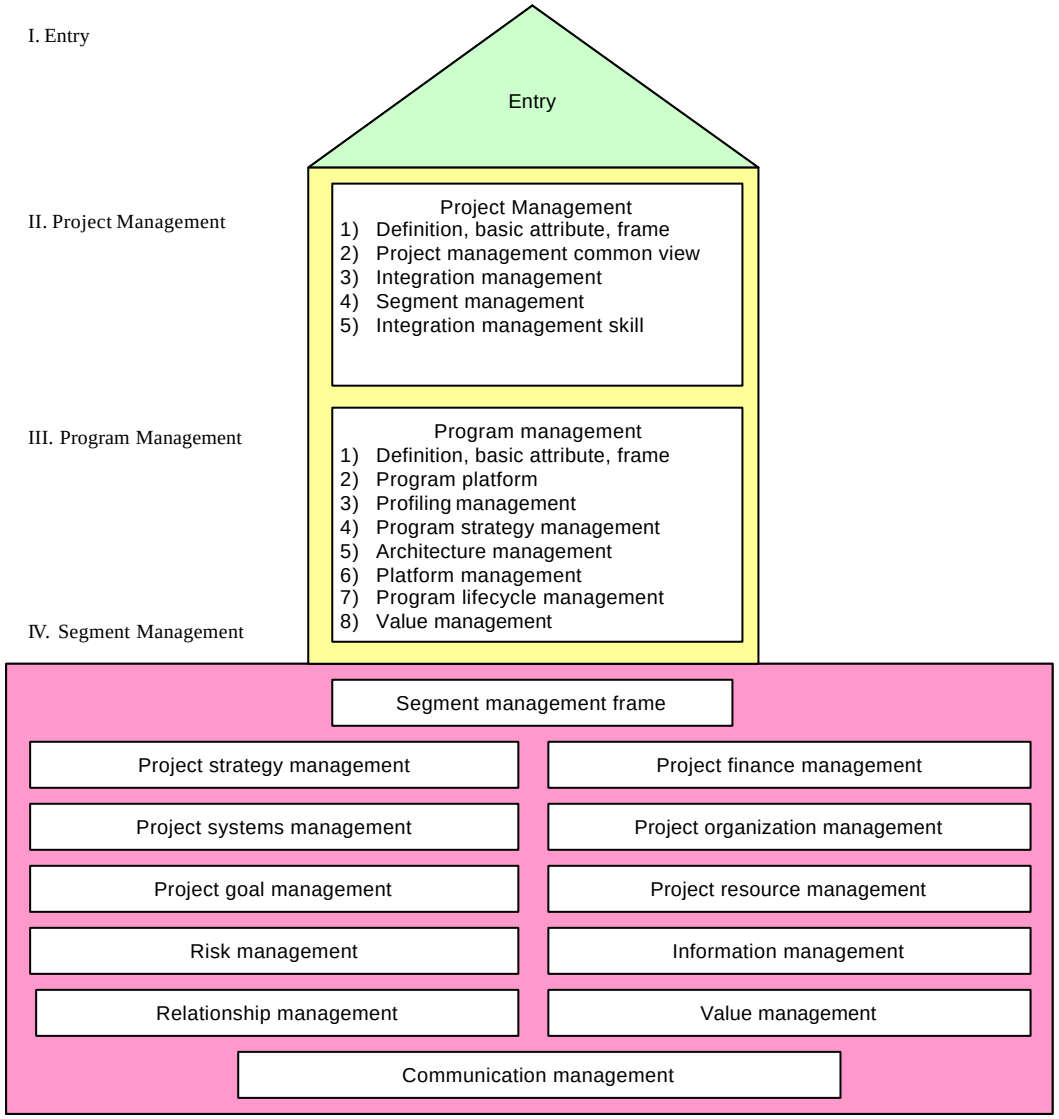

Figure 1-6: Practical Capability System of Project Management (Project Management Tower)

● Underling Concept, Orientation and Standard Approaches

Both project management and program management, basic concept, orientation and standard approaches are considered in terms of (1) definition, (2) basis attitude, and (3) common view.

	Project management	Program management
Definition	Value creative undertaking based on a specific mission	Value creating undertaking based on a holistic mission
Basic attitude	Uniqueness, temporary nature, uncertainty	Multiplicity, scalability, complexity, uncertainty
Common view	Systems approach Project life cycle Mental space of projects Project stakeholder Use of management skills	Program mission Program value Program community Program architecture Program integration management skill

Figure 1-7: Project Management and Program Management

● Practical Capability System (Base / Integration)

Program Management

As in project management, program management solves issues by combining the domains of project management. However, since a program consists of multiple projects interrelated to each other under a program, it features a double layer of management, viz., management of component projects and total management of the program focusing on the optimum integration of projects. Program management embraces the following four fundamentals and six features of integrative management:

[Fundamental Elements of Program Management]

(1) Mission ---------- Definition of the holistic mission of the program
(2) Architecture ---- Structure interlinking projects
(3) Community ----- Virtual space for integration of project professionals
(4) Assessment ---- Assessment of program value conceived, and realized

[Integrative Management – Six Features of Program Management]

(1) Profiling
(2) Strategy
(3) Architecture
(4) Platform
(5) Program Life Cycle
(6) Key Success Factors

Project Management

As a simple example of combination of domain management frames, suppose that a delivery time slips in a project. In this case, what approach or frame should be used for problem solution? A delay in the delivery will increase cost risk and cause client complaint or dissatisfaction. Sponsors also may complain. The project objectives must be met. Proper information and data should be obtained to make a quick and proper decision. Then a measure should be worked out to address this complex issue by combining three domain management frames of risk, relationships and objectives out of the eleven domains of project management.

In P2M, a **template** is provided, describing steps and procedures, as well as necessary knowledge for each domain.

[11 Domains of Project Management]

(1) Project Strategy Management
(2) Project Finance Management
(3) Project Systems Management
(4) Project Organization Management
(5) Project Objectives Management
(6) Project Resources Management
(7) Project Risk Management

(8) Information Technology Management
(9) Project Relationships management
(10) Value Management
(11) Project Communications Management

● Use of The P2M Templates For Efficient Mastery of Capability Building Baseline (CBB)

P2M is intended to facilitate readers to efficiently achieve the Capability Building Baseline (CBB). In CBB, knowledge, experience, practice and standards for project management are sources of intended competent project management practice, which includes both explicit and implicit aspects. The former can be acquired through learning and are more or less knowledge based, but the latter are related to judgment ability backed by practical experience and are thus hard to master for inexperienced project management practitioners. It is essential to transfer the know-how and wisdom of experienced project managers to inexperienced practitioners in as codified a format as possible.

Generally, experienced project managers intuitively design the most efficient plans and work procedures and have an instinct for predicting problems. P2M aims to decipher such implicit best practices into visible format and express them in the form of the P2M templates **(note: that template in this context is not a standard format for some actions or reporting but refers to standard practice patterns).**

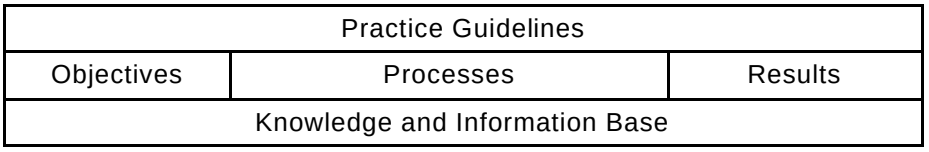

Figure 1-8: P2M Template Structure

● Use of "Practice Frame" for Acquiring Judgment Capability

Where he or she detects a symptom of unusual phenomenon in project work, a project manager with broad experience starts defining the problem, working out alternatives for solving the problem based on his/her past experience and lessons learned, and predicts outcomes. One normally solves problems using the Experiencing – Memorizing – Recalling – Applying Lessons Learned pattern. (refer to Figure 1-9). This structure of problem processing is called the "practice frame". In P2M, the eleven domains of project management in Part 4, represent practice patterns which frequently occur in project and program management..

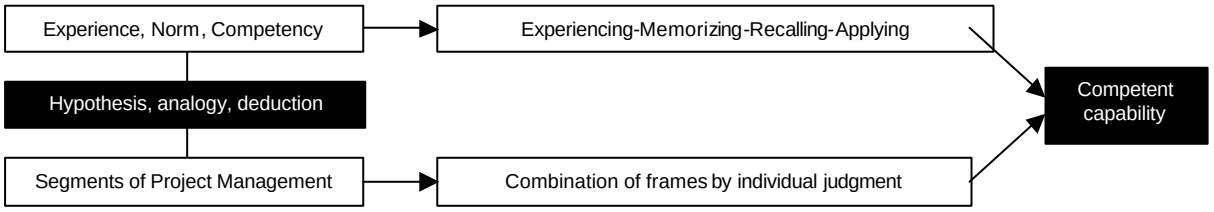

Figure 1-9: Structure of Judgment Capability

Whereas the eleven domains of project management, as standard patterns to manage aspects of projects are called "practice frames," the totality thereof or the complex utilization of individual practice frames is labeled as "total practice framework." In P2M, trend charts, layer charts, flow charts and fishbone charts, among others, are frequently used to expand applicability.

To apply capability, soft thinking or zero-based, broad-spectrum thinking is required to freely combine all available intellectual or practical assets. P2M has tried to formulate soft thinking into the practice framework, not confining itself to the traditional coverage and definition of program and project management definitions, as its mission is to help realize changes and innovations. In this context, P2M offers the following characteristics:

(1) Applicability deduced from practical experience
(2) Reflection of Japanese cultural, structural and industrial strength
(3) Avoidance of definitions and practices that are too rigid, thus providing leeway for case-to-case applications

(4) Setting of rules to utilize human intelligence and IT potentials
(5) Emphasis on holistic thinking rather than segmentation and precise combination of management elements

In summary, P2M is designed as follows:

- Templates are provided for ready retrieval of standard practice patterns.
- Standard frames or practice patterns are built on industry lessons learned accumulated through the Experiencing – Memorizing – Recalling – Applying cycle, which help acquire judgment capability.
- P2M allows project professionals to build professional capability by repeating deduction, prediction and application based on the standard frameworks provided.
- Cases in P2M facilitate simulation based learning.

Case ◆ Promotion of Corporate Innovation Project

Knowledge, information and service industries, as a percentage of GNP in industrialized countries has reached as high as 60 to 80 percent. In these growth industries, information and knowledge resources that satisfy customers are valued more highly than physical resources, and are the subject of many competitiveness enhancement projects.

On the other hand, manufacturing enterprises are promoting various innovation projects for survival as a program, such as a restructuring projects, professional development projects for selected few high-performer employees (departure from equal education opportunity characteristic of Japanese corporations), competency based employee appraisal, downsizing (rightsizing) projects to withdraw from unprofitable business lines, quick response as core customer services using IT systems, and business process reengineering.

In both competitiveness enhancement and innovation initiatives, the smart utilization of project (program) management should influence corporate success.

- P2M enhances project professionals' capability to apply knowledge and wisdom to project specific tasks and challenges
- A standard for structured knowledge base is important for the development of knowledge, knowledge education and qualification of project professionals.
- This Guidebook is intended to be a structured guide for forming capability, not a comprehensive textbook.
- P2M is a project and program management guide first published in Japan. It will go through continuing refinement with feedback from actual applications. Familiarization education is provided through dedicated seminars and reference literature.

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Part II. Project Management

1. Project and Project Management

● Definition of Project

Definition
A project refers to a value creation undertaking based on a specific, which is completed in a given or agreed timeframe and under constraints, including resources and external circumstances.

Specific (Project) Mission

A specific (project) mission means a fundamental purpose for which a project is created and the project is expected to achieve. Project management starts with the interpretation of this mission into a set of requirements and defines objectives, guidelines and policies, strategy, and essential action plans to meet these. Then, a project sponsor(s), when satisfied with such project fundamentals, accepts the value of the project and commits resources, including an investment fund.

Basic Attributes of Projects

A project has three basic attributes, namely: uniqueness of a project's mission; temporary nature charaterised by defined starting and closing times; and uncertainty such as environmental changes and risks. A project should also be a value creating undertaking.

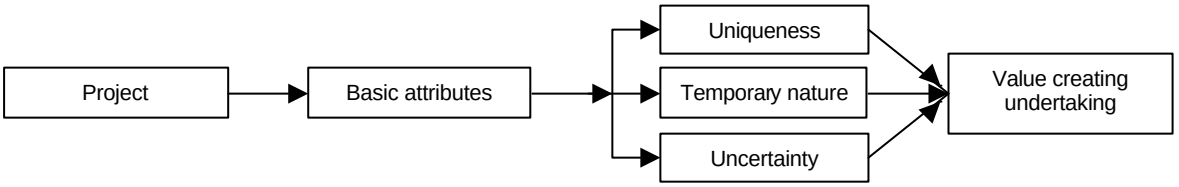

Figure 2-1: Definition of A Project

(1) UNIQUENESS

Uniqueness means the non-repetitive characteristics of projects. Even if some projects seem to resemble each other, a project is never executed in exactly the same environment and context others. Projects encourage pursuit of differentiation, new combination of approaches, novelty and innovation. If some projects appear to have similar missions, they will still be unique if they do not achieve the same results or entails different requirement interpretation, constraints, context and a project team. Uniqueness demands shifts of viewpoints, tailoring of approaches, and wisdom.

(2) TEMPORARY NATURE

Temporary nature is characterized by each project having a defined start and end point. The start time is clear as it is not only stated in the project schedule but a project team is organized based on the project's mission and the team's key persons are nominated. However, except for projects in the hardware-oriented project industry, there are cases where the timing of the project completion is not necessarily clear as in software development projects where debugging and/or feature additions due to unclear scope definition may continue for an extended period. Conditions for project completion should be defined. In order to carry out projects, personnel are temporarily summoned to form a special team. Implementation period of the special team is fixed and the team dissolves upon completion of the project.

(3) UNCERTAINTY

Since projects are executed assuming specific conditions and situation, the achievement of their missions is attended by uncertainty. This uncertainty results in risks caused by indefinite information, immature or unproven technology and unpredictable factors. In projects, these risks are overcome by proactively employing project manager's and team members' combined knowledge, judgment and creativity. A salient feature of a project is a project team's coordinated responses to uncertainty.

Value Creation

Projects embody insights of planners into given missions, which lead to the creation of new value enriched by uniqueness, differentiation, novelty and innovation. In day to day life, business and public scenes, value creating activities are carried out in pursuit of happiness, self-realization, profit, welfare and so on. A value creating activity is defined as an activity to realize value to meet needs of human beings, industry and society, which is carried out by one or more persons on the basis of intellectual, physical and financial resources.

Value creation through continuous improvement can be also found in routine manufacturing activities, whereas project activities such as development of new products (or systems), operational innovation, and development of business models are value creation activities. They are directly connected with the specific mission to satisfy customers' specific needs and, if successful, enhance enterprise profitability. However, a mission is stated briefly as a desired state to reach and thus signifies connotative requirements. In order to connect projects directly with the specific mission, it is essential for a program or project manager to clarify project goal, objectives and constraints that include, by way of illustration, basic functions, grade, design features, production processes, production costs, time to market and marketing strategy. In summary, a project can be defined as an undertaking embracing the following characteristics:

- A project is a value creating activity to meet a specific mission.
- When a project is successfully completed, it delivers novelty, differentiation and innovation on its product, either in a physical or service form.
- A project has a temporary nature having defined start and end times.
- A project has inevitable uncertainly factors due to its nature.

● Definition of Project Management

Definition

Project management is the professional capability to deliver, with due diligence, a project product that fulfills a given mission, by organizing a dedicated project team, effectively combining the most appropriate technical and managerial methods and techniques and devising the most efficient and effective work breakdown and implementation routes.

Requirements of Project Management

(1) DUE DILIGENCE

Due diligence here means proper methods and procedures that respect social expectations and ethical standards in general and conform with applicable laws, standards, widely accepted practices and where applicable, international standards that a sponsor(s) of a project, in carrying out a project, mandates to the project team. In this way, the project is held accountable to both sponsor and society.

(2) EFFICIENCY

Efficiency refers to the ratio of output gained against resources mobilized; it signifies a physical productivity indicator in relation to production plants and manmade structures. Project management requires procedures, knowledge and means to minimize irrationality, waste and inconsistency. In recent years, in addition to physical productivity, intellectual productivity is proving important: agile use of market information or production data, supply chain analysis, unique combination of technology elements, all leading to value enhancement.

(3) EFFECTIVENESS

Effectiveness means an indicator of favorable overall effect brought about by projects and a level of satisfaction of stakeholders who are directly or indirectly involved in a project. Effectiveness can be also evaluated in terms of benefit acquired against investment costs.

Professional Capability of Project Management

The professional capability of project management is largely classified into the following three categories:

(1) Capability to translate a mission into concrete objectives and schematically design processes, major work items and paths to attain these objectives.
(2) Capability to ensure the delivery of a project product through proper planning, management, coordination and controls.
(3) Capability to ensure overall stakeholder satisfaction by coordinating a variety of frequently conflicting stakeholder interests.

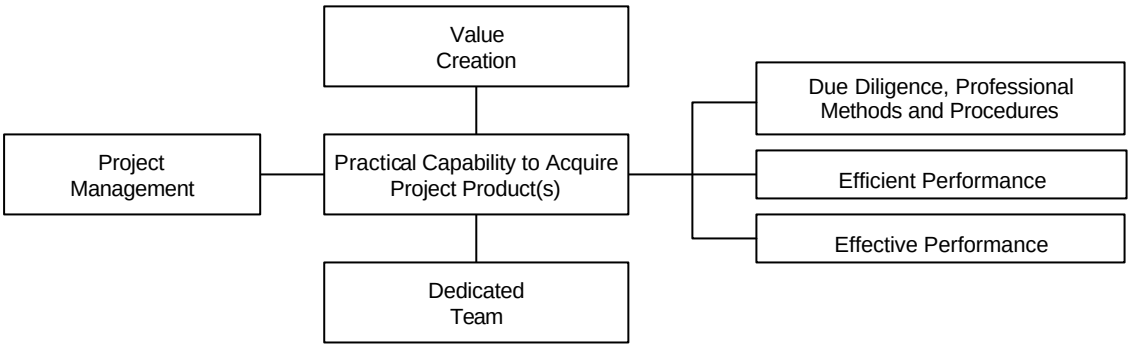

Figure 2-2: Definition of Project Management

● Value Creation through Project Management

Project value refers to the benefit that a project product renders when the requirements embodied in the project mission are fulfilled. There are prerequisites to attain value. The first is a necessary condition that the framework of practical capability is in place to achieve a project as envisioned; the second is that the project product should bring about value to all the stakeholders harmoniously. In short, a project produces **asset value** (including intellectual asset value) as a direct outcome of its undertaking, **innovation value** as its product generates profit or enhanced services to the public and **synergy value** that produces synergy for future beneficial collaboration or new cross-industrial business models, with a requirement that the project should successfully balanced interests of stakeholders.

Public Value and Private Value

From public viewpoints, value of projects includes realization of social benefits, public safety, serviceability, facility safety, human welfare, social acceptability and environmental conservation. From private viewpoints, project value refers to corporate benefits such as profitability, innovation, growth, stability and trustworthiness.

Planning and Assessment of Value

Project value is planned or evaluated on such criteria as the comparison of the benefit created by a project with the costs expended. Typical methods and indicators used for this assessment are CBA (Cost Benefit Analysis), CF (Cash Flow), NPV (Net Present Value) and IRR (Internal Rate of Return).

Case ◆ Public Project and Private Project

For example, a park project produces benefits such as comfort, rest, relaxation and fine view, but a financial profit cannot be expected because it is a public project. Accordingly, it is important to plan the project to acquire maximum value by optimizing a ratio of benefit to the cost for land acquisition, facilities and landscaping.

For enterprises, as is the case in product development, timely injection of a product superior to those by competitors contributes to future cash flow. Moreover, it also contributes to a rise in the company's stock value, which, in turn, improves asset value, accelerates growth and increases creditworthiness, and, as a result, facilitates financing.

2. Project Management Capability Framework

Project management should be based on professional capability and be a value creating activity. Deployment of this capability requires the shared view, total management, and domain management, which comprise the basic framework. It is also crucial for project management to harmonize objectives of a broad spectrum of stakeholders such as, typically, project sponsors (investors), project owner(s), project team member(s), contractors/vendors, regulatory agencies, and the society/community in general. A variety of objectives are a collection of different stakeholder expectations of a project mission; they should be essentially oriented toward the same core mission but connotations may be different, making harmonization difficult.

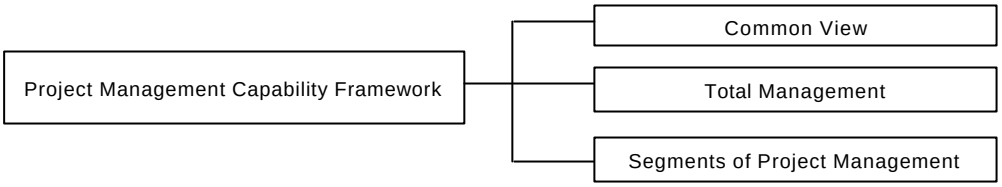

Figure 2-3: Project Management Capability Framework

● Project Management Shared View

The Project Management Shared View refers to common understanding of the basic attributes of projects and patterns whereby the project domain management and integrative management are employed, and natural, socio-political and economic factors exercise their influence on project activities. The elements of the shared view consist, regardless of project types and sizes, of systems approach, project life cycle, project mental space, project stakeholders, and management skills.

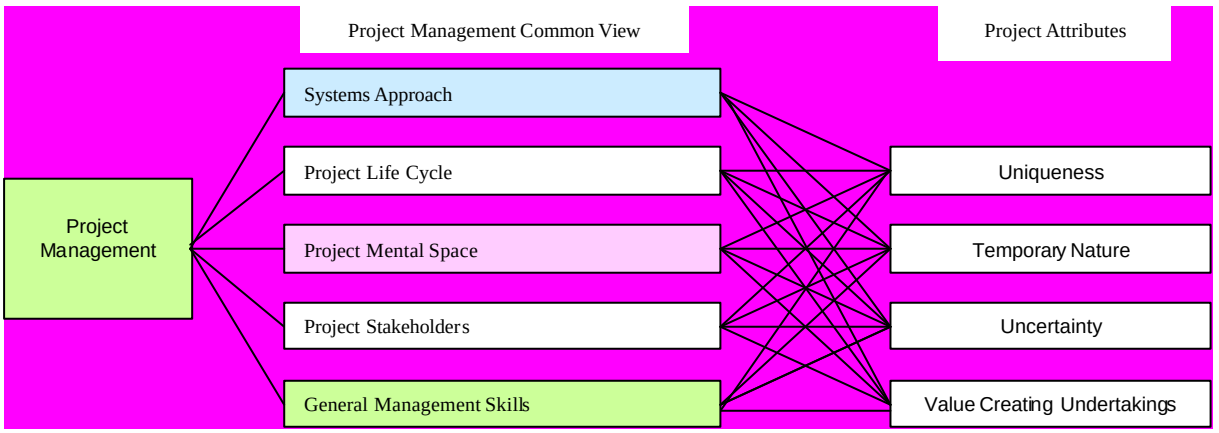

Figure 2-4: Project Management Shared View

Systems Approach

Project management addresses complex issues based on the systems approach. In project management, the following seven elements are recognized as comprising a process: input, process, output, constraints, disturbance, management cycle, and knowledge-tool-database.

In project management, constraints are premises given at the outset. Any change in premises needs to be endorsed by stakeholders on the strategic level and is beyond the authority of the project manager. Disturbances should be classified into two types: those within and those beyond the control of the project manager. Where any disturbance of a vital scale occurs that significantly affects the project product, re-design of the system should be carried out. The project manager must be mature enough to judge whether the change in question is within or beyond his/her authority.

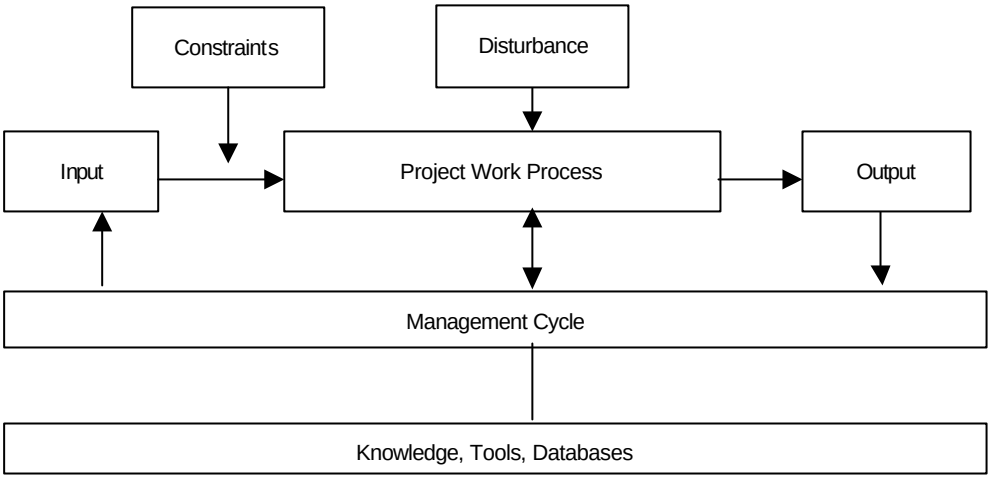

Figure 2-5: Systems Approach Theory

The domains of project management in P2M facilitate the process design of project work and its performance. Project management in the 21st century should pursue, in addition to human resources and physical resources, value creation in highly complex issues characterized by uncertainty by combining intellectual, financial, platform, and information resources. Development of a specific mission often leads to a project with a structure consisting of several subsystems as subprojects, rather than a simple-structure project. In this case, it is necessary to clarify the interfaces (relation between inputs / outputs and constraints) among individual subsystems.

Project Engineering

Project engineering (note: this is not the project engineering used in the engineering and construction industry) is indispensable for systems approach. Project engineering in project management means the systems approach for analyzing, defining, and proposing a solution(s) to complex issues involving socio-political, economic, managerial, informational, techno-engineering and financial needs

Case ◆ User-friendly Financial Information System

In building a financial information system, the knowledge on financial business, machines, IT and human engineering is necessary for designing software and applications platforms. For instance, to build an ATM system for cashing, deposit and transfer, a combination of knowledge on optical reading, transactions and verification is required, as well as understanding of ergonomics.

Project Life Cycle

To profile the total project, one should know how the project is formed and implemented phase by phase: each project phase is characterized by its distinctive attributes in terms of mission implementation and deliverables. Thus a project life cycle approach is universal in the project world.

Each project has a project life from the conception of a project to its completion; and each project has its own project life cycle pattern. With the period of a project plotted as the horizontal axis and amount of efforts expended as the vertical axis, a build-up curve is derived and the accumulated amount of effort expended is shown as an S curve. When the curve is demarked by milestones unique to the project, the divided periods are recognized as a phase. Milestones vary with the industry branch or project type such as product development, computer programs and plant construction, and can relate closely to management practice in each field. To profile the total project, one should know how the project is formed and implemented phase by phase: each project phase is characterized by its distinctive attributes in terms of mission implementation and deliverables. Thus a project life cycle approach is universal in the project world.

A typical project life cycle includes the initial, intermediate and final phases. The intermediate phase may be divided into two or more phases. These phases are represented, among others, by tangible intermediate or final deliverables. This deliverable differentiation demands work objectives and contents and management objectives. Thus, each project phase requires a tailored approach.

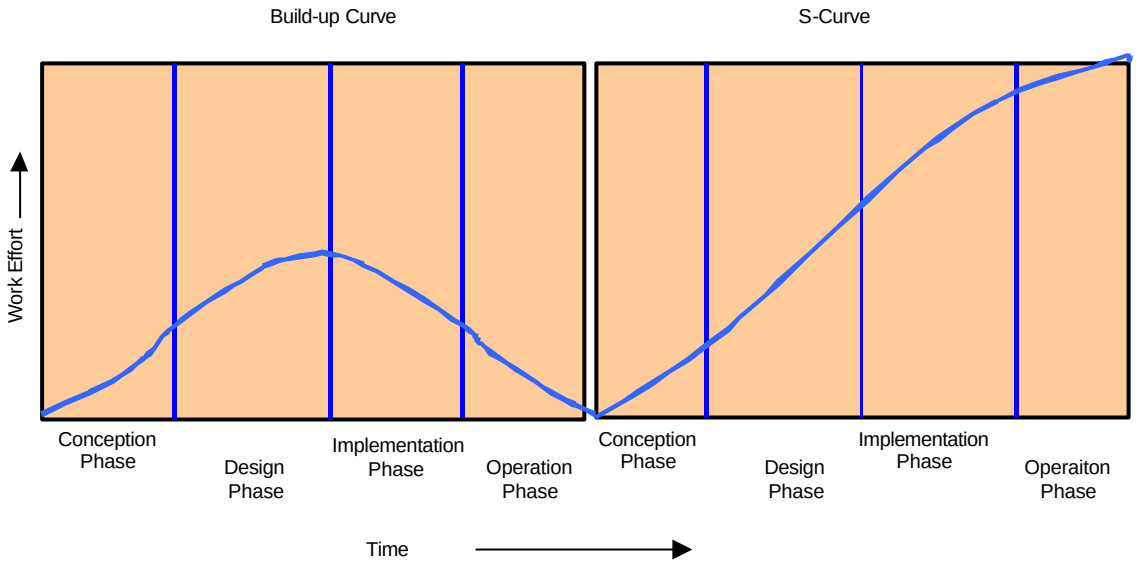

Figure 2-6: Project Phases vs. Types of Effort Curve

Project's Ba

The project mental space(ba) refers to the virtual, motivational space where stakeholders recognize the value of a project mission; commit themselves to the project from a variety of geographical, cultural, industrial, academic and organizational spheres; and helps build interaction and collaboration through a project specific communication base. Project performance is greatly influenced by whether or not the project can create an active project mental space.

On projects, as a variety of stakeholders, culture and information are interwoven into context, it is part of project management's important function to positively deal with complexity, uncertainty and multi-facets of a project toward a given mission, pursuing fusion, alignment and motivation, which creates high mental energy. Natural, socio-political and economic influences within, exterior to and on the interface with the project are important factors that a project should consider to utilize them favorably for, or mitigate adverse impact on, the project. The socio-political influences refer to interaction among human beings, communities and organizations exerted by or impact on political systems, social norms, state of life, custom, culture and manners of communications. Where a project is executed through an international consortium, the project would encounter misunderstanding, and confrontation if attention is not paid to cultural diversity.

In recent virtual project teams in which team members co-work on electronic networks, common sharing of project objectives and interest in project work provide the bond and communications are cyber-based. Project management in the 21st century should consider characteristics of cyber project teams and how team spirit and collaboration is maintained; "high-tech, high touch" should be one important factor. Regardless of physical characteristics of project teams, a single set of mission and objectives, finely knit communication routes and teambuilding activities shape the backbones of project mental space

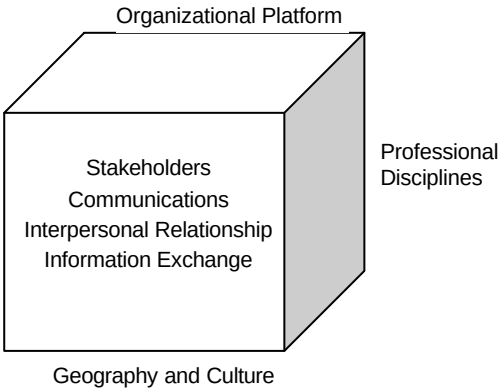

Figure 2-7: Project's Ba

Case ◆ Project's Ba

The four industry key words, i.e., focus on customer satisfaction, work-front first, team work and perfection orientation born in Japan have been imported into project management and are predominant objectives in project work. Pursuit of these key words drives project teams and helps produce unique ideas and work manners. Behavior such as endeavoring to honor contractual terms, avoiding lawsuits, seeking harmony by avoiding confrontation may produce both positive and negative results. However, a negative side can be minimized if the project mental space is designed properly. Quality teams are a good example.

Project Stakeholder

Project stakeholders are those directly or indirectly participating in a project or affected by projects and include sponsors, owners, financiers, contractors/subcontractors, materials or services suppliers, regulatory agencies, consultants, project manager, project team members, among others, who create value in one way or other. Typical indirect stakeholders are local government agencies and community that are affected by the projects.

Project sponsors are required to make a project investment decision not only based on analyzed project value but also giving due consideration to matters required by stakeholders (context) to obtain a balanced project picture. The project manager is a primary stakeholder who is a mission-performing professional endowed with the necessary authorities by the organization to direct and integrate the project; his/her role is to develop the given mission into specific objectives and execution strategy as well as forming a project team with expert professionals to execute project work under a set of constraints

- Projects are performed by players and sub-players who are both stakeholders.
- Projects exert influence on third parties who do not directly participate in the project.
- Due attention should be paid to the stakeholders for total harmony of the project.

Use of Management Skills

Management skills are needed to form an organization and get assignments done with expected results through project organization members efficiently and effectively while motivating them. Management skills are acquired from management theories and workplace application providing a driver for work execution with high efficiency through job descriptions and integrative management. People who belong to an organization are motivated by interest in jobs, zeal for work completion and comfortable working environment. A basic logic for management is, therefore, to form an organization most suited to the attainment of organizational objectives and motivation enhancement of organizational members.

However, what is more important is effectiveness. Effectiveness means the overall satisfaction and results of performance with well-balanced partial efficiency. Orientation and coordination among domains are required to achieve effectiveness. Leadership shows correct orientation and solutions by demonstrating adaptability to changes in environment and situation. The knowledge source of these management skills is theorized as the discipline, norm, practice, wisdom and expertise that are acquired through practical experiences. The strength of practical learning lies in the knowledge that is acknowledged as effective through practice.

3. Project Management Knowledge and Skill

● Domain Management

Project management skill refers to an ability to ensure deliverables through the complex use of general management and the 11 individual project management domains in order to demonstrate the largest efficiency and effectiveness by understanding the total and shared view of project management and adapting to changes in situation and environment. For demonstration of capability, skills in project management domains are stated with the template that integrates and formalizes the flow of objectives, work execution and results, constraints and disturbance due to environmental changes, and the measures, knowledge and data for coping with them.

● General Management

In project management, the project manager forms and manages a temporary organization whose activity is limited to the performance of a specific mission by maintaining relations with the parent organization. Whether a mission is for profit or not for profit, a temporary team is formed within an organization, or across organizations, or by gathering expert individuals from various outside sources. Project leaders normally demonstrate management ability by exercising specialized authorities and have the responsibility for achieving results.

Thus, project management is a type of management dedicated to projects. However, a considerable part of general management practices backed by proven theories can apply to project management. Typical general management skills as applied in project context are shown below.

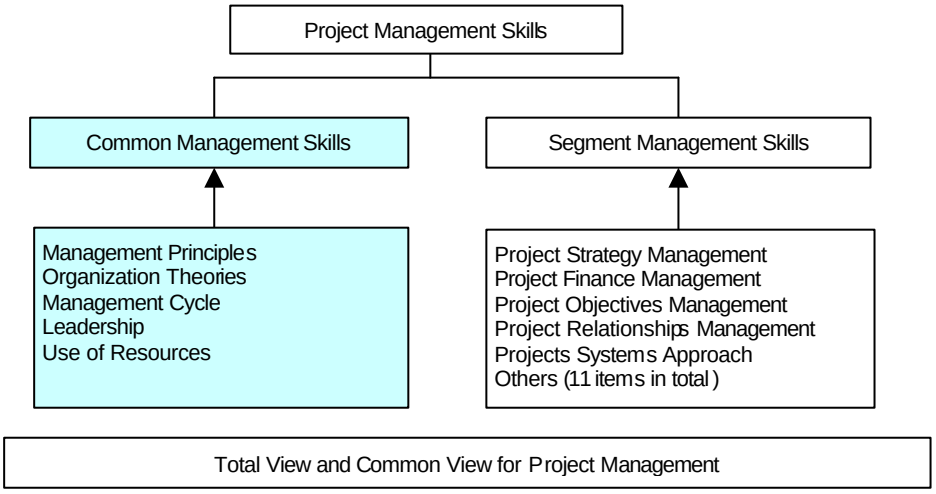

Figure 2-8: Project Management Skills

Management Principles

(1) BASIC ACTIVITY CHAIN OF PROJECT MANAGEMENT

Project activities in the P2M context refer to value creation activities by the project team. Core activities of project management consist of planning, integration and coordination for efficient and effective project execution with good progress and results. Project management provides competent direction to project work with leadership, policy planning, process design, goal setting, organization, task tabulation, resource assignment and adjustment and project team building, including motivation.

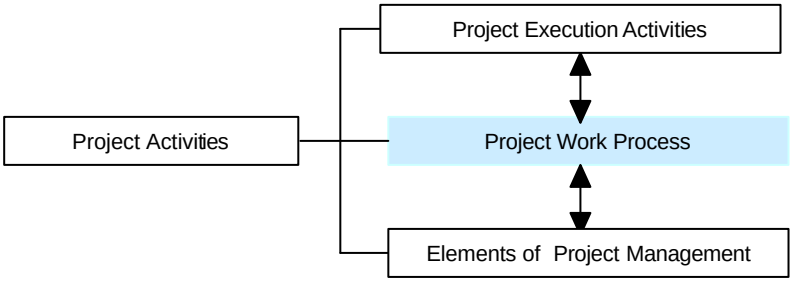

Figure 2-9: Overview of Project Activities

(2) Project Work Process

The concept of project work process is necessary to understand the relationship between project execution activities and of project domain management. Project work process shows a flow of overall execution activities from the beginning to the completion of a project as described in Figure 2-10. It also shows time phases to which domains of project management apply.

Project work process can de described by distinguishing between project execution work and project management but importantly both are interlinked closely. While project execution breaks down project work elements and produces products for each work package, project management serves as a gyrocompass for project execution work by applying leadership and the management cycle.

Project work process consist of the following:

- Work process for the total project
- Work process for specific parts that constitute the total project

The work process for a specific part is referred to as the work process module, which can be characterized with unique products produced by work items contained in the module.

Work process refers to work procedures and is often described with a diagram. Figure 2-10 shows the total work process.

1) VIEWPOINT OF PROCESS MANAGEMENT

Project work process signifies a standard pattern showing the flow of project execution activities along the time axis. To understand this work process from the viewpoint of management, recognition of two key points is required.

- Efficiency

The standard work process should be reviewed on an ongoing basis and be improved efficiently since it may have waste, inconsistency and unreasonableness with time.

- Effectiveness

The standard work process should be improved from the viewpoint of stakeholders, customers in particular, on an ongoing basis to demonstrate its effectiveness.

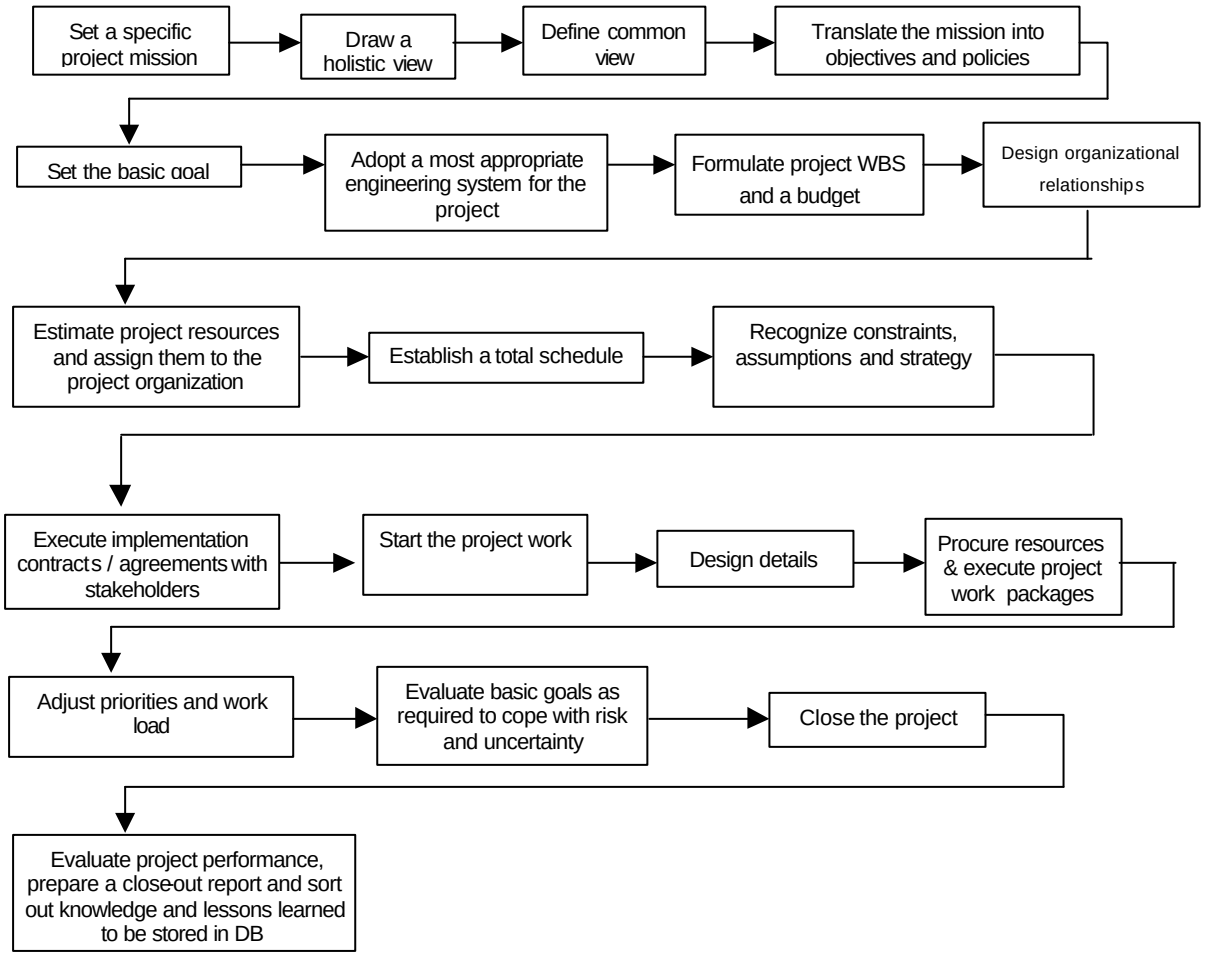

Figure 2-10: Standard Project Work Process

2) TYPES OF WORK PROCESS

Since projects are value-creating activities, they go through resources mobilization, conversion and product acquisition. When conversion is viewed in terms of added value, there are value creation, evaluation and enhanced value utilization activities via digital media.

- Work Process from Value Creation Aspect

The viewpoint of the value creator, which was proposed by Michael Porter, is called the value chain. Here, functions such as conception, R&D, design, procurement, construction, testing and trial run are expressed as a chain of work process. Human resources management, finance and accounting and other corporate planning and management services are classified as support functions.

- Work Process from Evaluation Aspect

Evaluators are in the position to evaluate project products such as manmade structures and services produced from the value chain. If they find that the value created does not meet the conditions for quality, performance, costs, delivery time and other parameters set out in the contract, the product must be modified, repaired or rejected. Value creators, then, need to reengineer the work process so as to satisfy evaluators.

- Digital Work Process

Work processes may take such a form in which work execution are supported by CAD / CAE / CAM with accumulated data, information and knowledge. Also, we are in the age where virtual work-flow backed by digital network is in place that enables virtual exchange of product data and their review and approval.

3) REENGINEERING OF WORK PROCESS

The Business Process Reengineering (BPR) has been proposed by Michael Hammer and James Champy. BPR supports customer's viewpoints and is the methodology guide for reducing lead-time and costs by drastically reviewing existing processes from scratch, eliminating waste, and making the best use of information technology. This concept can be applied to project work processes as it is. It is highly important to re-design the work process to enables the maximum accomplishment of a specific mission by eliminating work overlaps, pursuing parallel work chains and adopting digital work processes.

Project Leadership

Leadership refers to interpersonal influence that leaders exert on team members to effectively achieve project objectives and goals by giving psychological energy to project teams to motivate their group endeavors. Leadership has two factors: position authority-based influence in the organization and personal influence that includes personality-related charm or competency based on experience.

Leadership also has four common elements: indicating right directions; distilling mental energy; helping team members understand the core of the issue; and suggesting solutions for a crisis. Project leadership should be expressed in the appropriate style that meets the respective project type and situation.

Creativity-focused leadership style, objective-centered style, teamwork-focused style and others can be developed through study and exercises.

Project Organization

An organization with diversified expert professionals is the basic principle for achieving high productivity. Organizations generally aim to have a common objective, confirm collaborative work setting and enhance productivity to ensure performance by achieving a mission with communications being the centerpiece to attain this mechanism. Project organizations are established for a specific mission on a temporary basis either anew, as an expansion to or independently from the existing parent organization. Their resources such as human resources, technology and information are dependant on the existing organizations. Although project organizations show various patterns and are of a temporary nature, all should have one common aspect that is value creation through the organization under uniqueness and uncertainty environment. Project organizations are largely grouped into two ways: functional project organizations and projectized organizations.

The functional organization is often seen in mass-production type manufacturers and service providers. The projectized organization is popular among job-order type engineering, information software, and research institutes. In the function-focused organization, since operational work has more weight than project operations, projects are likely to be handled secondarily. Meanwhile, in the companies that place greater weight on projects than operations establish a system that responds to formation of a project team at any time with a matrix organization.

There are many other types between these two poles and a typical one is a task force that forms an independent project organization on a temporary basis. This type enables approach to highly significant themes, strong authority of project managers, and demonstration of mobility. In the matrix type organization, a project team and resource departments are coexistent and staff are involved with both sides, so that conflict is likely to occur among them as to which work or order should have a higher priority.

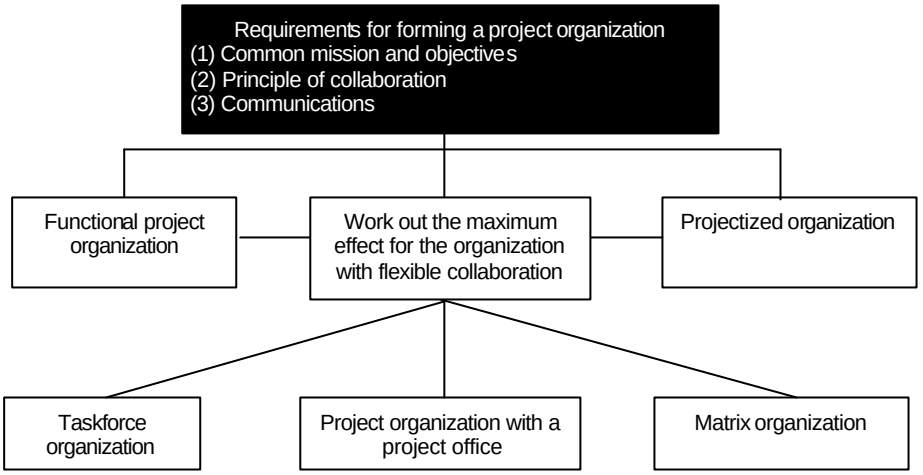

Figure 2-11: Project Organization

When concurrent coordination is inevitable and a project office is established for special coordination, a resource-pool-management type organization including human resource allocation may be adopted. In recent years, network type organizations using IT are becoming prevalent. They have a common feature of concurrent existence of business as usual and projects. Objectives of organizations are classified into profit, non-profit, and complex types. The non-profit type includes policy planning, regional development planned by local public entities, academy symposiums, development projects by enterprises, development of computer programs, innovation of organizations, rescue operations performed by volunteer groups, and planning of special themes.

(1) TEAM BUILDING AND COMPETENCY

A critical issue for team building is whether optimum human resources are secured. Competency has been identified as a significant factor.. Competency refers to the trait of an incumbent employee who achieves excellent performance repetitively for a given duty in the organization. It has been found that such competency is created in many cases from behavior patterns owing to personality and quality such as attitude and commitment toward work, enthusiasm and sense of value, rather than from job knowledge or skill. People produce results by making combined use of gifted ability, competency acquired through learning, and work-related behaviors. The most significant element is behavior pattern.

It is significant that such a high performing person with a characteristic competency serves as a model for team members. This is because they achieve remarkable performance in work models, setting standards for competency and due diligence. Particularly, as Figure 2-12 shows, they constantly have innovation awareness, display a behavior pattern to maintain a broad human link, detect issues from the status quo, conceive good ideas, think of strategies logically, coordinate the whole organization, and accomplish results, taking into consideration time and information availability or constraint. Persons having such qualities are appropriate as project leaders.

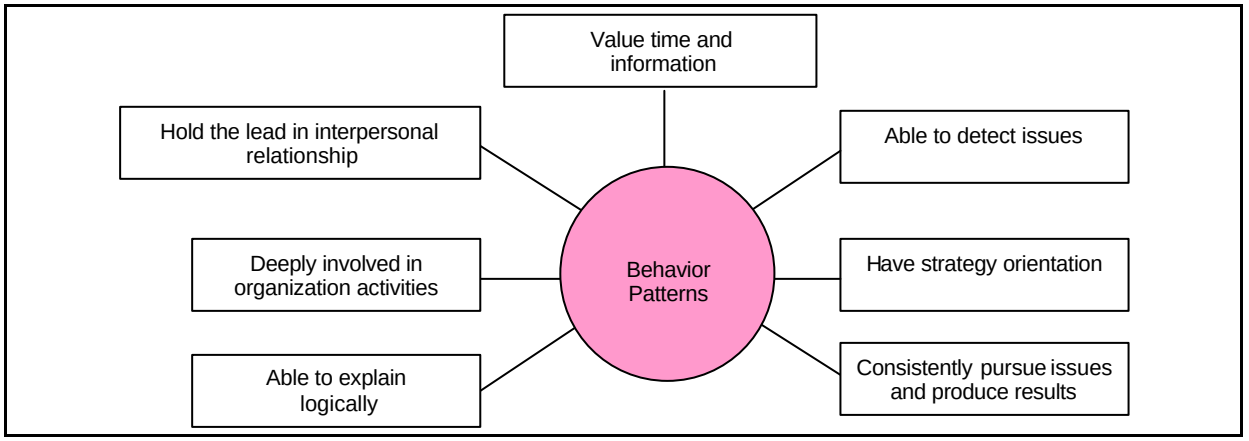

Figure 2-12: Team Building and Competency

(2) ASSESSMENT OF COMPETENCY OF TEAM STAFF

Projects need various expert human resources; in-house entrepreneurs who have ingenious imagination, experts who demonstrate capability supported by abundant experience and ensure expected results, project managers who can integrate their teams, and managers who have mobility to avert conflicts in the organization and to motivate others. For assessment of such human resources, the following procedure for creating competency models is necessary,

(1) Select a number of high performance achievers,
(2) State the business process in the style of interviews,
(3) State key points for implementing each process,
(4) State desirable behaviors in each process, and
(5) Arrive at common desirable behaviors and create job competency models.

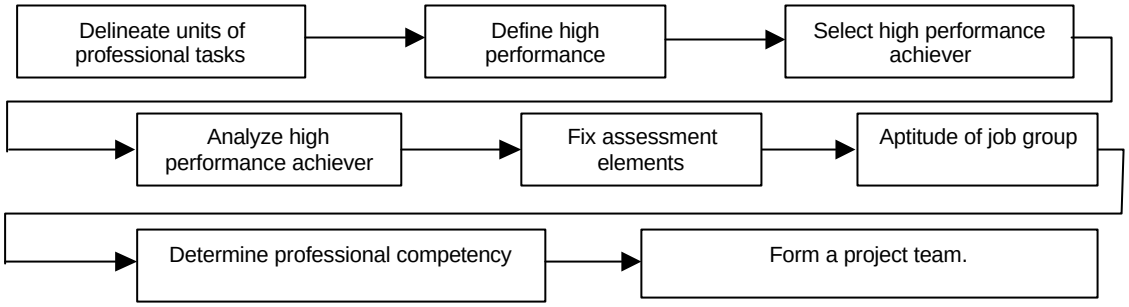

Figure 2-13: Job Analysis for Project Team Staff

Case ◆ Competency in International Procurement

Suppose international procurement of materials is needed for a project. Select 10 persons who have negotiation skills to procure quality materials within the budget. Then, prepare a question list on key points for procurement business process and behavior patterns to survey behavior patterns behind competitive procurement. Thus, the competency data on procurement work should be collected.

Project Resources and Arrangement

Project resources include six types of resources: material resources, labor resources, intellectual resources, information resources, financial resources and platform resources. Material resources include machinery, parts, materials and raw materials. Information resources encompass base intelligence, information and data necessary for decision-making and knowledge formation. Intellectual resources include knowledge, know-how, techniques, skills and services. Financial resources are a source or measure that enables procurement of capital and funds. An idea is not a project but with organized injection of necessary resources, it can become a project. Concerning project resources, attention should be paid to availability constraints, interrelationship and recycling.

Since resources are limited, they are a constraint for project management. Intellectual assets are formed by the fusion of information and intellectual resources. Intellectual assets have the benefit of recyclable knowledge resources to improve a project itself or productivity of project management across geographic distances, cultural spaces and time.

As a result, they can impact the necessary amount of material and labor resources. As is represented by assembly work, advancement in automation and artificial intelligence realizes labor saving. In addition, financial resources are one of the resources but it has a special characteristic as a means to procure other resources. In other words, projects cannot be materialized without financial resources.

To date, project management has positioned the approach to financial resources and its framework as a prerequisite of a project. Financial resources should be recognized as significant resources that unite project needs with seeds. Project management acquires new information and knowledge in the process of creative coordination activity in which project resources are utilized and products are acquired. Moreover, workers can upgrade their skills through experiences and material resources can be recycled or renewed in the form of products or by-products of projects.

Lastly, platform resources refer to service resources to be acquired from institutional, social platforms such as legal system, networks and roads.

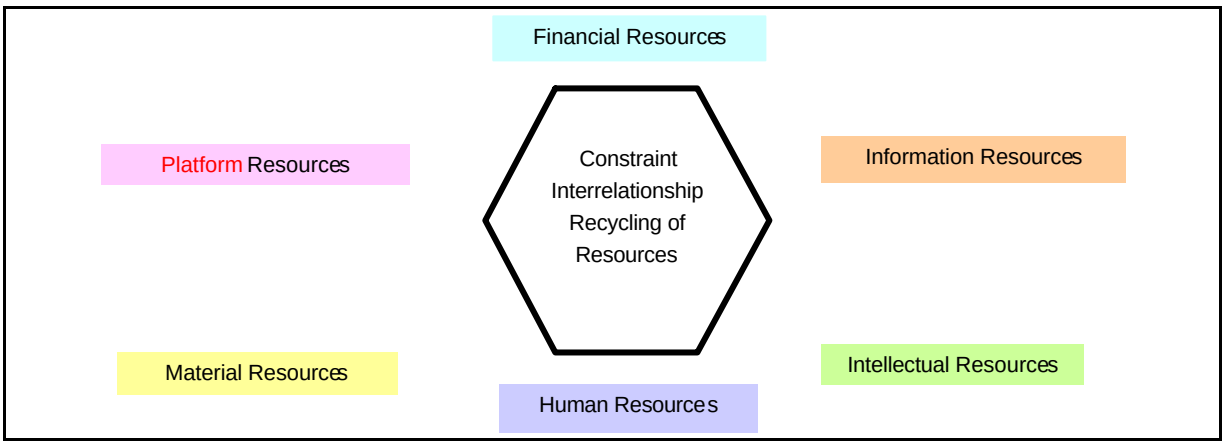

Figure 2-14: Project Resources

Case ◆ Notable Intellectual Assets

The advent of information society has given rise to the influence of intellectual assets on the economy. In project management, attention should also be paid to the superiority of financial, information and intellectual resources. The knowledge related to this is an essential object of education for professionals concerned with project management.

Case ◆ Powerful Platform Resources

Today, the use of networks is essential for project management. Therefore, optical fibers are one of the powerful platform resources. The environment for free trading with less restriction, fair and safe human or legal service, and appropriate protection also belong to this type of resources. These resources work as a significant, efficient support for performing projects.

Project Management Circle

Project Management Circle is a procedure available for enhancement of problem-solving in the overall project, phases and workflows as well as improvement in efficiency and effectiveness. This Circle, although standard in pattern, is applied in a unique manner to practical operations of each project.

Action is taken based on five process elements: designing, planning, implementing, coordinating and delivering. This set of process elements also corresponds to the action patterns for decision making throughout the project.

The design element should engage originality, idea and optimisation to provide an adequate basis for launching and planning a project. The coordination element aims for a solution through consultation among interested parties concerning occurrence of issues, pursuit of their causes and measures. Coordination replaces the control element, aiming for reduction of the difference between goals and results by monitoring it. Coordination also involves monitoring of environmental factors such as situational changes, accidental factors, interference between goals, obstacles to collaboration, and malfunction.

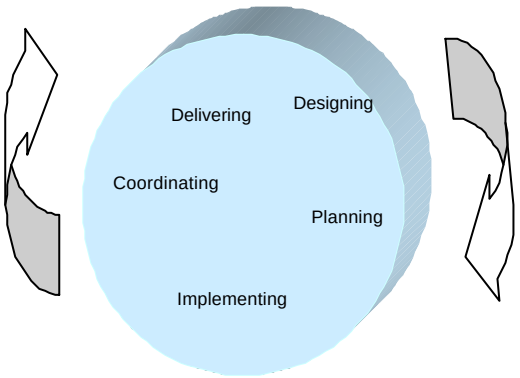

Figure 2-15: Project Management Cycle

● Complex Management

The capability of project management is achieved by combining two types of management: product –delivering and issue-solving. The product–delivering type involves a project management life cycle for ensuring products are delivered by coordinating the difference between the design and results of the plan. Meanwhile, the issue-solving management indicates response to modifications and situational changes in the course of performing a project. Both types of management involve single or complex use of domain management in accordance with the Project Management Circle processes.

Domain management is the capability framework consisting of 11 domain management frames and 70 units of frame modules. The 11 management domains are as follows: project strategy management, project finance management, project systems management, project organization management, project objectives management, project resource management, project risk management, information technology management, project relationships management, value management, and project communication management.

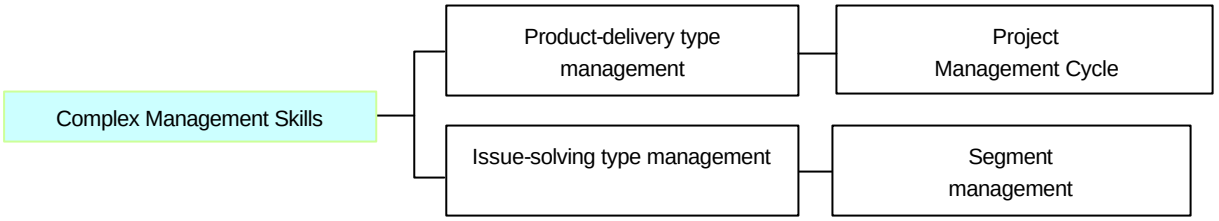

Figure 2-16: Complex Management Skill

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Part III. Program Management

1. Program and Program Management

● Definition of Program

Definition
A program is an undertaking in which a group of projects for achieving a holistic mission are organically combined.
Multiple projects that have weak relations with one another or are independent are not regarded as programs

Basic Attributes of Programs

In programs, the concept and fundamental requirements of a value-creating undertaking proposed by an entrepreneur or owner is represented by a series of meaningfully grouped projects that constitute the program. This requires the solution of complex issues involving various concepts in various ways and typically includes rich contents and context that encourage the development of road maps to achieve solutions. This complexity necessitates integrated consideration of various factors such as politics, economy, society, technology and ethics. Combination and integration of these factors generally determines the size, dimensions and the scalability of programs.

Being an organic combination of multiple projects, programs reflect the complexity arising from the interfaces between projects as well as combination and overlapping of project life cycles. In addition to the basic attributes of single projects, program durations tend to be longer and uncertainty is likely to be higher because they may confront substantial environmental changes.

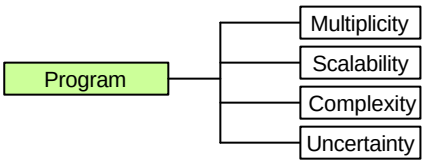

Figure 3-1: Basic Attributes of Program

Case ◆ Program of Project Apollo

Project Apollo is a case of a grand program. It was promoted by former US President Kennedy and achieved man's first round trip to and landing on the moon. It is well known that the United States, preceded by the old Soviet Union in the development of artificial satellites, gave top priority to the recovery of political and military prestige as the leader of capitalist countries and gave the Project the highest priority by establishing the National Aeronautics and Space Administration (NASA).

A great number of projects, such as the development of the rocket etc, training of astronauts, control of space flight and flight monitoring, were placed under integrated control . This scheme 's programs were very successful.

- Programs are undertakings in which multiple projects for achieving a holistic mission are organically combined.
- Programs have multiplicity, in that they accommodate multiple purposes and objectives that arise from multiple world views and interpretations of the mission that may, in themselves, suggest solutions.
- Programs are applied in politics, economy and society and have scalability in size, dimensions and structures.
- Programs have complexity arising from interfaces between projects as well as combination and overlapping of project life cycles, and confront uncertainty due to environmental changes since periods until completion are usually longer than with ordinary projects.

● Modern Significance of Programs (Relation between Program and Project)

Project management is used in a great number of areas. Project management of the first generation had been used for many years in engineering projects as an effective management method for achieving objectives of given time, quality and costs with planned results.

It is widely known that project management of the second generation is applied to a variety of business solution projects, work process innovation projects for building an agile organizational structure, emerging "management by project" applications to both manufacturing and services industries, in addition to traditional infrastructure and capital investment projects. Fields where the second generation project management is applied are expanding because it is used for management strategies and its effectiveness deserves great attention. However, the current world economy and social environment demand some new form of project management beyond that of the second generation; program management in the P2M context is addressed here in the hope that it is useful for solving complex issues in the contemporary society.

As mentioned above, effectiveness of project management is widely recognized in fields such as improvement of social infrastructure, production facility construction, product development, new business launching and building of information systems among others, and companies initiate a great number of projects in a decentralized manner to solve their problems.

However, if we trace the origin of projects, we would find that projects derive from any idea, strategy or holistic mission of management innovation and those projects should be basically approached as a total management system of collaboration, combination and integration. Program management has traditionally been applied to large-scale management programs such as space development and military development. However, in this age of rapid and discontinuous social changes, perceptive approaches to complicated events, speed and uncertain factors have become significant challenges for program management rather than a scale issue.

For example, management of projects constituting a program become more effective when they are divided into small modular projects for flexible response to situational changes than when they proceed as fixed projects managed separately.

Switching to modular projects to adapt to changes in circumstances would result in satisfaction of social needs, without losing values of the mission such as solutions for complicated events, reduction of project life cycles and uncertainty in investment returns.

(Note) A "modular project" is the minimum management unit of a project, which maintains the basic attributes of a project and allows for acquisition of a completed product. When the size of a project increases, it is reasonable to re-organise an original project as a program to achieve a flexible approach to complexity of issues or situational changes and treat the original phases as modular projects.

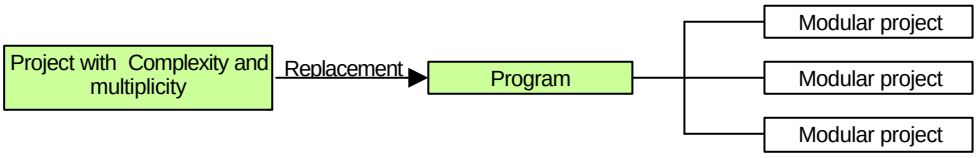

Figure 3-2: Relations Between Project and Program

- Decentralized projects should be integratively managed as a program based on the strategic mission.
- In program management, complicated events due to discontinuous environmental changes, speed and uncertain factors are significant factors.
- Dividing programs into modular projects allows management to cope with changes in circumstances.
- Integrated management of modular projects enables satisfaction of social needs such as reduction of project life cycles, without losing desired values of the mission.

● Value Creation by Program Management

Definition of Program Management

Program management provides a framework of capability for an organization to flexibly adapt to changes in external environment, by devising ways to cope with such changes, for achieving a holistic mission. This capability involves integration activities to enhance holistic value and to achieve the mission by optimizing relationships between projects.

Management of multiple projects is a similar term to program management but this term refers to the management of a group of projects without consistent total management policy or just physically proceeding in parallel with strong independence. However, if multiple projects need to come under group management in any manner, they are classified into the broader category of program management.

Concept of Program Integration

The concept of program management implies harmonious satisfaction of demands of many stakeholders with many related interests and objectives, which is achieved by dividing a holistic mission into multiple projects, and managing them as an organic combination. In other words, program management aims to achieve the integration of projects from an overall perspective to enhance the total value of a program, and this is the core of the capability for mission-performing project professionals proposed by P2M.

Integration means organic and meaningful unification of multiple projects under a certain concept and achievement of a program by paying full attention to overall efficiency, overall effectiveness, the win-win principle and synergy effects. The concept of integration implies wisdom, ideas, ability and dedicated effort which avoids redundancy, waste, unreasonableness and hazards, eliminating unevenness, and creating added value.

The basic ingredients of program management include integration, compounding (which implies both interactions and fusion), combination, collaboration or alliance, strategy, etc. This section focuses on integration and its interpretation.

In addition, multiple projects may be grouped together in a program where they have characteristics in common that would mean that overall efficiency would be thereby enhanced. This grouping of projects for efficiency can be considered as group management of projects or a special case of program management.

- In program management, demands of many stakeholders with many interests and objectives should be satisfied.
- In an overall perspective, capability of integration to enhance the overall value of a program is a core competence of mission-performing professionals.
- The purpose of a program is to create added value with overall efficiency and effectiveness, a win-win approach and synergy effects.
- Multiple projects, that do not share objectives, may be grouped into programs if for efficiency if they share certain characteristics that would benefit from some form of group management.

Basic principles of integration activities

The activities in program management are at a higher level than in project management and center around harmonizing the structure among projects and their interactive mechanism and proactively reacting to necessary changes with overall vision and sharp insight.

The role of a program is to facilitate an organisation's ability to best respond to changes in the external environment by planning, monitoring, intervention, coordination, alternative selection and initiating changes, across all related projects.

The objective of integration is enhancement of value, and guidelines for activities that underlie the concept of integration comprise the following four basic principles:

(1) Principle of zero based approach

Program management works effectively for the solution of complex issues that present society faces.

Complex issues are difficult to profile and solve and require a new framework based on innovative perceptions. This approach starts with insight profiling that converts the current status to an ideal status. Then, based on this derived mission, a basic framework is built for subsequent program development to achieve the mission. All these activities should be undertaken free of the influence of preconceived ideas.

(2) Principle of flexibility to changes

Since programs are exposed to discontinuous and rapid changes in circumstances, originally intended objectives might have to be re-evaluated as circumstances warrant. To cope with such uncertainty, in program management, relations between projects should not be designed too rigidly and component projects should be treated as discrete units while maintaining basic interrelationships. Through this process, a system and skills should be provided which support decision making regarding speedy and timely adoption of alternative plans, their suspension or cancellation, and the maintenance and enhancement of program value.

(3) Principle of competence base

For efficient and speedy promotion of knowledge creation activities, common information bases storing processes, knowledge, historical project data and information should support stakeholders. In the project mental space for open communications, not only is an efficient information network required but also the creation of a climate based on common and deep understanding of issues regardless of nationality, culture, organization and profession as a basis of program competence.

With this culture and climate as a background, wisdom and knowledge are produced. Therefore, the system and skills for linking knowledge, information and culture should be carefully considered.

(4) Principle of value assessment

An original mission is converted into a product with unique asset value through planning and execution of the program. This unique asset also has the innovation value that is expected in a program mission.

Stakeholders receive these asset value and function value in their respective positions and their levels of satisfaction are closely related to the "coordination value" that is generated through the processes of management from planning, implementation and closing. In addition, stakeholders can acquire "intellectual asset value" such as know-how and data accumulated through experience and learning depending on their positions and roles in the program.

These four types of values are subject to due and fair assessment and serve as vital guidelines for management in decision-making in the face of environmental changes in terms of relative value positions, market, competition or technological innovation. In particular, well balanced, program-specific qualitative and quantitative indicators play an important role in providing management with visual yardsticks to gauge planned effectiveness, suggest enhancement and trigger modifications in the program through pre-evaluation, in-progress evaluation and post-program assessment.

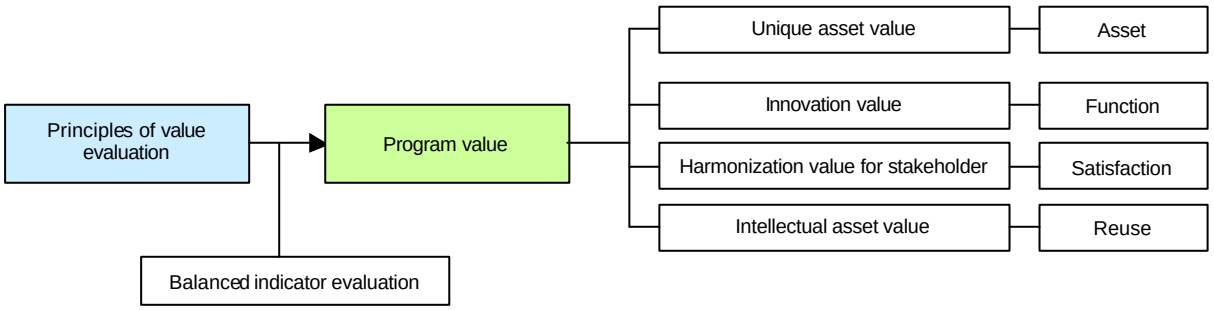

Figure 3-3: Value Assessment Principles and Program Values

Case ◆ Adaptation to Speed of Market Change

Adaptation to speed of market change, or time to market imperative is a very significant factor affecting value. In product development, if timing of placing products in the market is delayed, large amounts of investment money mightbe lost, or market share and competitive position reduced..

Currently, businesses are also racing against time. As the life cycle of products is being shortened, , companies have to take appropriate measures against value loss by reducing the time for product development and return on investment. This is especially true of R&D for pharmaceuticals, computers and other IT-related devices and automobiles.

Figure 3-4 is a road map showing the four basic steps in program management. : they are (1) defining, (2) sharing a common view, (3) building a common base and (4) using the skill for integration management.

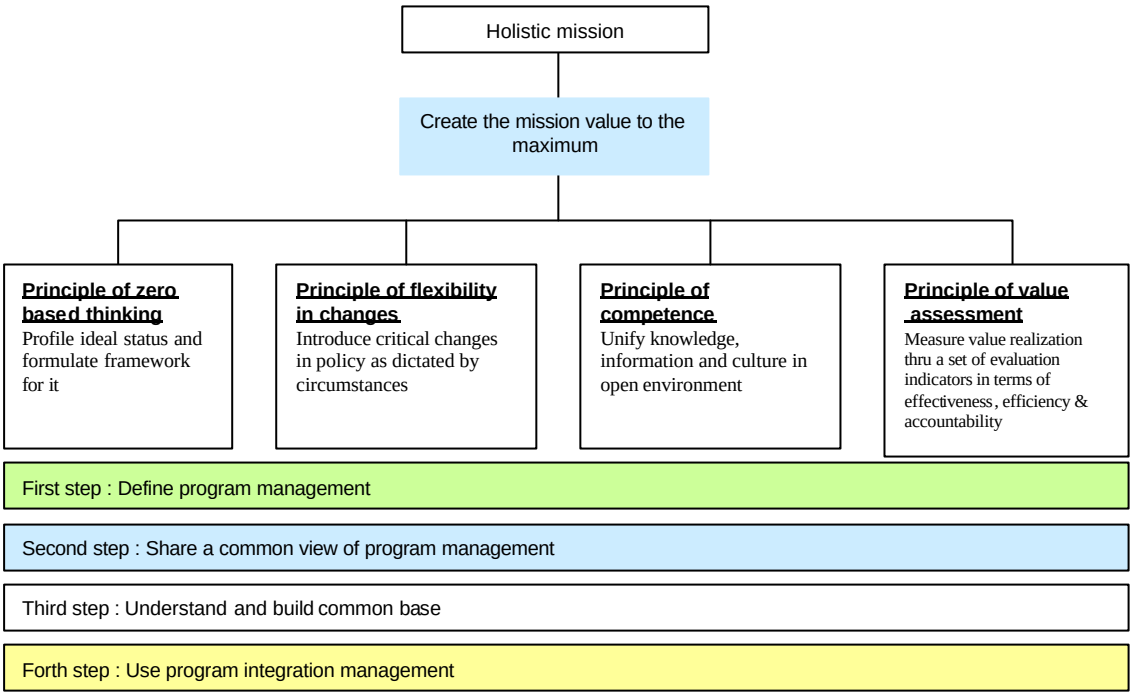

Figure 3-4: Step Approach in Program Management

- Integration activities are characterised by an understanding of the mechanisms connecting projects and coping with changes in the external environment.
- Typical means for coping with changes in the external environment and adapting organizational ability are planning, monitoring, intervention, coordination, alternative selection and responses to internal change.
- Integration activities have four basic principles.
- Integration builds a basic framework and starts from insight profiling using zero based thinking.
- Integration may demand a shift to an alternative plan, suspension, or cancellation of component projects under the principle of flexibility to changes.
- Integration requires the system to unify knowledge, information and culture under the principle of competence.
- Integration clarifies approach to maintenance, improvement and modification of program values under the principle of value evaluation.
- Well balanced, program-specific, qualitative and quantitative indicators play an important role in providing management with visual yardsticks to gauge planned effectiveness, suggest enhancement and trigger modifications in the program through pre-evaluation, in-progress evaluation and post-program assessment,

2. Framework of Practical Capability of Program Management

To demonstrate the capability of a program, the first step is to understand the program's basic attributes that constitute the basic framework. As the second step, the "common view" required for program management should be acquired The third step requires understanding of the meaning of the common view and the necessary skills to implement integration management in actual program initiation based on the common view.

Part II, Project Management, of P2M provides an overview and principles of project management, including project segment management, most of which are valid in program management as well, although program management have its own areas of competence, frames and attributes. It is not prudent to regard program management as existing in a vacuum.

For example, in program management, if a critical event occurs due to a situational change, measures may be taken, (by way of illustration), using the Project Risk Management and Project Relationships Management knowledge and skills discussed in the Project Segment Management of this P2M. Program management intervenes in component projects which are directly or indirectly affected by such changes, from the overall programperspective. The relationship among program management, project management and segment management in P2M is standardized as an overall framework based on the common view.

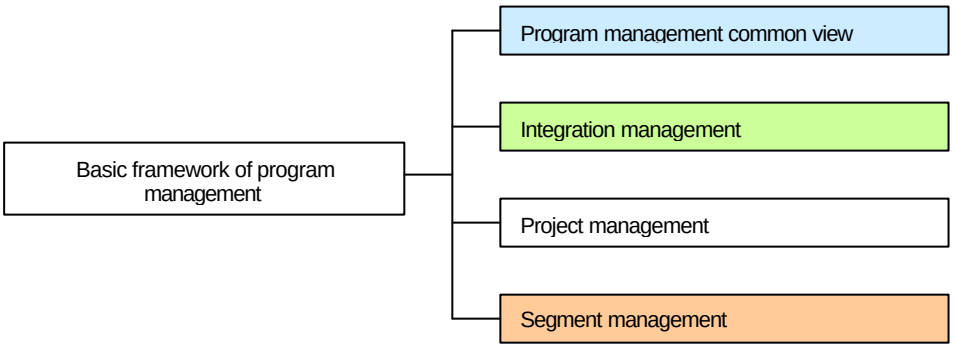

Figure 3-5: Basic Framework for Program Management Capability

● Program Management Common View

The program management common view refers to the common understanding for specifying program management methods that are molded by segment management, integration management, and socio-economic and political implications and their interaction on the program.

Principal prerequisites for the program management common view comprise five factors: program mission as holistic mission, program value, program community, program architecture and program integration management skill.

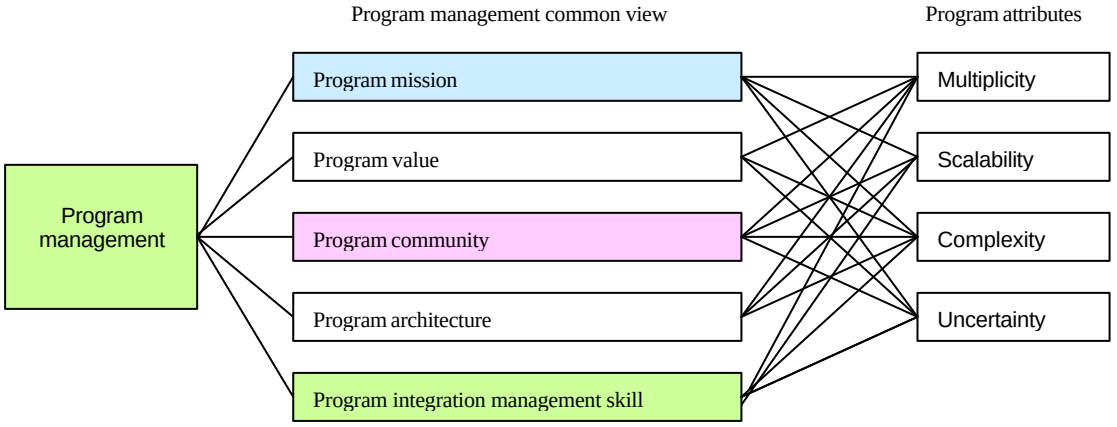

Figure 3-6: Program Management Common View

- Program management, project management and segment management are interwoven and standardized as an overall framework.
- Understanding program management involves the meaning of, and relevant skills for basic framework, basic attitudes, common view and integration management.

● Program Platform

The program platform refers to the main object of program management that is derived from the shared view recognized to integrate projects. Unless this foundation is firm, the architecture called the program will collapse. Program management, in a way, is a struggle to make this platform as firm as possible to withstand all weathers.

The conventional project management standards or literature have limited description or discussions on a program management platform and frameworks for consistent integration of projects but have rather focused on the description of planning and implementation control of discrete projects and a short definition of program management.

Program management in the ongoing social and business spheres needs a structured framework of four platforms based on the principles and common view of program management. The four platforms are: mission profiling to clarify a mission; community to integrate intellectual resources as a source of value creation; architecture to give rational relational structure among projects; and assessment to evaluate results of integration management.

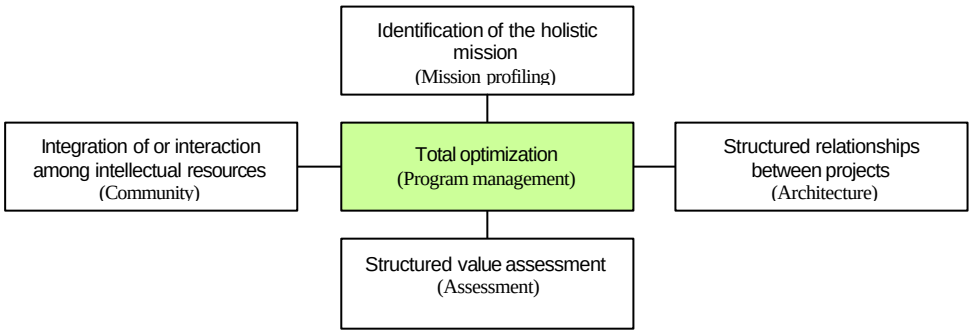

Figure 3-7: Total Management and Four Platforms

(1) Program mission signifies the high-level shared view of what to attain as a program that reflects the holistic mission demands desired by stakeholders of the program.
(2) Program community signifies the community where core competencies of program /project teams are centralized.
(3) Program architecture signifies the basic architecture or architect's rendering as to how to build a program - a blue print of the fundamental concept and structure of the program.
(4) Assessment signifies the common, explicit criteria to evaluate a program at key milestone in terms of value creation and stakeholder satisfaction.
(5) Integration management is the integrative management of projects from a set of program management principles and policies, and constitutes the basis of core competency of mission-performing professionals.

- Implementation of program management needs the formalization of the four platforms based on the basic principles and program management common view.
- The four platforms are mission profiling to clarify a mission; community to integrate intellectual resources; architecture that designs relationships between projects; and standard criteria for program assessment.

(1) Definition of Holistic Mission

Definition
A holistic mission refers to comprehensive demands for a program and deals with, for instance, a national policy or a strategic corporate goal; as such it is characterized by a rich, high-priority and complex nature and uncertainty.

Holistic program management is distinguished from the management of specific missions that are embodied in individual projects. For convenience of distinction between these two concepts, the holistic mission is hereinafter referred to simply as "the mission" and specific mission as "the project mission."

Clarifying the mission requires definition of strategic intent, objectives, goals, policies, measures, action guidelines, etc. It should be noted that resources will not be allocated to a program if the value of the mission of the program is not recognized

(2) Process for Clarifying A Mission

Clarification of a mission refers to the statement of a holistic mission for value by defining the direction for addressing and solving the issue in complex circumstances arising from environmental changes. The process of clarification includes prediction of results based on observation of the issue; profiling of alternative hypotheses for solution, illustration, and evaluation of solution plans; it requires expert management.

Conventional approaches address issues and directions for solutions mainly based on logic and analysis. However, for complicated phenomena, even if ambiguityexists, it is essential to describe a holistic mission based on philosophy, insight and means(?).

1) HOLISTIC MISSION AND A MISSION STATEMENT

A holistic mission means the requirement forachieving program goals in an overall context that fully covers the meaning of the program, the stakeholders, description of the issues, directions for solutions and recommendations about the disciplines involved.

The document that describes these goals is called a mission statement, and the this is normally given in a top-down manner.

2) PHILOSOPHY AND INSIGHT FOR CLARIFYING MISSION

Broad visions and overviews are generated through practical experience and cross-disciplinary knowledge. Statesmen, top executives, and program managers have their own well developed philosophy. Philosophy is the ability to realize an ideal image and recognize the values that dominate the totality in a complex issue. Stakeholders endorse this philosophy for programs and commit themselves to the program in expectation of program actions and results.

Insight refers to the ability to read trends of politics, society, economy and technology based on this philosophy and to predict future directions and one's own capabilities vis-à-vis critical decisions.

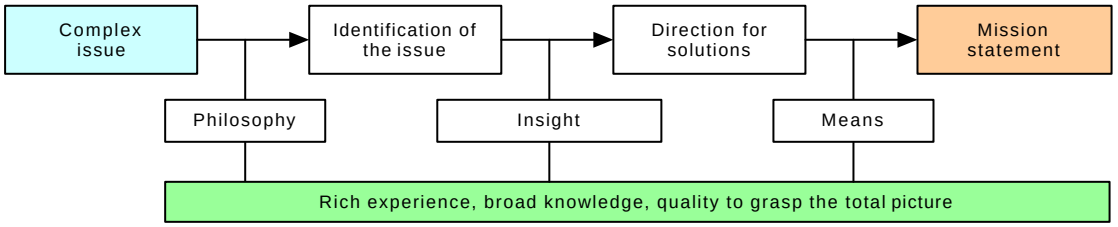

Figure 3-8: Profiling and Holistic Insight

(3) RELATIONSHIP BETWEEN MISSION AND VISION

A mission is generally interpreted in management theories as the concept to show the rationale for corporate existence and business direction. However, in program management, the mission refers to directions for achieving a strategic mission required in a program. The document describing these directions is called the program mission statement.

The mission is a guide to the requirements that underlie a strategic plan , while a vision serves as a guide for thought and action to achieve the mission. A mission and vision, however, are co-related to each other. They are sometimes ascribed the same meaning, but the mission indicates objectives of implementation, goals, policies, mutual relationships of interests and serve as action guidelines for project teams.

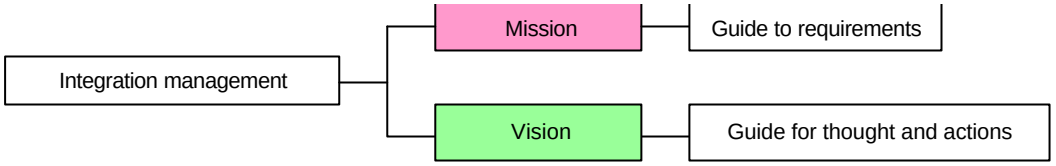

Figure 3-9: Mission and Vision

Case ◆ Mission and Vision

In the case of the Tokyo Bay Aqua Line (underwater tunnel) Project its mission was grandiose and was intended to alleviate traffic intensity along the bay in the Metropolitan Area as well as vitalization of the East-Kanto region by connecting the industrial zones in Chiba and Kanagawa Prefectures via this Trans-Tokyo Bay Highway. This mission was of a social-economic nature for the Kanto region.

Meanwhile, its vision was posted more specifically, as "Stakeholders of the program, i.e., the central government, the related public corporations, municipal governments such as Tokyo, Chiba and Kanagawa, to complete Aqua Line by 1995 fully deploying leading-edge technologies, coordinating interests among the concerned parties for subsequent smooth management by a third sector corporation, and promote the program with concerted efforts".

Case ◆ Grasping Total Picture

Planning an environmental policy in the resource-recycle society requires keeping an eye on the total picture, including philosophy for global environment, sense of crisis for global warming, its influence on society, and the environmental management policy of corporations.

For grasping such a total picture, broad knowledge, abundant experience and a sense of justice are necessary, and actions such as surveys into environmental pollution or public nuisance and endeavoring to solve such issues, considering relevant laws, damage to local society, abatement technology, fund raising methods and understanding of local residents' mindset.

- A holistic mission is the total requirement for a program and is considered as a complex theme relating policies and strategies.
- A mission defines and clarifies strategic intent, objectives, goals, policies, means and action guidelines.
- A mission is the requirement guide and a vision is the guide for thoughts and actions. They are co-related to each other.
- A mission cannot be clarified without the description of a holistic mission based on philosophy, insight and means, even if ambiguity remains.

Assessment Platform – Scaling of Value Assessment

Definition

Assessment refers to systematically evaluating, maintaining and advising means for increasing, and preventing a decrease in, the value of a program through concerted activities of design, planning, implementation to achieve results.

(Note) The value of a program includes four types: unique asset, innovation, harmonization and intellectual asset. (refer to "Principle of Assessment" in this part).

(1) VALUE THAT VARIES ACCORDING TO ENVIRONMENTAL CHANGES

Since program value changes with the lapse of time, changes in environment and circumstances, expected value has to be continuously checked against the original plan. Changes in circumstances stem from a wide range of factors such as politics, society, economy, market, competition and technical innovation. Program value is a primary indicator to determine the direction of management.

Case ◆ Investment Projects Affected by the East Asian Monetary Crisis

A fall in the foreign exchange rate for a nation seriously affects the value of a program/project. At the time of the Asian Monetary Crisis in 1997, many capital investment projects in the developing countries supported with foreign currency loans were cancelled or suspended as exchange rates rapidly deteriorated. Stagnant demand and loan repayments have become heavy burdens for debtor nations and project asset value has considerably decreased.

(2) VALUE THAT VARIES ACCORDING TO STAKEHOLDER ROLES

Stakeholders with different interests and roles participate in a program expecting different values. Therefore, it is crucial to balance value attributes as much as possible to satisfy all the stakeholders. However, in reality, a change in circumstances will cause imbalance in the value accrued to stakeholders. In such cases, release of information on analysis and prediction of and outlook for changing asset value indicators would help prevent confrontation among stakeholders.

(3) BALANCED OVERALL VALUE INDICATORS

Many benchmarks can be mentioned as assessment indicators such as achievement of the mission, objectives, goals, products and stakeholder value. Assessment should be made at least prior to program sanction, at major milestones, and on completion of a program. Assessment indicators require such features as being (1) easy to understand, (2) quantified, (3) visualized, (4) timely released, (5) readily prepared and (6) consistent in contents.

In addition to these conditions, the most significant feature should be a well-balanced assessment. Standard indicators for assessment are the five "E"s: Efficiency, Effectiveness, Earned Value, Ethics and Ecology, and the two "A"s: Accountability and Acceptability.

Five "E"s

(1) Efficiency refers to resource efficiency in projects, viz., output (benefit) vs. resources employed.
(2) Effectiveness refers to the level of satisfaction by stakeholders before and after the project and represents the benefit side of the efficiency equation.
(3) Earned Value refers to a universal yardstick to measure progress on projects by co-relating project scope, time schedule and costs (resources).
(4) Ethics refers to the response to generally accepted, fair and right ideas, social and industrial ethics and expectations.
(5) Ecology refers to a benchmark for endorsing sustained growth by paying due regard to global environmental protection.

Two "A"s

(1) Accountability refers to management being held responsible for program/project outcome, including interim results toward stakeholders and includes, transparency, visibility and disclosure of program/project status to a generally acceptedlevel.
(2) Acceptability refers to a set of terms agreed among stakeholders regarding value realization normally expressed as amounts of capital invested, guaranteed returns and cash-flow plans.

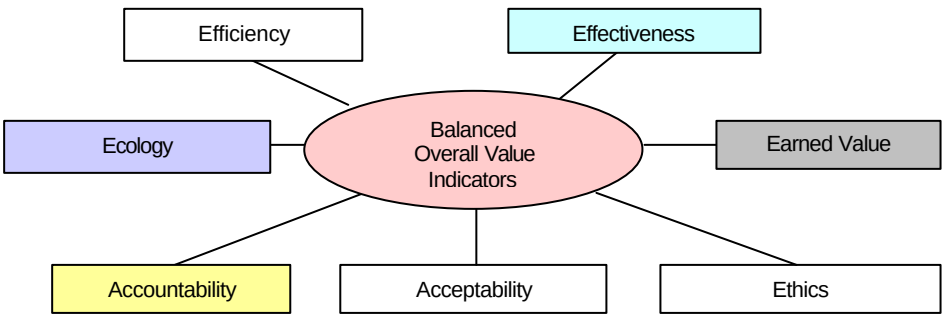

Figure 3-10: Total Value Benchmark

Case ◆ Balanced Score Card

For safe, secure and comfortable landing of an airplane at a destination, a pilot is required to operate an airplane by reading a variety of information such as speed, altitude, direction, air current, weather and fuel balance from instruments and in-flight information systems, and to make prudent balanced decisions therefrom.

Integration management also has project models that correspond to take-off, cruising, landing and maintenance, and mandated visions, goals or objectives that correspond to safety, certainty and comfort. In addition, the approach to reading and interpreting internal and external changes by using appropriate indicators for decision, actions, implementation and assessment is similar to flight operations. Accounting professors Robert Kaplan and David Norton have developed a unique enterprise performance measurement method called the Balanced Score Card that is intended to gauge corporate efforts for improved competitiveness, which also works effectively for program management.

- Assessment refers to the basic framework for sustaining value by a systematic assessment of program activities.
- Program value achievement needs assessment since it is likely to change with changes ir time, environment and circumstances.
- Assessment requires the indicators represented by five "E"s: Efficiency, Effectiveness, Earned Value, Ethics and Ecology, and by two "A"s: Accountability and Acceptability.

Community Platform --- Integration of Intellectual Resources

Definition

Community refers to a common mental space where people communicate with each other on common themes, objectives and goals to create new values through concerted efforts.

(1) COMMUNITY THAT REPLACES ORGANIZATIONS

The concept of a community in the program/project context is similar to that of an organization. Organizations place high value on achievement of duties while community focuses on demonstration of creativity. In organizations, concerns with functional responsibility, power and culture, authorities and responsibilities of superiors and subordinates are clear, and work proc edures are standardized hierarchically or vertically. In program implementation activities, solution of issues is given a top priority, but is not undertaken in a normal hierarchical corporate way With programs, human resources are released from an organizations' vertical pools and are re-formed into a flat community without hierarchy, and this acts as a base for achieving creativity by way of self-fulfillment, self-starter mindset and professional capability. The community is based on the concept of combining individuals into a team to capitalize on professional ability, create learning opportunities, achieve work satisfaction and stimulate creativity by reaping the benefits of combining the strengths of these professionals.

(2) ATTRIBUTES OF COMMUNITY

The community has at least the following six "C"s, contexts that underpin the program overall; Creativity of professional human resources with a broad vision needed for programs; Collaboration in a common space; Communications in a free network environment; Contents with a high intellectual level needed for programs; and Concentration using experience and wisdom. Common to these six "C"s are three platforms, namely, human, information and cultural platforms.

Human platform — This comprises the professional human resources who can use knowledge and wisdom. It is well known that when people work in a group on a project, group dynamics such as teamwork functions better. The relationship between team members and the team requires a platform in which the bas is for authorities, responsibilities and compensation of team members lies in empowerment. Leaders take direct responsibility

Information Platform — In a "net team" dependent on the Internet, members of the community have self-initiative and relative freedom, and more active collaboration with others through the network, in addition to face-to-face relationships. In addition to communication via the Internet, shared reports and communications using groupware, program community members require free access to information, knowledge and technology data bases that support engineering and management.

Culture platform — Achievement of a holistic mission requires a virtual space that helps develop a common understanding of the value of the program, and generates a culture that motivates people to collaborate freely. However, typically on international projects, differences in nationalities, races, custom,

cultures and social systems tend to deter realization of a truly collaborative program space.

- A Program/Project Community is a common virtual space for people to create new value or a common theme.
- A community has attributes of context, creativity, collaboration, communication, contents and concentration, each of which are based on human, information and culture platforms.

Architecture Platform – Structured Relation between Projects

Definition

Program architecture represents the grand design of the overall program structure, the overall functions and basic operability, embodying program profiles and using the basic requirement of program scenarios as its design base.

Architecture refers to a type of presentation that coordinates, based on the holistic view represented by a mission, the definition of basic demands, basic requirements, basic objectives, goal, measures, policies, characteristics, composition, structure and functions. Architecture is represented by such products as models, documents and drawings, which symbolically reflect a holistic mission.

(1) FRAMEWORK OF ARCHITECTURE

1) FIVE FUNCTION DESIGNS FOR A HOLISTIC PROGRAM

Architecture involves the design function of defining basic requirements, program life cycle, basic structure, total functions and basic operability, embodying profiles and scenarios.

It is noted that profiling defines the root requirement of a mission, and preparing scenarios examines a program's dynamic attributes, and incorporates future predictions andhypotheses.

2) DEVELOPMENT TO PROJECT MODEL

In the holistic program structure, interfaces and relationship between projects are coordinated to allow program segmentation into multiple projects. Basic specifications are determined based on the project's holistic functions, and the project is developed into component modular projects.

3) PROGRAM OPERABILITY DESIGN

In the overall operability, a road map and management rules for the program are developed.

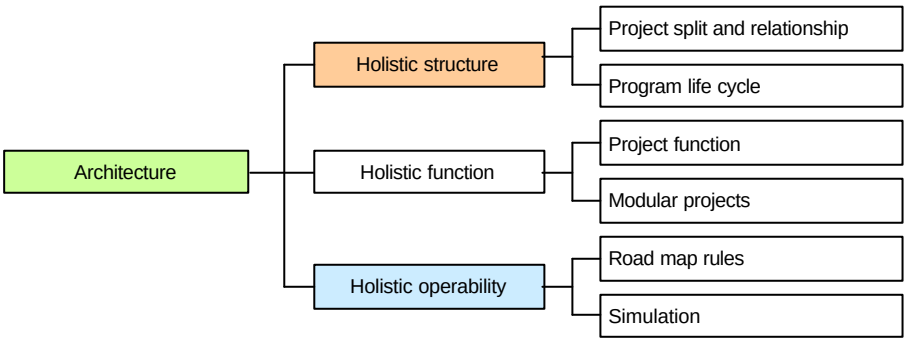

Figure 3-11: Framework of Architecture

In addition, in consideration of prerequisites or hypothesis for scenarios, designs that allow for changes in situations with progress and possible disturbances should be considered to secure program success.

Thus, the objective of architecture is to generate grand designs and management plans for achieving the thoughts and intent of a holistic program. Architecture is a design plan to demonstrate the holistic efficiency, effectiveness and synergy effect of a program, and is basisto determine program value.

Case ◆ Significance of Architecture Prediction

Motorcycles and bicycles have different architectures. Bicycle parts are of an open type with historically standardized interchangeability, while motorcycles are made of closed type parts with no standardization because different types of parts have been developed for each model change.

In product development in the Japanese automobile industry, sharing of parts that vary according to models and reduction of excessive diversity were implemented first as well as the design rationalization movement to the extent that integration was not damaged. This simplification of design patterns has facilitated the shift of production bases to foreign countries in a shorter period, and contributed to the improvement in performance.

The origin of such car production lies in the architecture in which production of different models of cars shares a common production floor, called a platform. High grade CAD/CAE now allows production simulation on the screen. Of urther importance is high-quality analysis of market outlook and technology advances. Prediction of production modes is also vital, as these may drastically change prevailing common practice and routines. Hybrid cars imply the advent of a new architecture.

(2) PROGRAM MANAGEMENT ARCHITECT

An architect means an expert on grand design for buildings. A program management architect refers to a person who is endowed with the sense and talent that enable comprehensive understanding of the society, technology and culture; and who has experience in designing multiple programs in a specific expert field, and is able to develop a program into a tangible architecture by reading and interpreting the given scenarios. An architect needs to understand program scenarios, divide them into concepts or models for stakeholders to understand, and design the structure and function fortheir achievement. Program managers focus on implementation of programs, while program management architects are further required to possess broad knowledge and the power to influence implementation.

Case ◆ Temple Building Architecture

Suppose you are commissioned to build a temple. Temples have their own contexts, e.g., denomination such as Buddhism or its Zen-sect, a mission such as being a feudal lord's family temple or a religious space for people; a place for enshrining a Buddhist image, or focus on serving also socializing needs; who provides the funds, feudal lords or people donating. The scenario describes something, but what people understand would be different according to their backgrounds. An architect embodies them through design and makes them visible by determining a specific form, shape and function for a temple building, to represent the basic value that the temple offers.

Case ◆ Architecture for Service Engineering

For the purpose of offering total services such as accurately determining customer requirements on an ongoing basis, production to customer needs, flexible response to changes and quick responses, in the manufacturing and engineering/construction industries, a mission of converting to "the super-manufacturing industry" or " service engineering industry" is being proposed. A certain research group has developed an object-oriented manufacturing program to achieve highly flexible approach to rapid changes and frequent alterations, by dividing the objective into responses to individual customers, continuous improvement of products, and attention to parts suppliers through utilization of the accumulated knowledge in the Japanese manufacturing industry.

- Program architecture represents the grand design of the overall program structure, the overall functions and basic operability based on basic requirements from the scenarios.
- Architecture refers to a type of presentation that coordinates definition of basic demands, basic requirements, basic objectives, goal, measures, policies, characteristics, composition, structure and functions
- A program management architect is a professional who is able to comprehensively understand society, cultures and technology and to develop the programs into practical architecture.

● Profiling Management

Profiling refers to the process that clearly defines as a mission the issue that is molded insight from complex phenomena in the initial process of the program.

Definition
Profiling management develops a mission into feasible scenarios by interpreting the intent of a holistic mission from wide perspectives, using a broader value structure to move from the "status as it is" to an "ideal status."

This activity should not be performed only once when a program is drafted, but should be repeated to maintain the validity of the mission whenever any change is encountered due to environmental changes. A program starts with a mission. The definition of a mission has an important role in drawing up the total picture for solution by way of hypothesis using deduction from past experience and knowledge to assess value even when ambiguity exists.

The structure of profiling management is as shown in Figure 3-12 below.

The first step is mission expression that describes the mission and analyzes context and meaning. The second is relationship analysis that analyzes the meaning of the total and parts and clarifies the relationships of cooperation and interests. The third is the scenario statement that works as a bridge for the realization of a program through description as a story to achieve the mission, feasibility study and scenario simulation. Profiling management involves a capability to integrate these pieces of work into a basic plan for the program.

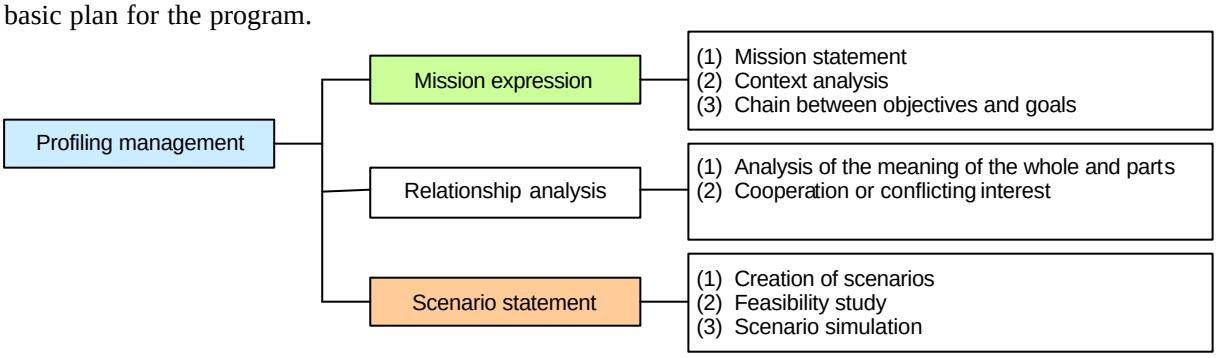

Figure 3-12: Profiling Management

(Note) Scenarios find issues from the current mission and directly connect them to solutions. They focus on predicting a mission's picture in the future.

Mission Expression

(1) DESCRIPTION OF MISSION

1) ATTRIBUTES OF MISSION

Since the statement of a mission shows the total picture expected by the sponsor or owner, it expresses program value that reflects the sponsor's or owner's views of the time, world and total picture. What a mission suggests is largely classified into two categories: current issues, and desire for the future after overcoming the current issues. Statement of the issue-solving-type mission for realizing an ideal picture is mixed with objectives, contents, methods and policies, and is filled with multiplicity and ambiguity that make the mission novel but hard to understand. There are deep meanings and significance between each context. They are the values of a mission, not mere issues. An issue derives from a mission.

Therefore, a mission should not include specific intention or distortion by the writer. The writer has to elaborate, edit and present the mission statement repeatedly until the owner becomes satisfied with the expression of the mission. In editing, it is significant to detect and describe basic value, key words representing value, issues, objectives, policies, etc., and to use allegory for ambiguous items.

It is also necessary for a mission statement to reflect the concept value of the owner, and to do this by confirming with the owner if there are any additions ordeletions.

- A mission presents both issues and desires as a pair.
- A mission has directions for solutions.
- A mission has multiplicity and ambiguity.
- A mission has novelty.

2) SKILLS FOR MISSION EXPRESSION

A mission statement requires the skill to correctly express the intent of the program. It should fully comply with the intent and be comprehensively expressed in a rich manner without any omission or inconsistency. It should not necessarily be described logically. The most basic skill to prevent ambiguous expression or omissions is "6W1H," a method for preventing apparent omissions by clarifying "Who, What, When, Why, How, Which and Whom."

In addition, devices such as allegories with simile and metaphor and figures of speech are used for expressing multiplicity and ambiguity. Simile is paraphrasing with other similar words. Metaphor is an expression to convey contents with implicit words. Moreover, a mission should be developed after determining the key value that dominates the owner's desires.

- A checklist for expressing the total picture is 6W1H.
- Devices such as analogy and metaphor are used for expressing multiplicity and ambiguity.
- Desires for the future such as value, direction and expected results should be developed after determining the owner's sense of value.
- Transmissibility and confirmation areimportant for a mission statement.

Who	Owner	Mission planner
What	Problem and solution	Multiple projects
When	Start and end	Schedule, uncertainty
Why	Reason for existence	Value, objective, expectation, policy
How	Engineering	System, resource, budget
Which	Direction, selection	Policy, direction, alternative plan, decision making
Whom	Stakeholder	Persons interested

Figure 3-13: Method for Clarifying Ambiguity

Case ◆ Prevention of Global Warming

For example, the statement "For preventing global warning, we want to reduce carbon dioxide emitted by enterprises by 10 percent within five years through energy conservation and new technology" represents a political mission but shows no process for realization. This can be further clarified if developed using 6W1H.

(2) CONTEXT ANALYSIS

1) GRAMMAR OR PROCESS FOR INTERPRETING THE MISSION

Context analysis is a methodology for understanding the total picture. Particularly, when the interaction of multiple values is expressed abstractly, a precise grammar or process for interpretation can assist in avoiding different interpretations or misunderstandings.

Misunderstanding occurs because the concept of context is not fully taken into consideration or the approach method is not developed. Therefore, the basic interpretation grammar or process for describing the mission should be prepared

Since multiple values are included in interpretation of a mission, there are a number of methods of creating an interpretation grammar and listing value items for clarification. A number of these methods are described below.

2) VISUALIZATION OF CONTEXT

Rich conception in a mission statement has positive aspects such as innovation, foresight and novelty, but has negative aspects such as incomplete recognition of issues, ambiguity and lack of logic. In context analysis, the methodology for understanding the overall context should be presented visually and the values of the owner or planner should be fully disclosed.

Assessment / Desire for Results	Income	Growth	Market Share	Adaptation to Environment
Innovation	B	A	B	A
Social contribution	B	A	B	C
Foresight	C	B	A	A
Novelty	A	A	C	A
Ethics	B	B	B	B

Figure 3-14: Case of Value Design Matrix
(A, B and C represent a hierarchy of values agreed by the planner or owner and derived from integration of analysis of values held by particular stakeholders or groups of stakeholders)

Figure 3-14 shows an example for visualizing mission contextThis is a value design matrix which indicates the perceived importance of certainresults against each assessment item for the program.
This matrix has the merit of designing items and assessment benchmarks as well as visualizing the key points of context. However, it needs consultation or confirmation with the owner and planner before creating the matrix.

The value design matrix shown in Figure 3-14 indicates that the context of this case is an environment-adaptation type project that focuses on future growth based on a plan with high novelty at the sacrifice of current profitability. Therefore, contents of the program do not necessarily value the market share.

By evaluating multiple values such as innovation, social contribution, foresight, novelty and ethics based on the value design matrix, the value of the mission should be enhanced.
In addition, in context analysis, one of the methods for clarifying the intent of the planner is for project architects or producers to participate in the analysis and interview the owner or planner and discuss or confirm the such items as values, objectives, policies resources, and expected results.

Case ◆ Selection of Preferential Issue

An automotive company developed a specific mission program for urgent revitalization to overcome a managerial crisis. In the context of specific missions, such factors as survival of the organization, recovery of trust, response to customers, recovery of profitability, and base for future growth are incorporated.

In this context, the issue with top priority was conversion from deficit to profitable status in a short period. In order to recover profitability, the company intended to reduce fixed costs with a project for closing unprofitable plants, and formed a procurement project to screen material and parts suppliers for low-cost supply on a long-term basis. In addition, the company formed a project to sell off its space business department to focus on the core automotive business. The company also integrated the projects to innovate personnel and education systems through the president's frequent spot inspections, preferred appointment of younger staff to responsible positions, and renaissance of employee awareness through education.

In the above-mentioned program, top management gave the vision and specified the mission; a variety of projects to realize those were formed through communications with middle management.

- Context analysis is used to develop a basic interpretation grammar for understanding of multiple world views and developing the total picture.
- Multiple world views and values, if expressed in abstract terms without benefit of a shared interpretation grammar, will generate different interpretation.
- Context analysis requires a method to maximize visualization of the planner's means of achieving results.

3) Chain of Objectives and Goals

As the next step, the chain of objectives and goals should be read from context analysis by decomposing a mission in a logic-tree manner as Figure 3-15 shows.

Objectives signify the reason for the projects' existence and goals mean the results expected. In other words, "what for" is questioned in terms of objectives, while goals are defined by specific items such as "what," "by when", or "how". Objectives are placed in a higher position than that of goals and have a higher level of abstraction. Meanwhile, goals indicate specific, assigned tasks and involve lower degree of abstraction. In addition, objectives are assigned to organization groups or individuals. Clarification of objectives and goals generates significance and motivation for achievement.

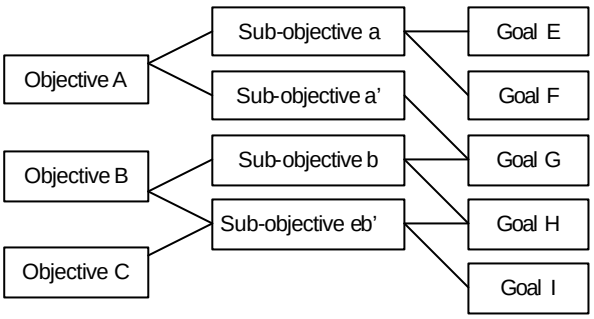

Figure 3-15: Chain of Objectives and Goals

This process gives structure to objectives as well as goals and serves as the procedure for making scenarios, which is shown as follows:

- Illustrate the interrelation between objectives and goals based on context statement.
- Modify the interrelation from the viewpoint of external environment and organizational policy, and create multiple diagrams.
- Modify the interrelation between objectives and goals in light of stakeholder cooperation, confrontation, contradiction or constraints.

A key role of profiling management is to prevent deviation from the mission and themes, of objectives and goals, and goals and measures as well as their distortion, planning, maintaining and coordinating their consistency.

Such deviations are likely to cause displacement or inconsistency between a mission, objectives, goals and results. The displacement of a mission and objectives is called "displacement of objectives from a mission."

Case ◆ Consistency of Mission and Objective

The Trans-Tokyo Bay Highway, Aqua Line, opened in December, 1997. The highway runs for 15.1 km across the Tokyo Bay and connects Kawasaki in Kanagawa Prefecture with Kisarazu in Chiba. Users can drive over Tokyo Bay in only 10-15 minutes.

This project aimed for an economic boost arising from the connection of industrial areas and sightseeing routes between Chiba and Kanagawa, without passing through Tokyo, and for alleviation of traffic congestion in the metropolitan area. However, there are fewer users and the initial goal for income has not yet been achieved. The corporation has to rely on public subsidy for relief. This status of the Aqua Line is attributable to inconsistency in the chain of a mission, objectives and goals.

- Identify the chain of objectives and goals by decomposing the mission with the logic tree through context analysis.
- Objectives signify the reason for projects' existence and goals mean the result expected.
- Modify the interaction between objectives and goals in the case of conflict of interests between stakeholders.

Relationship Analysis

Relationship analysis covers a range of relational issues in addition to the relation between the whole and part.

(1) RELATIONSHIP BETWEEN THE WHOLE AND PARTS

Further advancement in a mission statement and interpretation of context requires attention to how to relate the whole to its parts.

Solutions to complex issues require knowledge of the relationships between the whole and parts to enable achievement of a mission as a program, as well as examination of achievement by maintaining the self-sufficiency of the whole and parts. This is because it is an essence of program management that, for addressing solutions and uncertainty, individual projects and programs should demonstrate self-sufficiency and initiative, liaise with each other, and influence each other in a positive way. Therefore, there are no difference in ranking between programs and projects although the layers are different, and both of them are principally expected to harmoniously proceed and generate the results expected in the mission.

One of the methods for relating the whole to its parts is the creation of a Relationship Property Matrix (RPM) as shown in Figure 3-16. In this method, , the relationship between the whole and parts should be classified into (1) principle, (2) organization, (3) rules and (4) behavior, and the interrelation before and after the implementation of program should be recognized,

	Detect prior relationship	Examine prior relationship	Design prior relationship
Principle			
Organization			
Rules			
Behavior			

Figure 3-16: Whole and Part

Case ◆ Product Development

In the development of new automobiles, a variety of development principles, cooperation between organizations, project rules and team behaviors exist at enterprises. Rules and behaviors that delay development or cause failures should be corrected at the beginning of the program.

- It is necessary to know, examine and design the relationship between the whole and parts to interpret context.
- It is necessary to demonstrate the self-sufficiency of projects and programs, and how they address solutions and uncertainty.
- The relationship between the whole and parts can be expressed in terms of (1) principle, (2) organization, (3) rules and (4) behavior.

(2) COOPERATION / INTERESTS

Program stakeholders are those who have specific interests in specific programs.

Those directly involved include program planners, program participants, participants in multiple projects and their supporting parties. Collaboration partners who directly or indirectly influence programs have stronger economic interests through program resource transactions. Others may be more related to social interests, and may be concerned with environmental factors such as preservation of ecosystem. Thus, for implementation and realization of projects, various stakeholders such as the owner, investment institutions, financial institutions, consultants,, designers, project teams, project managers, contractors, engineering companies, manufacturers, think tanks and regulatory agencies participate in a program to perform value creation activities to varying degrees, and with different expectations.

In addition to players who directly participate in a project, there are also cooperative partners such as services companies, manpower supply companies and distribution companies who join a project as sub-players.

However, there are also local public agencies and local residents who do not directly join or are not involved with the project but suffer social influence from the project. Interests differ with these stakeholders, depending on how they are affected by the program, and their intrinsic interests.

In program profiling, recognition of the total range of interests is indispensable for the development of the program, because a progress in the event of program changes is dependent on negotiations between those interested parties. Since involvement or concerns of stakeholders change at the interfaces and in the interrelations between projects, recognition of the overall position becomes particularly significant.

As a method of analyzing such relationships, the dependence and negotiation relationship matrix works effectively. The case for this is shown in Figure 3-17 below.

Dependence / negotiation	Participation relationship	Cooperation relationship	Coordination relationship
Resource dependence	Investment	Venders	Procurement negotiation
Human resource dependence	Parent organization	Manpower agencies	Specific requests
Organization dependence	Partner enterprise	Outsourced firms	Competing enterprises
Technology dependence	Technology provision	Technology providers	Technology negotiation
Environmental burden	Environmental conditions	Condition setting	Negotiation for conditions
Permit dependence	Explanation	Request	Persuasion
Strong restriction	Solution and alternative plans	Request for participation	Persuasion

Figure 3-17: Dependence & Negotiation Relationship Matrix

- In programs, attention should be paid to stakeholders who change their specific interests for whatever reason.
- Interests in a program differ with a party' dependence on and level of involvement in the program, as well as the nature of their interests and the perceived adverse effects of the program to the party..
- What is important is positioning of these interests and negotiation based on the interfaces and interrelation between projects.

Scenario Development

A scenario means a presentation of a story on how to realize "what should be" from "what is". In the program/project context, a scenario bridges the present and future with a program or project. Major points expected in a scenario are issue identification, solution implication, road maps, methodologies and performance. Depicting these as a story is a method of expression for scenarios.

(1) SCENARIO VALUE

Scenario value sources are (1) contents of innovation, (2) anticipation of future value, and (3) coexistence. Scenario creation means incorporation and feasible implementatioin of situational changes from these three value sources and development of future total pictures and processes. It is also a step in forming consensus among stakeholders.

(2) Scenario Statement

A story has to include the statement of the following three factors with a certain level of persuasiveness: a sense of reality like "likely to realize," a sense of urgency like "must practice" and a sense of expectation like "aim to".

Persuasiveness should include grounds and attractiveness that appeal to mission planners and program initiators or supporters. Although persuasiveness is required, it is in fact difficult to depict a story by predicting a future in complex phenomena. However, since a program does not proceed without a scenario, a story with a sense of reality is needed to achieve a mission.

Therefore, a basic scenario should be prepared first. Then, scenarios should be developed based on both optimistic and pessimistic assumptions within the permissible range of stakeholder expectations. This process should be repeated in the middle of program implementation. This multiple-scenario method is expected to produce three scenarios (best, most likely and worst case) and nine derivative scenarios arising from the mid-program implementation review.

A scenario refers to a method of depicting future environment and circumstances by developing hypotheses.

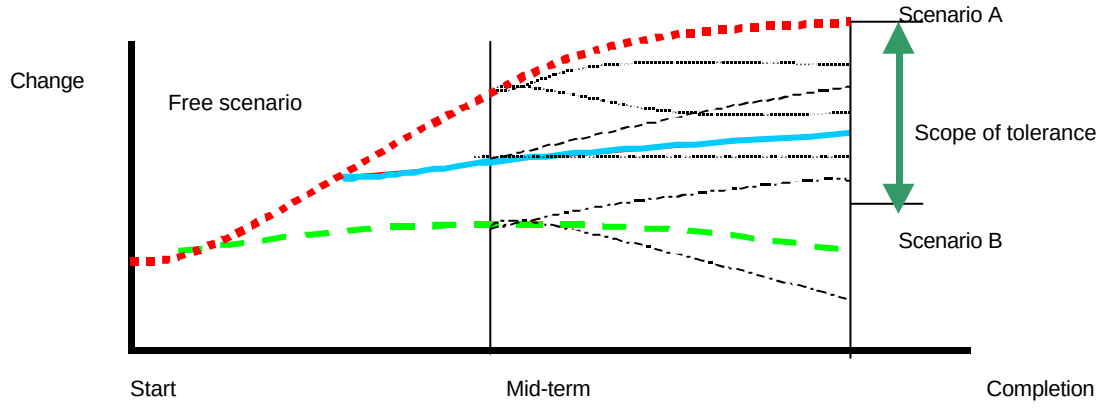

Figure 3-18: Development of Scenario

Scenarios also work as a procedure for drafting alternative plans for a program with creativity. There are many methods for scenario statement such as 6W1H, KJ, brain-storming, Delphi, and Kepner/Tregoe. In either case, the intuitive grasp of an entire complex system into a story is a significant preliminary step for the program.

Case ◆ Plan Management Scenario

Public-private cooperation type projects by third-sector (quasi-public) corporations in Japan have been widely developed throughout the country as an ideal pattern for local revitalization, but most of them are suffering a big deficit.

Typical cases are that man-made facilities as projects' products were completed to meet the project objectives in terms of budget, construction period and quality; but the mission of revitalizing local economy has not been achieved,,and those facilities have become heavy burdens for corporations and their supporting local governments. This problem is attributable to insufficient consideration of planning or management scenarios.

(3) FEASIBILITY STUDY AND SIMULATION

Feasibility study and simulation are carried out as methods to strengthen the feasibility of scenarios. It is desirable to carry out feasibility studies as objectively as possible by adopting methods such as monitoring and interviewing intelligent people. For simulation, we can expect more reliable results by adopting statistical methods such as Monte Carlo method and computer analysis.

[Summary of Profiling Management]

- Program scenarios serve as a mechanism for completing a basic program plan.
- Profiling needs procedures for mission expression, relationship analysis and a scenario statement.
- Context analysis represents multiple value benchmarks .
- Relationship refers to the analysis of the whole and its parts, and of cooperative and adversary relationships and interests.

● Program Strategy Management

Definition

Program strategy management represents the way of thinking, analysis and decision making activity to address uncertainty, changes, critical issues, strategic elements and constraints in all processes of program formulation and implementation by clarifying interrelationships between issues, objectives, goals and measures while continuing to prioritize achievement of mission.

Integration of Management Strategy and Program

It is said that only 10 to 20 percent of basic policies or management strategies are generally achieved.. Common causes are : (1) strategy planning and its implementation are split off, creating a gap between them; (2) strategies become meaningless due to changes in circumstances; (3) top management does not empower the head of line units thereby nullifying the mission and responsibility; (4) top management's commitment is too formal without ensuring follow-up action, and (5) strategies are biased intentionally in lower tiers, and used differently from the original intent.

These causes could be combined into a single comprehensive cause, namely a lack of a well-conceived basic framework with stakeholder buy-ins for strategic program integration that would provide a holistic and practical picture of decision-making and processes from the mission given by management.

Many projects have been executed inflexibly with regard to changes in circumstances with ambiguous strategic intent,resulting in their being unsuccessful. In addition, many enterprises take a "hands-off" position at completion of projects and have no structure to ensure realization of benefits and satisfaction of stakeholders.

Although the terms of an implementation contract may be fulfilled, a project should be considered a failure if it does not delivered the planned and desired value and benefits Many innovations include complex values and meanings, interlinked objectives, and complicated problems with unclear objectives and factors for realization. In a complex program that has a high level of intellectual asset and dynamic combination of multiple projects, optimization of the total program should be pursued.

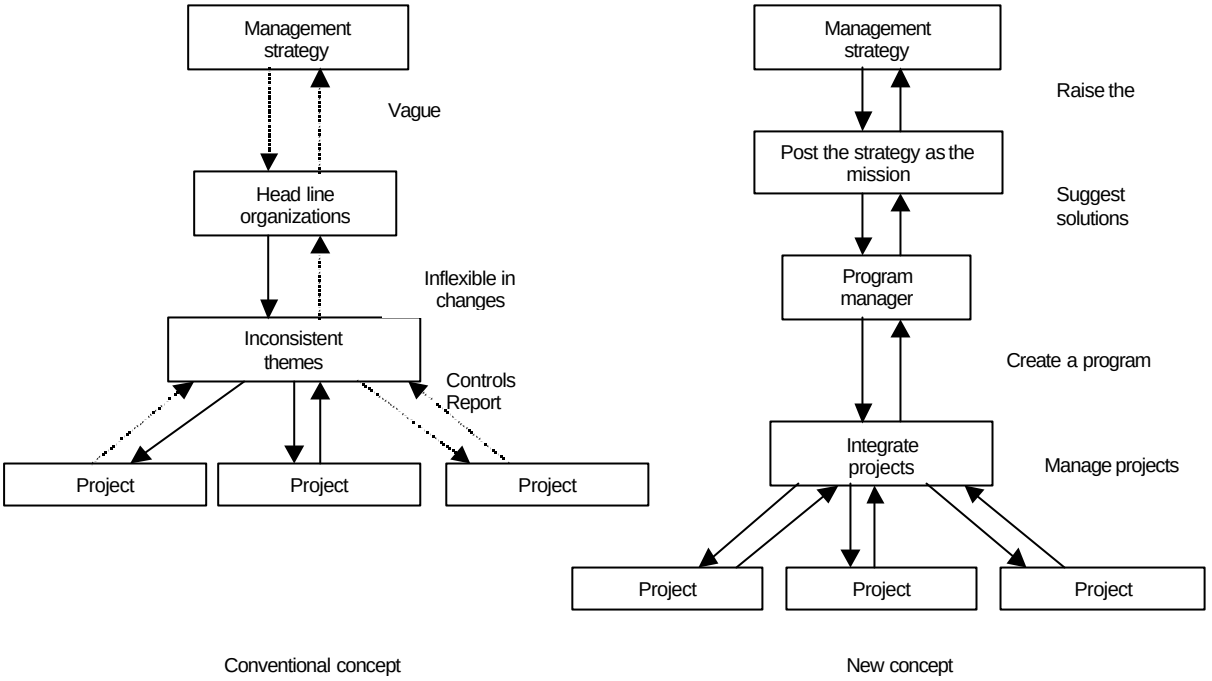

Figure 3-19: Integration of Management Strategies and Programs

However, the greatest reason for failure to achieve results is the omission of a basic framework for strategic program integration that provides a holistic and practical picture of decision-making and processes from the mission (generated by management conferences) to its implementation.

Projects have often been executed inflexibly in terms of their response to circumstances with ambiguous strategic intention, resulting in unsuccessful projects. In addition, enterprises have often failed to pursue a holistic coordination approach by which they would take responsibility for reaping the desired value and benefits from projects once completed and handed over to operations, .

Once basic requirements of projects may have been achieved, projects can often be deemed to have failed unless stakeholders confirm that their needs have been satisfied after project completion.

(1) MERGER OF TWO MANAGEMENT THOUGHTS

Integration management, which has a mission to solve issues involving management strategies, requires implementation management to be carried out through a strategic breakthrough mindset that creates organizational capability by flexibly adapting to environmental changes, while never failing to achieve the mission. This concept places top priority on the achievement of a mission in spite of uncertainty.

Therefore, strategy and integration are primary components and charateristics of program management.

Program Management Thought Aiming at Achievement of Strategy

1) View the context and relationships of the mission in their totality (Holistic thinking).
2) Build a basic framework for solutions by giving weight to the mission achievement value (Framework orientation).
3) Use wisdom for planning and implementation by thinking freely without sticking to conventional concepts (Zero based thinking).
4) Make decisions by setting priorities on multiple plans according to situations (Option orientation).

Program Management Thought Aiming at(?)Integration

1) Prepare logical proposals and procedures as a basis (Road map orientation).
2) Structure a mission into projects to enhance feasibility of management (Architecture orientation).
3) Illustrate work process with a consecutive(?) flow to streamline the relationship of operations and changes of the status (Process orientation).
4) Analyze the cause and effect relation between goals and results to adjust gaps between them (Coordination orientation).
5) Give autonomy and decision-making powers to projects to enhance motivation for collaboration through decentralized integration (Community orientation).

- Programs with ambiguous strategic intent cause problems in dealing with changed circumstances and will not be likely to achieve overall coordination or satisfaction.
- Integration management places a top priority on mission achievement in conditions of uncertainty, by preparing overall logical proposals, and making decisions according to situations by setting priorities.

(2) FRAMEWORK OF PROGRAM STRATEGY MANAGEMENT

The basic concept of strategy management has been summarized in previous sections.. It ensures that the mission will be achieved regardless of environment changes.

Drawing up strategies is called strategy formulation and its realization is called strategy implementation. Strategy formulation is expected to reflect a mission for a program more practically and feasibly than in scenarios, in order to enhance the probability of success.

When a strategy is not achieved as formulated, it is in many cases attributable to insufficient design to cope with changes in environment and circumstances, or inadequate decision making on the selection of an alternative plan. In terms of implementation, the causes may be a shortage of core human resources that work with competence, or problems with team formation, leadership and communications. These critical factors that decide the success or failure of a program are called strategic drivers.

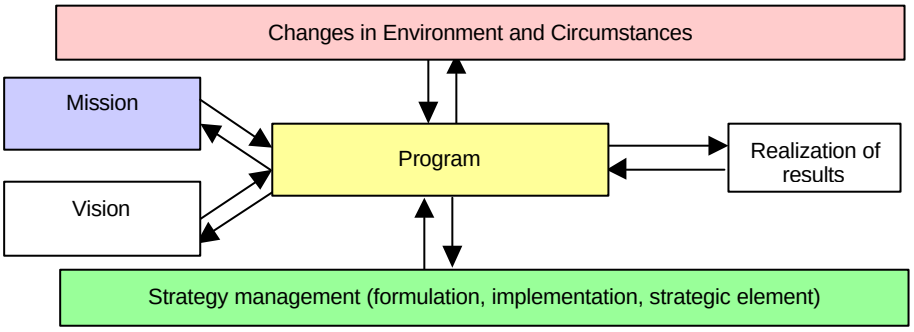

Figure 3-20: Strategy Program Management

Decision-Making in Program Strategy

The magnitude of recent environmental changes is large, and changes show discontinuous patterns, andcan happen quickly. Therefore, although long-term plans are necessary, it cannot be expected that things will proceed as laid out in the plans. However, a mission must be realized as expected. For this to happen, the following decision-making processes are adopted in strategies: (1) prediction of environmental changes, (2) identification of strategy elements, (3) assessment of the gap between goals and results, (4) assessment and selection of alternative plans, and (5) decision making for an optimum plan.

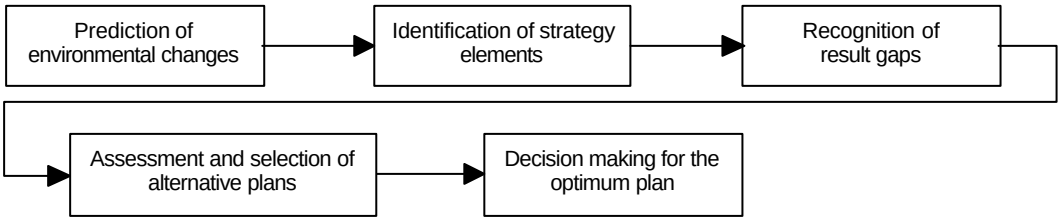

Figure 3-21: Decision Making for Program Strategy

(1) IDENTIFICATION OF STRATEGIC ELEMENTS

1) SWOT ANALYSIS ON PROGRAMS

Programs have various strategic elements and SWOT analysis is generally utilized for identifying these elements. SWOT is an abbreviation of "Strength," "Weakness," "Opportunity" and "Threat". An understanding of these four aspects on programs facilitates the identification of strategic elements.

In program activity core competence should be recognised as a "strength," and "weakness" should be addressed. It is also important to decide whether a situational change would constitute an "opportunity" for the program, or would affect it unfavorably. Focus on foresight or prediction is important for addressing "threat". Response to threats can be achieved by using appropriate portfolio selection, and combination of projects (refer to the sections of "Project Segment Management" and its "Portfolio Management", and "Strategy Option for Project Alternative Plan" (refer to "Real Option"))

2) RELATIONSHIP OF OBJECTIVES, GOALS AND POLICIES

In strategies, integrated management of constraints is important as a strategic element by relating objectives, goals and measures and by setting their priorities. Each element of SWOT has its own objectives, goals and measures. Objectives signify the results to be realized when they are achieved, while goals mean more specific results to be achieved, and accountability for these results is required.

In addition, policies need to be formulated, since separation of objectives and goals cause a problem. Policies work as a guideline to connect objectives and goals. The more complicated the rules for specifying a mission, the more objectives and goals are needed, supported by secondary objectives and goals,

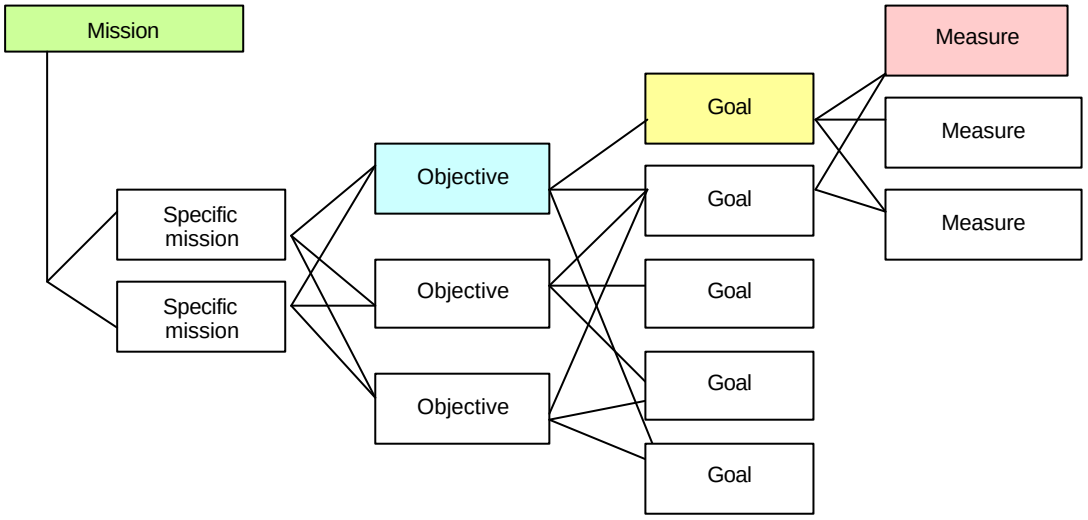

Figure 3-22: Chain between Mission, Objectives and Goals

Case ◆ Gap between Plan and Goal

A chemical company drew up a two-fold income boosting plan and implemented the program through participative discussions. However, only two years after the start of the program, actual performance figures indicated a negative variance from the planned goal, and in the third year the income was greatly reduced.

What was the cause of this? In summary, there was a short-fall in , in identifying strategic elements, and in recognition of the chain connecting objectives, goals and measures. Although figures were set first of all in expectation of growth, actual achievement departed from the prediction because accurate recognition and solution of the issue were not undertaken, since attention was paid only to the values that exceeded the realistic prediction.

- Programs with ambiguous strategic intent causean inflexible approach to changed circumstances and will not be likely to achieve overall coordination or satisfaction.
- Integration management places a top priority on mission achievement in conditions of uncertainty, by preparing overall logical proposals, and making decisions according to the situation by setting priorities.
- Strategies have two aspects: "strategy formulation" and "strategy implementation."
- Strategy formulation requires accurate definition of mission, recognition of the changes in environment or circumstances, and preparation of alternative plans.
- Strategy implementation requires team formation, leadership and communications.
- Strategies have a specific decision-making process.
- Programs have various strategic elements and SWOT analysis is undertaken for identifying them.
- Project portfolio selection is one of the methods for risk diversification.
- In strategies, objectives, goals and measures are placed under integrated management as strategic elements by relating them to each other and setting their priorities.

How to Overcome Uncertainty

(1) UNCERTAINTY AND ALTERNATIVE PLANS

Management of uncertainty is one of the basic issues in strategy theory. Uncertain future phenomena, which are unpredictable, occur outside the project and inside the organization, and cause trouble, crisis or loss in the course of implementing a program. Projects in progress face crisis triggered by changes in government policies or regulations, emergence of alternative technologies, changes in the competitive market, economic fluctuation, etc. Moreover, inside the organization, development projects with complicated requirements or systems often cause delays in the schedule or budget overruns due to a shortage of information and lack of technological knowledge. Since project values change according to changes in circumstances, it is critical to maintain the mission value for a program period by modifying schemes, systems or alternative combination thereof.

In program strategy management, the scenario method and portfolio method can apply. The former is for writing plural scenarios for solution by assuming uncertainty and for determining the achievable level by analyzing the route and key elements of a program. Moreover, the scenario method is based on the concept of maintaining the achievement level by coping with situational changes and providing for alternative scenarios. The latter, the portfolio method, is for minimizing the influence of uncertainty in total by individually assessing frequency of uncertainty and its impact.

There are the KJ Method for creating ideas (a method of integrating ideas developed by Dr. Jiro Kawakida), and the Delphi Technique for developing mid- and long-term scenarios. In addition, as an analysis-oriented method, there is PPM (Product Portfolio Management), a well known analysis method developed by Boston Consulting Group, which has various applications areas and ways to apply), the Kepner- Tregoe Method (analysis based on four processes including status analysis, issue analysis and potential issue analysis). Also, analysis of relationships between elements can use ISM (Interpretive Structure Modeling, a method developed by Warfield for recognizing relationships by pair comparison between elements).

(2) PROJECT PORTFOLIOS

1) SELECTION PATTERN OF PROJECT PORTFOLIOS

The following are typical cases in project portfolio analysis.

- A value creation portfolio for innovation programs.
  Selection of high-risk and high-return projects, which include creation of business or product development.
- A value creation portfolio for renovation programs
  Asset reinforcement types such as those for introducing production management system into a factory to improve portfolio productivity; selection of low-risk and high-return type programs.
- A value creation portfolio for network type programs
  Selection of low-risk and high-return type programs that enhance asset value by connecting multiple project assets on a network.
- A value creation portfolio for service type programs
  Selection of low-risk and low-return type programs that expand the asset use for another undertaking of service.

2) METHOD OF PORTFOLIO MANAGEMENT

The basic method of portfolio management is classification of projects into "what should be done" and "what need not be done" by recognizing the asset properties of programs.

- Create multiple program plans by combining project models.
- Make an assessment based on the asset properties and effect of programs.
- Make an assessment from the viewpoint of reasonable resource allocation.
- Make an assessment from the viewpoint of uncertainty.
- Set priorities on programs.
- Adapt to changes in circumstances by assuming optimistic, pessimistic, and most probable cases.

Thus, procedures for portfolio management involve selecting an optimum combination of projects to achieve the maximum value of a mission. For example, in the case of a project model to be achieved quickly with a low cost, portfolio management means to make an assessment as to whether to "make or buy" and to make a decision. In other words, portfolio management examines the possibility of drafting broad strategy plans by considering strategic properties of the project model.

● Architecture Management

Definition

Architecture management, which serves to apply structure and function and to provide information for creating strategy process and project models, means the task of designing a creative mission. Architecture management not only copes with changes in environment but also creates innovation concretely based on mission. It has the following five duties: (1) Create the strategy process for mission, (2) Create project models, (3) Apply structure (4) Apply functions to the structure, and (5) Equipment with information.

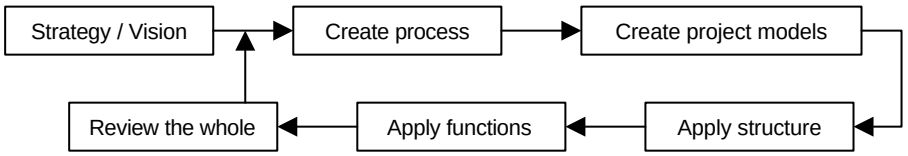

Figure 3-23: Process of Architecture Management

Development from Project Scenarios to Architecture

Project architecture means designing a creative mission. However, the creative mission does not necessarily indicate a specific, fixed project mission but has many variations depending on insights as to how to integrate philosophy, idiosyncrasy, sense of value, individuality and sensibility. However, the mission represents a strong assertion or belief for breakthrough that will accomplish issue setting and overcome barriers. It will provide direction and gives team members pride, satisfaction and confidence.

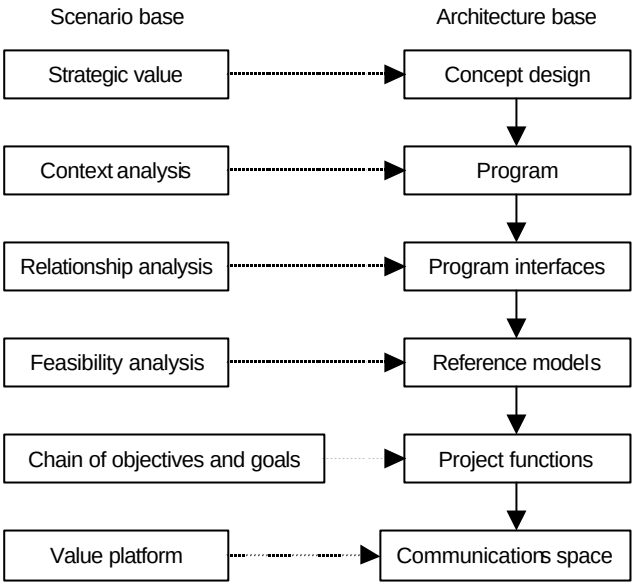

Figure 3-24: From Scenario to Architecture

The Standard Project Models

The standard project models refer to standard forms of programs that integrate overall projects comprising a program as independent management units. A project model has common basic project attributes of an independent package with unique theme, goal, process, team and tools, and generates added value through combination or substitution with other alternative project models.

In the face of discontinuous and drastic changes in circumstances, built-in flexible arrangements are necessary for a program, in which component projects may be re-phased, suspended or cancelled as warranted as if they form part of a mosaic, thereby maintaining the original value of the program

ISO's standardization subcommittee for automation of information has been working on research of definitions and model creation. They aim to shift the total picture of project activity to standard forms considering the maximum use of advancing IT. Attention should be paid to at least the following four items for development of standard project models which serve as reference models.

- Coordinate the holistic mission with the objective structure
- Ensure flexibility to maintain mission in situational changes.
- Ensure model's self-sufficiency, connectivity and synergy effect.
- Make a model considering uncertainty.

(1) THE SCHEME MODEL

A scheme means a conception plan to develop a mission into multiple scenarios, with a scheme report concerning the feasibility as a deliverable. The contents of the scheme model include draft basic conception documents, basic policy paper and basic configurations for projects through research and survey of the following items: (1) the objective and goal of a project, (2) basic management policy, (3) basic requirement specifications, (4) project stakeholder collaboration relations, (5) expected results, (6) constraints, and (7) estimated required resources.

The key attributes of the scheme model are the definition of feasibility, internal structure and external relationship, and flexible adaptation by modifying assessments to respond to requests for changes by the owner or user arising from environmental shifts. The products of the scheme model are basic conception documents, feasibility survey reports (technology, financing requests, investment readiness, economic and socio-political environment and ecosystem among others), documents for soliciting bids for projects, investment and finance plans, etc.

- A scheme means a conception plan, to develop a mission into multiple scenarios, with a scheme report concerning the feasibility as a product.
- Scheme modeling includes drafting the basic conception documents, basic policy paper and basic drawings.
- The intent of the scheme model is to facilitate flexible adaptation by changing the assessment of feasibility and external relationships.
- The scheme model explains the basic design for participation in a project and responsibility to stakeholders.

Case ◆ Scheme Model

In industries such as banking, automobile and chemical, international alliances are becoming a managerial issues and corporate survival in the future greatly relies on having a good basic plan for reorganization and merger. Such schemes embody the results of ideas and wisdom concerning whom to select as a partner, whether to choose capital alliance or operational alliance, whether to use market, manufacturing or technology alliance, etc. Competition involves the need for many resources and has time pressures. It is hard for a single corporation to survive on its own. The project scheme model defines a process for survey, assessment, contract and implementation concerning future collaboration partners for co-growth.

(2) SYSTEM PROJECT MODEL

The System Model is based on the systems approach. In this methodology, when the allocation of resources, incorporating uncertainty, is decided for the first time in complex system projects, it encompasses the design of details for materialization, system planning and verification. This method principally pursues optimization with project engineering techniques, of which typical cases are program design and EPC (Engineering, Procurement, Construction) for projects.

This method focuses on control with the phase approach that divides work process by the time axis and by the work breakdown concept. In this respect, this method has its advantages, but in the knowledge and information society, increase in the added value is not expected without combining this model with the scheme and service models. Non-alignment with the scheme model is given as one of the reasons why a reasonable profit cannot be attained in services organizations (contractors) in spite of demonstrated superior project execution performance in terms of delivery time and quality, excellent operability and resources productivity in completing a large scale plant contracted for through competitive bidding.

- The System Model is based on systems approach.
- The model encompasses the design of details for implementation, system planning and verification.
- The model basically involves optimization by project engineering methods.

Case ◆ Value Creation Program for System Building

A project to customize a company-wide resource program or a plant construction based on process engineering uses the system model for efficient and effective construction of a system through delivering contracting services. A contract defines the objectives of projects, construction period, budget, quality, scope and other aspects. This model accommodates various risks in the projects, such as risks for design, technology, procurement, construction, performance, guarantee service and delivery and ensures that value is generated for all parties.

(3) THE SERVICE MODEL

The service model draws on a completed system's functions to create potential value. The service model takes the form of a project in which goods are produced and services are provided by using a completed system through a program or project. The operation of systems (note that systems are not necessarily information systems) is routine work; therefore it has been treated in the same way as general operations. However, a period until a system becomes operational, or a period when returns on system investments are interlocked to such schemes as BOT (Build-Operate-Transfer) and PFI (Private Finance Initiative), should be recognized as a project period during which risk and returns are inter-related. Therefore, there should exist motivation and incentive for achieving goals as a program or a project that generate values in operations.

The things that are acquired through system deployment management, such as quality, brand, technology, know-how and data, are the resources needed for new value creation. They can be fed back to the system model or fed forward to reinforce the existing scheme model. In other words, the service model has properties similar to operation project development, and is based on knowledge management in which the experience, information and data that maximize the value of system management are used for a new business opportunity.

- The Service Model produces goods and provides services by using a system as a product of a program or a project.
- The period during which The Service Model is deployed is recognized as a project period during which risk and returns are inter-related.
- The Service Model accumulates new resources such as quality, safety, technology, know-how and data.
- The Service Model is based on knowledge management that is used for a new business opportunity.

Case ◆ Service Model in an Oil Company

An oil company introduced a simulator for product mixing in blend tanks and shortened the production lead-time. The service model was characterized by flexibility and quick response to customer needs and market changes. The company also introduced total preventive maintenance (TPM) for preventive maintenance, and production improvement using production data, which resulted in an operation level of twice the defined capability, with small investment.

Case ◆ Service Model in an Aircraft Engine Maker

An aircraft engine manufacturer in the US collected engine operation data on airplanes in operation throughout the world, and analyzed the parts data, which led to developing a service model for improving airplane availability rate by dispatching repair teams when airplanes landed.

Architecture and Interface

Program interface means the division of a grand design into a number of projects and their classification into standard models that visualize not only structural relationships between projects but also simulation for dynamic interaction of multiple projects. Since architecture maximizes value generated by a combination of standard project models, logic that shows value structure, innovativeness, visibility and accuracy of architecture presentation is required. Architecture management also means interface management of projects. Architecture management develops visible formats, common orders and tacit knowledge based on accumulated effective practices in the layers and processes through visualization of the total picture. Architecture management addresses:

(1) Complex system phenomena (perceived in a multi-faceted way).
(2) Open system model (design of relationship between models and core values as a pattern issue)
(3) Process adjustment (control of situational changes by a phasing approach)
(4) Structuring (systems can be controlled by breakdown to layers)
(5) Knowledge skill (able to organically deploy in-hand and additional acquired skills)

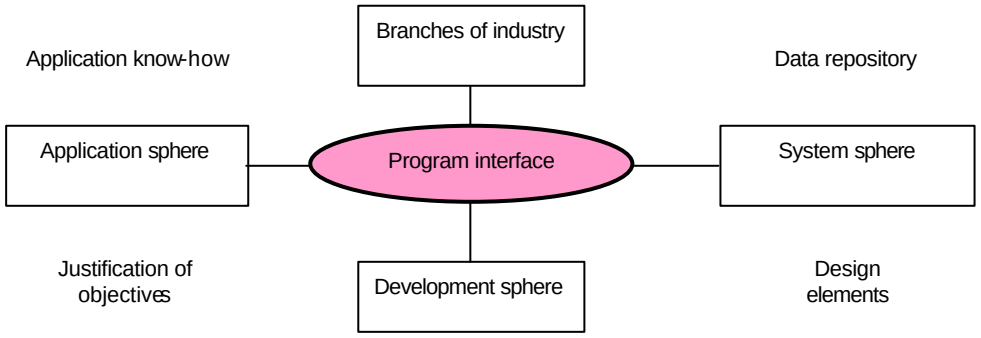

Figure 3-25: Program Interface

Programs have interfaces with four spheres as illustrated in Figure 3-25, i.e., branches of industry, development, system and application. These four spheres are reflected in the three project models depending on the nature of a program or project. They are also represented by the standard project models. Identification of hypotheses on dimensions, elements and constraints from each model based on concept models also clarifies requirement specifications. Concept models, relations between environment and models, and functional and non-functional requirements by models can be simulated by applying them to a project model.

- Architecture management requires logic that shows value structure, innovativeness, visibility and architecture presentation.
- Architecture management categorizes accepted rules and tacit knowledge.
- Program interfaces have four spheres: branches of industry, development, system and application.

Case ◆ Development of An Information System

Let us take a case of developing an information system. First, there is the sphere of client industry affiliation - whether the information system is for a pharmaceutical company, travel agency, financial firm or other. Each branch of industry has its own unique systems requirements and practices. The objective that shows why the information system in question should be developed relates to the specificity in the sphere of application. In the case of a pharmaceutical company, the objective is to support the development of materials for new products or new manufacturing methods. For such system development, decisions are made considering complexity, performance based on novelty, development cycle time, cost, and success probability.

Concept of Object Orientation and Technology Application

Since information technology is developing at a fast speed, it becomes necessary to apply the concept of multiple agent systems that have been created on the object orientated approach to program management. Program management requires a framework that identifies and recognizes basic objects. Objects comprise accumulation objects and element objects. They also facilitate flexible presentation of the layer structure of the whole and parts, and of the relationship between classification and specific cases.

For example, project risk management is part of integration management. Cases of success and failure in risk management are related to class attributes of risk management such as identification, quantification and response measures. Objects are like a capsule where the data structure and operational method are integrated. They are ready for operation when a client conveys the message. Such object-oriented frameworks are highly useful.

Case ◆ Information Technology Tool

In particular, the use of IT CASE tools can generate application generators, database call, and user documents, which are connected with the repository, accumulating and allowing retrieval of specifications and data. In this case, attention should be paid to the usability engineering or integrated software development environment (ISDE) such as CASE.

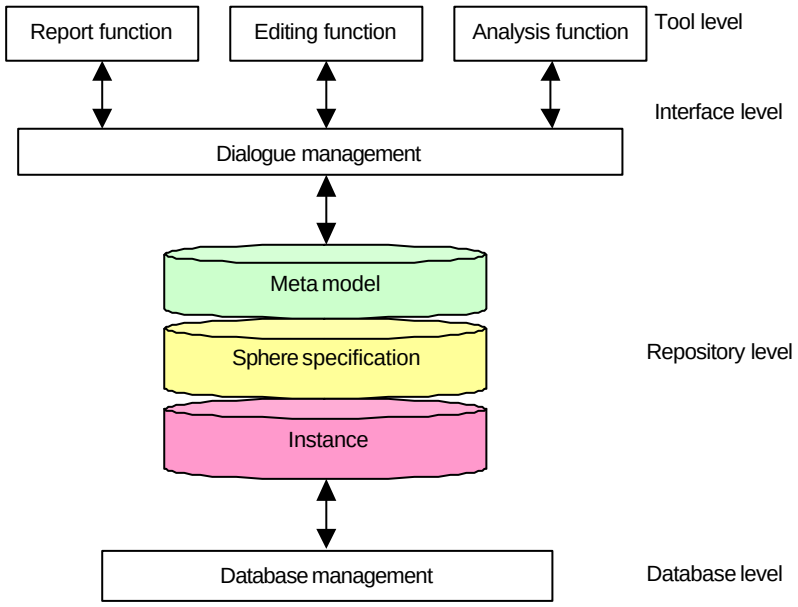

Figure 3.26: CASE Tool Architecture

In the service model, the functions of human interfaces, repository and communications can be applied to improvement of the status quo and new value creation for systems. CASE tools can generate application generator, database call and user documents through connection with the repository for accumulating and searching for specifications.

- Program management requires a framework that uses object orientation.
- Objects represent the layer structure of the whole and parts, classification and specific cases.
- Objects are like a capsule where the data structure and operational method are integrated for ease of operation.

Case ◆ Application of Information Architecture

An architecture of an information system consists of the part that man can see (front-end) and the part that he/she does not (back-end). The front-end is the part where data such as documents are created on the screen and the back-end is the part for back-office processing such as CPUs, and ERP, PDM, CAD and other application packages.

The connection of these two architectures is fixed and there were many problems if either is changed. However, a business-to-business work integration system called Enterprise Application Integration (EAI) has been created for flexible connection of the systems. When Web is used for the front-end and EAI for the back-end, the class and message can be separated since they are created on object orientation technology.

What should be noted here is application of the data and knowledge as corporate know-how, which are accumulated in the back-end. Corporate data are stored separately within companies such as manufacturing data in plants, market data in sales sections, and financial data in the mainframe at a head office.

Sharing such decentralized data leads to the construction of a value platform for people, information, and organizational culture. If an enterprise has the strategic intention to reinforce a value platform by utilizing knowledge assets, it is necessary to appreciate how corporate data and knowledge should be used by employees for projects, or among projects, from the aspect of both platform and architecture management.

● Platform Management

Definition

Platforms refer to a specific community space to facilitate a program or a project, which is provided for collaborative work essential for building on, acquiring and sharing information and knowledge on human, information and cultural aspects.

In other words, a platform is the space for communications where issues that cannot be communicated only on architecture are handled.

Definition

Platform management refers to management activities that involve interactions between human, information and cultural aspects as well as appraisal, design, launching and ongoing improvement of platforms to help reinforce organizational competence for overall programs.

Platform Management has two major roles: establishment of platforms and their management. Establishment includes the mission, objectives, policies and rules. Meanwhile, platform management refers to maintenance, improvement and connection with management systems or external services. Procedures for platform management are shown below.

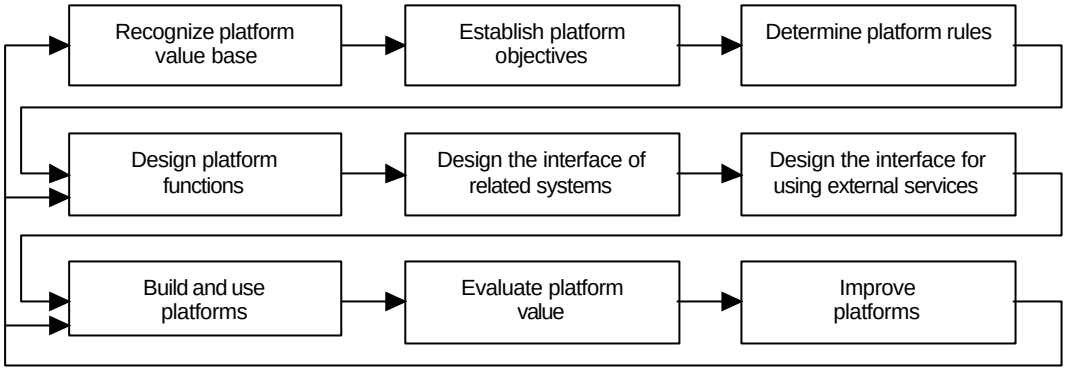

Figure 3-27: Work Process for Platform Management

- Platforms refer to a specific community space where people, information and culture are integrated.
- Platform management is an activity to reinforce organizational competence and value base.
- The establishment of platforms includes buy-in, implementation and modification vis-à-vis the mission, objectives, policies and rules. Its management refers to platform functionality assurance and connection with management systems or external services

Design of Community

From the viewpoint of value creation, the design of a platform space or the project mental space discussed in Part 2, Project Management, is one of the most important elements. The space in question specifically refers to meetings, space on networks and in the workplace. The following three elements are important for its design and management. First, communication aspects are indispensable for human networking. Today, digital networks are essential vehicles. Secondly, the concentration of talented professionals is a significant issue. Recruiting of multi-national professionals is not feasible without providing an atmosphere that demonstrably accepts cultural differences in nationality, race, religion and profession. Lastly, attractive missions, themes and leadership are at the core of a project community. These three elements produce effects that harmonize with teamwork, and each element is deeply concerned with or combines elements of human, information and cultural aspects. Thus, a harmonized platform geared with human, information and cultural systems considerations exerts a positive influence on value creation activities.

(1) TWO ELEMENTS OF CONTEXT AND PROTOCOL

Basic elements of platforms are expert context, competency to interpret the meaning of programs, and the protocol to understand special languages for communications. Context indicates guidelines, practical experience and knowledge concerning project management. Protocol is the language to be shared for communications such as the English language, project management terminology and computer languages.

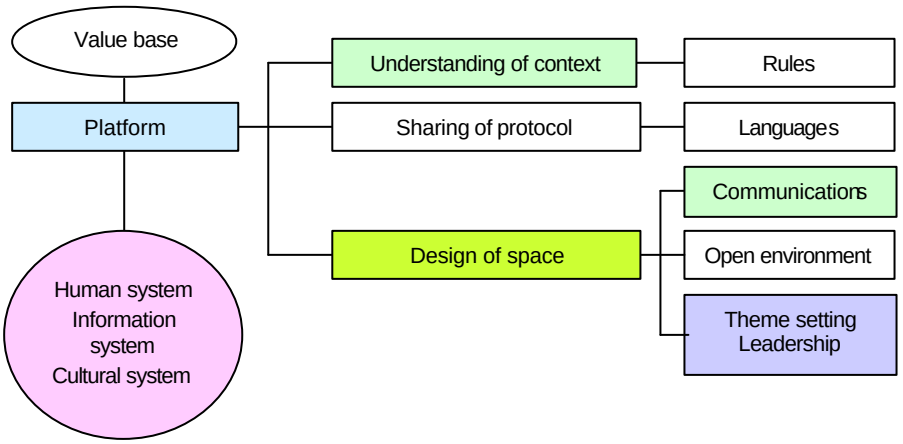

Figure 3-28: Image of Platform

(2) VALUE BASE OF PLATFORM

Platforms are a base for creating new value by concentrating professional human resources from different cultural backgrounds with broader perspectives and by integrating global knowledge.

Human system

Knowledge, know-how and skills that are injected into programs are deeply embedded in the tacit knowledge, intelligence andn persona of the human beings who contribute to the programs. They are generally classified into the categories of labor, personnel, human resources management, or knowledge management in recent years.

Information system

However, knowledge and service produced from the human system needs to be processed rapidly by incorporating new information, and to be promoted en bloc through digital accumulation processing. Knowledge is merged through human system communications and undergoes digital processing for solutions, and then its value is created through accumulation and transmission.

Cultural system

Core competence with high specialization forms the principles for ethics, society and duties, dominated by a characteristic uniqueness based on the cultures of race, region, enterprise, organization and occupation.

Global and open collaborative work is promoted through endeavors for advancement of human communications based on mutual respect without eliminating such cultural differences, through merger of global knowledge and culture, and through coordination with existing rules, custom and procedures.

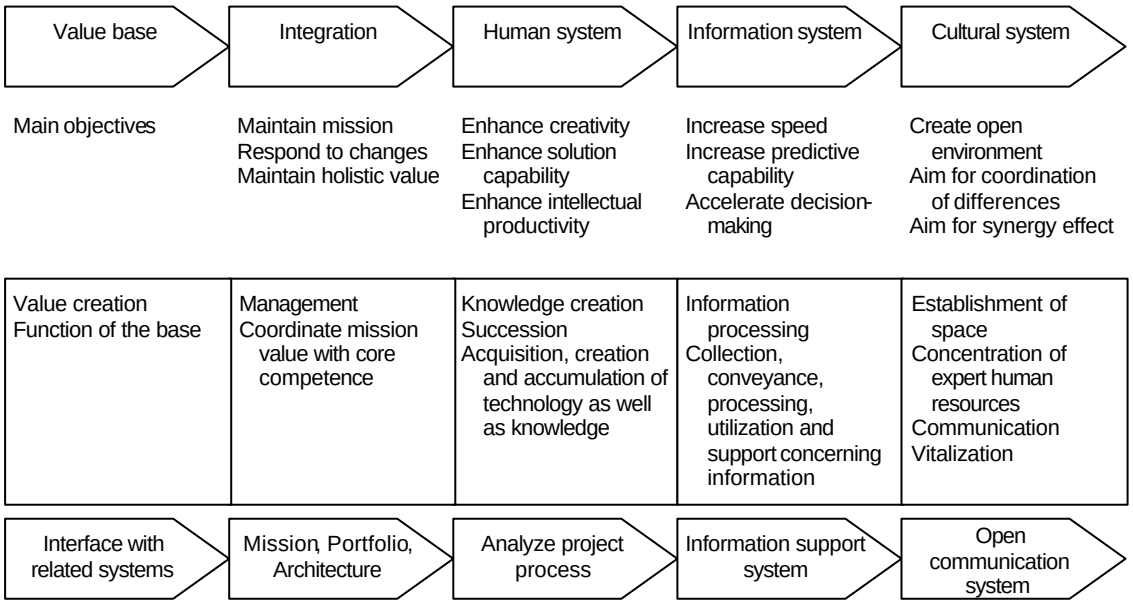

Figure 3-29: Value Base Controlled by Human, Information and Cultural Systems

- The community space needs communications, concentration of human resources, attractive themes and leadership.
- Value creation activity is influenced by human, information and cultural systems.
- Platforms require the competency to understand context and protocol in a special language for communications.
- Context refers to rules, practical experience and knowledge, and protocol refers to a shared language for communication.

(3) OBJECTIVE OF PLATFORM MANAGEMENT

The objective of platform management is to build, maintain and improve the value base for creating core competence in the process of knowledge creation, which is the core of program activities.

- A community space where professionals with diverse specialities gather and conduct work efficiently using protocol should be provided.
- A community space where professional and companies can conduct transactions using program protocols and formats should be established.

- A community space should be established where flexible response to rapid changes or frequent fluctuations is possible within a network.

(4) RULES FOR PLATFORMS

In programs, professionals from with different areas of specialisation and skill collaborate for a mission. Platforms are the competence space for concentrating professional competence, encouraging cross-fertilization among professionals for greater professional potential. On the program level, the most critical requirement is interfaces for combining relationships of organizations and human beings in collaboration. At least the following five rules are required for a competence platform that includes understanding of common context and development into mission reading, context and knowledge creation activity for concept.

(1) Mutual reliance – common objectives, social ethics, attitude for collaboration, and fulfillment of promises.
(2) Sharing of program context and rules – understanding of the mission, objectives and roles, and technical terms.
(3) Sharing of program protocol – rules, discipline, common language, communication terms, and transaction standards.
(4) Professional ability – professional capability to contribute to work.
(5) Community – participative space to be used by program stakeholders while maintaining their own professionalism and abiding by certain minimum rules.

(5) FUNCTIONAL DESIGN OF PLATFORM

Physical space

Since platforms are the space enabling exchange in a variety of formats, for a program, a space inside a physical building and other facilities for collaborative work. are needed

Electronic space

Electronic spaces are cyber spaces that allow program participants to conduct teamwork and other type of collaboration through communications on networks where e-mail, Internet, groupware, server and database are provided.

Space for coalition

For formation of core competence, platforms require another virtual space that transcends different cultures. This "space" includes a clear program theme that should be shared, openness, transparency, fairness, free participation, responsiveness, global standards, English, etc.

(6) USE OF EXTERNAL SERVICES

Specialized external services mean business mediation services over digital networks. Internet providers, portal site businesses, auction agencies, security providers and info-mediaries are typical mediation functions. Major mediation functions consist of the following four items.

(1) Information Services – Website businesses that match-make business partnerships, introduce specialists, and provide useful information, etc. for a fee.
(2) Security Services – Security specialists sell security measures for digital transactions, systems, information and communications.
(3) Payment Settlement Services – Businesses that mediate settlement of transactions
(4) Procurement Marketplace – Businesses that provide electronic marketplaces for equipment, materials, parts, services, etc.

Evaluation and Improvement of Platforms

Platform management requires three factors: visualization, readiness for use and freshness of content information. Visualization of plans versus actuals, quantitative indicators, and cause and effect relationships should be in place for participants to consider platforms useful. Moreover, it is desirable for a platform to be capable of offering ready access to databases or data marts at any time from any place; otherwise platforms may not be able to attract first-class talent. Excellent managers are well aware that the key factor for producing intellectual productivity is communications supported by far-reaching information systems, databases and knowledge bases, as well as well-motivated, self-starter team members at the front of the program.

Case ◆ Platform Management

It is one of the major tasks in platform management to create such a system that enables data communication with the XML (extensible Markup Language) by applying EAI (Enterprise Application Integration) to systems with different protocols, and allowing visualization on diverse systems with GUI at the front end. There have appeared system integratorswho design and build large-scale decentralized systems on the Internet using this architecture.

- The objective of platform management is the establishment, maintenance and improvement of a program value base.
- A platform means a created space where human resources act efficiently with a certain set of protocols.
- A platform also refers to a space where project-related organizations can make transactions by using communication standards or formats.
- A space that facilitates flexible responses to rapid changes or frequent modifications on a network should be established.
- Five rules are required for competence platforms: mutual reliance, sharing of program context and rules, sharing of program, professional ability and a participative community.
- A platform has physical space, electronic space and virtual bonding space.
- A platform has mediation functions such as information provision, security and transaction settlement.
- Platform management requires three factors: visualization, readiness for use and freshness of information content

Trends in Platform Management

Platform management is indispensable for advancing programs in global-scale competition and collaboration through engaging professional persons with superior ability rather than the masses. For collaboration with program partners, it is necessary to access reliable procurement data, human resources data, technical data and corporate data services, in addition to the data made available within single corporations.

In project management associations in the US and Europe, professionals certified with qualifications for project management are registered. There is also a good supply of reliable project management consultants, tool venders and application software packages. Efficient and rapid implementation of knowledge creation should flexibly deploy information management for appropriate architecture design and information and data flow.

Collaboration between organizations, communications among different businesses and international partners in programs and projects should be increasingly common for Japanese corporations; however quite often, the international nature of collaboration can be a cause of failure. A closed society has a strong sense of boundary with no concept of platform management, and tends to stick to existing frameworks. As a result, joint work with external entities and responses to foreign cultures have caused confrontations or handicaps, and it has become a substantial barrier to collaboration. Platforms cover the activity base for integrating people, information and cultures.

Case ◆ Intellectual Asset of the Japanese Traditional Manufacturing Industry

Large manufacturing companies in Japan are facing stagnant performance due to stubborn business units and functional departments with strong power which stick to the myth of that high quality products is a point of differentiation when in fact greater customization is in demand. In spite of huge intellectual assets, corporations have repeated failures in building a database for smartly utilizing those assets. Building a database naturally requires extensive data input, which needs steady efforts and perseverance without being rewarded or considered as a merit point in performance evaluation. Only the use of information and data has been stressed but input work that requires plenty of time and cost has always lagged behind, which has made DBs quasi empty knowledge boxes.

This is one of the reasons why we need to stress platform management in which all projects can use common DBs and have instance access thereto. An important task of program management is to create positive feedback from work-places by providing well thought-out and efficient information systems that encourage them to continually input required data and use them to produce higher project productivity.

Case ◆ Sense of Crisis over "Article Making"

There is a sense of crisis over the infrastructure of "article making" in Japan. The accidents of concrete fragments that fell off in tunnels, a radiation sickness case caused by careless handling of radioactive substances, and a food poisoning affair due to dairy products--all these cases are principally issues on space in an organizational climate, human education and information management.

Case ◆ Integration of Planning and Track Record Systems

One of the values of project management lies in achievement of a mission by minimizing risk through flexible responses to situational changes, adjustment and adoption of an alternative. For example, reduction in lead-time increasingly needs integrated use of a planning and track record systems on data transactions on an online or overnight feedback basis. In an enterprise attempting specific innovation by way of program management, the first step is to combine a planning function at a head office, a marketing force, a manufacturing function, all decentralized, as a single data model so that all of them can debate and share business concepts and data on a common basis.

- Platform management is indispensable for advancing programs in global-scale competition.
- A closed society has a strong boundary sense and tends to stick to existing frameworks, which has become a big barrier for collaboration, the modern key to business growth.

● Program Life Cycle Management

Definition
Program life cycle represents continuous program transition from the beginning to the end and consists of recognizable phases with different gate deliverables.

It is also important to understand aspects of cost, environment, economical efficiency and uncertainty, as well as the life cycle composition.

Object	Scheme model	System model	Service model
Life cycle viewpoint of cost	Forecast of repayment of investment costs Calculation of life cycle costs	Sanction of budget for project system (project product) Firm estimating of costs by project	Minimization of maintenance costs Change in maintenance costs
Life cycle viewpoint of environmental load	Forecast of environmental load	Environment design and implementation Environmental protection system	Measurement of environmental load Recycling/no emission
Life cycle viewpoint of economics	Forecast of return on investment Pre-assessment of investment value	Implementation of investment Interim assessment of investment	Maximization of return on investment Post assessment of investment
Life cycle viewpoint of uncertainty	Program design Portfolio selection	Changing program design Execution of options, as warranted	Changing program design Execution of options, as warranted

Figure 3-30: Viewpoints of Life Cycle in Project Model

Definition
Program life cycle management is intended to maximise the use of program assets from a life cycle viewpoint of the overall program by overcoming uncertainty, either by alternatively combining projects or by selecting options, in order to maintain mission value to combat potential increases or decreases in the intended value arising from changes in environment and circumstances.

1) THE PROGRAM DESIGN

Program design means designing program functions, combination of projects and their interfaces from the viewpoint of the life cycle. Managing costs and environmental load over the program life cycle is one of the typical features of program design.

2) OPTION OF PROGRAM ALTERATION

Through execution of options for changes in structure, function and circumstances that occur in the course of implementation when planning a program and after planning, their influence on the the life cycle

should be evaluated and mission value maintained.

- Program life cycle is an aggregation of segment program life cycles.
- Program life cycle should also be analyzed from the aspects of costs, environment, economics and uncertainty.
- Program life cycle management refers to management to maximize program value by alternately combining component projects or adopting options to cope with situational changes.
- Program design means designing functions, combination and interfaces from the viewpoint of the life cycle.
- Program options mean options available to maintain program value and to be executed when evaluation of the influence of situational changes in the program warrant.

Program Design

Programs include projects of various types, e.g. those of a development type that start from scratch, innovation types, system types that combines existing and new elements, and service types that acquire operation know-how through new system operation.

The interrelationship of different types of projects has been collectively handled under programs. Meanwhile, program design is receiving attention as management that provides powerful measures for dealing with structural and situational changes surrounding programs, and bringing about value synergy, innovation and chain effects.

(1) CLASSIFICATION OF COMBINATION PATTERNS

Programs consist of multiple projects that are related to each other and are combined in multiple patterns to achieve a mission. There are three basic patterns for such combination: (1) Sequential project combination, (2) cyclic project combination and (3) concurrent project combination.

Multiple projects that include independent projects with no direct inter-relations are most frequently found in engineering and construction (E&C) companies. However, management methods similar to those of program management are actually adopted in such companies, as is seen in group management for organizational efficiency in resource utilization or process management. In such cases, economies by synergy effect are generated through integrative management of decentralized groups and corporate management.

1) SEQUENTIAL PROJECT COMBINATION

Sequential project combination refers to the combination of multiple projects, e.g., A, B and C, which linearly proceed in the order of A, B and C along a time axis, keeping precedence relations with each other. This is seen when a large contracted project is divided into planning, construction, operation, etc. Projects A, B and C actually may overlap to some extent in schedules or work interfaces but they are basically linear projects.

Why are A, B and C not managed as one project? The main reason is that if any environmental change occurs at the completion of A, the project may be changed to B', not B as it is, or if any change occurs in B', the project may even be switched over to C''. Such flexibility is taken into consideration in the program viewpoint. In other words, projects in a traditional sense have a tendency to inhibit flexible response to changes once started, but a program allow for changes in the future and should have built-in flexibility to adopt optional alternatives

Figure 3-31: Sequential Project Combination

Case ◆ Appropriate Capacity of a Manufacturing Plant in the Face of a Drastic Economic Change

A financial crisis occurred in East Asia. A manufacturing plant, which had been planned in the growth period expecting hefty market demand, was completed according to the original plan during the crisis. Recovery of the regional economy was expected soon, but the demand dropped to one-third and the huge investment is continuing to be a heavy burden, causing bad debt. If an alternative plan had existed to reduce the plant capability to a half, while variable costs might increase by 20 percent but fixed costs would have been decreased by about 40 percent, they could have waited for recovery of the

market before reinvesting in plant expansion.

2) CYCLE PROJECT COMBINATION

If a development type program has favorable results, future developments will utilize successful experience for further improving programs. A development type program starts with a conception project, prototyping a product and, if successful, proceeds to a commercial design-build project. However, while structural data can be obtained in design and construction, comprehensive data can only be collected after the project is started. These comprehensive data are reflected in the subsequent program development.

Three projects of the scheme model, system model and service model are combined as a cyclic combination and the next project will spin off from the original cyclic model. This is called the cyclic project combination. In software development projects, this type of development is called a spiral model since phases form spirals, and sequential combination is usually called a waterfall model. The critical point of program design is to maintain an holistic value chain view and to avoid the temptation to pursue fragmented domain management.

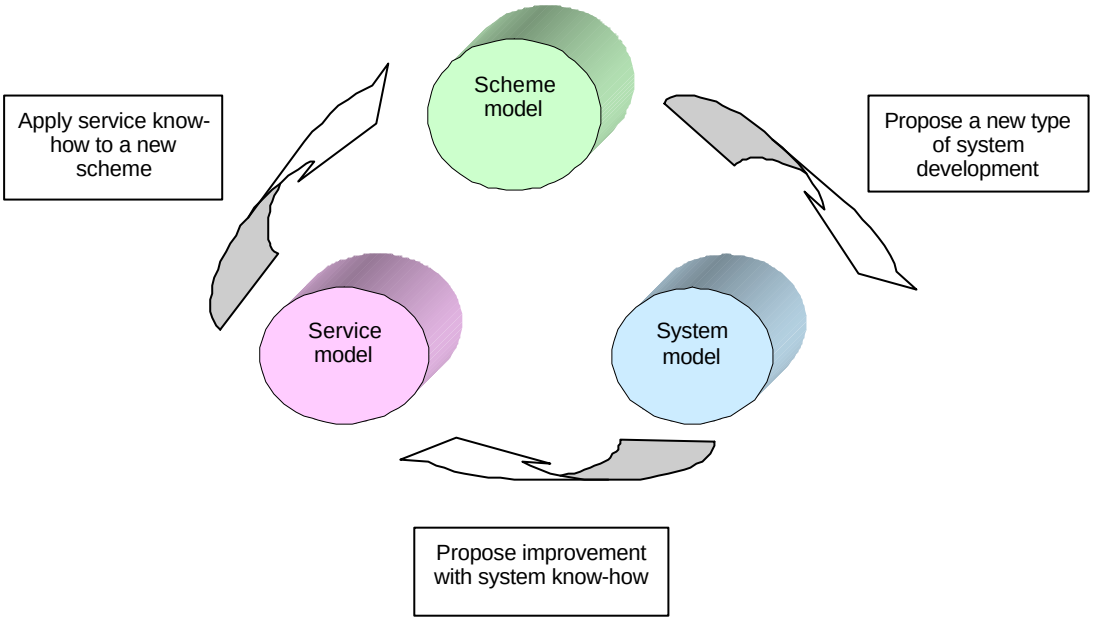

Figure 3-32: Integration of Project Cycles

A program designer recognizes that the scheme model is appropriate to plan a system and service utilizing the system as component projects. Program designers also comprehensively collect, accumulate and process knowledge, know-how and data and have a mechanism to incorporate intellectual productivity improvement supported by knowledge management into design. What is important in program design is pursuing value in the chain and not in segmented phases or projects, using knowledge and know-how acquired under a program, in order to achieve synergies.

Case ◆ Project Cycle Combination

Many airline companies now consider that airfare and stand-alone package tours should not be their main revenue source. Based on partnering with aircraft manufacturers, airline companies have started Internet connection and air-borne phone services and comprehensive mileage card businesses that combine mileage credit with ground amenity services. An airline company and an aircraft manufacturer have considered in-flight space and flight time as a business opportunity and developed a chargeable Internet connection service for passengers' PCs. The key concept behind this is smart utilization of customer database, perks temptation, and advanced IT and communication technologies.

3) CONCURRENT COMBINATION

Concurrent combination is a model of combining projects that is used for crashing development or manufacturing lead-time, compressing costs and enhancing chances of detecting solution elements by overlapping originally sequential multiple projects. As one of such methods, concurrent engineering is well known, developed by Boeing for concurrent design, procurement and production of airplanes. Specifically, it is a project management method that realizes reduction in lead-time, cost compression and

better client satisfaction by forming a Design & Build Team (DBT) and using three-dimension CAD for design, layout arrangement and assembly simulation on the computer screen to decrease design and production recycling. This is a type of multi-project management used for multiple projects but having no distinct project life cycle, maintaining interrelationship by consistently pursuing value for a mission.

The concurrent combination has three typical cases and features. The first case is for the reduction of uncertainty in project cycle time by executing multiple projects concurrently and thereby reducing program lead-time. In this case, overall standardization of work processes that allows for concurrent work execution and computerized simulation tools for downstream work are essential. The second case is intended for elimination of overlapping between projects and resulting reduction of lead-time by forming projects concurrently. The third case is for enhancement of success probability by intentionally letting concurrent projects compete for better outcomes when uncertainty is rather high.

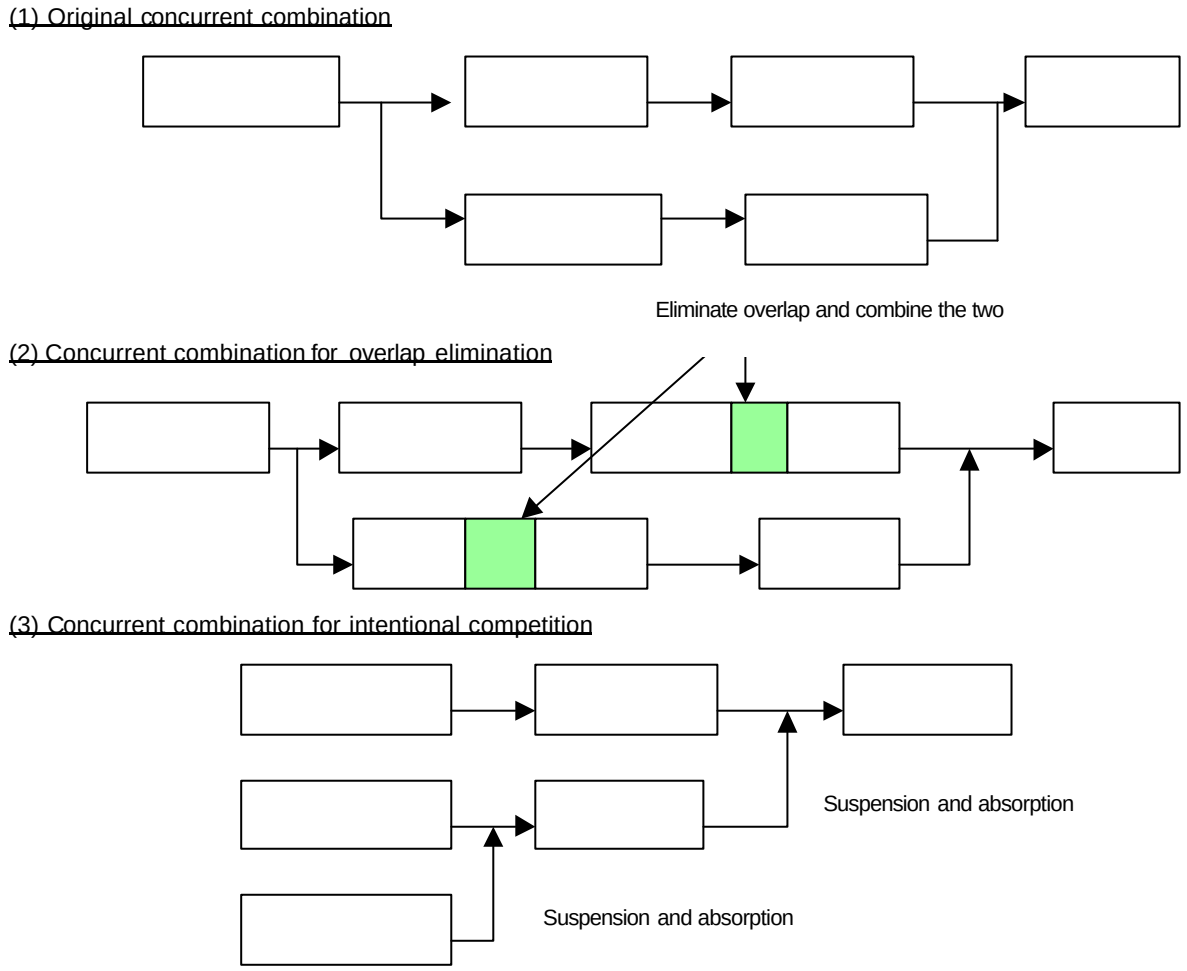

Figure 3-33: Three Types of Concurrent Combination

- Original concurrent combination is often seen in product development in the auto industry, which values organic multi functions. A corporate competitiveness recovery project consisting of multiple strategic projects such as workforce reduction, new product development and procurement reform often comes under this category.
- Concurrent combination for overlap elimination is a method to cut fat, waste and inconsistency of overlapped portions through combination of projects, in addition to the natural merit arising from concurrence. Multiple projects in airplane manufacturing have achieved good results with this method. In regional development projects, integrative management must be applied cutting across multiple projects otherwise independently executed concurrently over a certain time span to avoid, for instance, the construction of roads and bridges that are not used by local community members.
- Concurrent combination for intentional competition is found in new product development programs with high uncertainty. The pharmaceuticals and electronics industries, which are racing against "time to market" to grasp windows of opportunity in changing market needs, endeavor to raise

chances of success by allowing multiple projects to compete for results on specific themes such as products, manufacturing methods, materials of construction and marketing strategies according to sub-missions divided from a holistic program mission.

•

Case ◆ Development of New Products

High-risk and high-return programs for the development of new products such as high-performing lithium batteries, new integrated circuit parts, and new drugs, may improve their probability of success by introducing the competition principle to form plural project teams for the same theme. The essential objective of program management cannot be achieved by simply increasing the number of projects.

- Program design brings about value synergy, innovation and chain effects.
- Basic patterns of programs are (1) sequential project combination, (2) cycle project combination and (3) concurrent combination.

Program Change

(1) GUIDELINES FOR INITIATING PROGRAM CHANGE

Three elements should be recognized as the guidelines for activating program changes: change attributes that indicate whether a change is structural or situational; permissible level for value evolution, or departure from the original value; and critical value factors for programs. If it is predicted through report analysis and constant monitoring of relevant project information by means of a change monitoring system that any environmental change would affect these three elements, change management should be initiated to refer to the critical value factors to judge whether it is necessary to make modifications in the original program or to shift to alternative plans.

1) CHANGE CAUSES

Uncertain political situation, financial crisis, unpredicted technical innovation, market changes, appearance of competitors, serious delays, confrontation with stakeholders, defective technology problems, change in rules governing transaction contracts, etc.

2) PERMISSIBLE LEVEL FOR VALUE EVOLUTION

Qualitative and quantitative evaluation for value evolution is performed with the Balanced Score Card method.

3) CRITICAL FACTORS

Program leader, project manager

(2) REAL OPTION

Real options refer to expanded, readily available options, other than financial assets, for program evaluation and implementation under uncertain conditions. This is a significant concept suggesting combinations of projects, alternatives and eventual balanced decision-making seeking real program and project values which might be otherwise glossed over.

Based on the option that best suits situational changes and associated wise(?) management's decision, real option based present asset value is likely to become greater than that calculated under the conventional DCF method. Therefore, the real option is also called extended NPV. In this sense, real option can be defined as the portion of project value accruing from future options.

There are the following options available for projects. In the DCF method, unless a rate of return exceeds capital costs, decision on the investment is not made and good investment opportunities are likely to be lost. With the real option method, alternative plans for project models through options allow flexible responses to uncertainty of investment opportunities.

1) OPTION TO POSTPONE

This option is to postpone the decision-making on investment, waiting for a decrease in uncertainty to a permissible level, to enhance the project value.

2) EXPAND OPTION

This option, notwithstanding the high uncertainty, is to anticipate future growth and make a minimum investment in a project, allowing an option to expand the project in the future when the situation changes.

3) OPTION TO CONTRACT

This option is to reduce the size of the project if estimated maintenance cost has proved to be higher than plans, or the initial investment or environment deteriorates.

4) ABANDON OPTION

This option is to abandon the project if the market environment deteriorates and depreciation costs are incurred over an intolerablylong period.

5) TIME TO BUILD OPTION

This option is to allow for phased realization of a project so that either of the options to postpone, suspend or abandon can be selected when the environment becomes adversarial.

6) OPTION TO TRANSFER

This option is to transfer use of assets according to changes in situation.

7) SHUT-DOWN & RESTART OPTION

This option is to suspend the project until the market recovers if market deterioration causes a fall in the product or service price and variable costs eat into expected profit.

8) CANCELLATION OPTION

Option to minimize risk when the environment deteriorates, based on the cancellation clause provided in the project contract.

Case ◆ Manufacturing Volume Fit for Demand

A beer brewer has attained business success by constructing a new brewery whose production output is less than the half the normal economic volume in accordance with the demand in the Hokuriku Region of Japan, which enjoys abundant pure natural water coming from the mountains. The associated manufacturing costs are relatively higher but due consideration has been paid to the fact that the market is mature and a large demand growth cannot be expected. Good quality, fresh local beer is put on the market so that the beer can compete with mass production brands. If the company had made a decision based on commonsense economic production capacity, initial investment costs would have become a burden on company viability. It is a good lesson to observe that overseas power companies and petrochemical companies are actually suffering from escalating bad investment risk due to financial crisesafter the construction of their plants.

- In program changes, change attributes, permissible level for value evolution, and critical value factors should be identified.
- It is crucial to constantly monitor projects and initiate change management based on the assessment of influences.
- Real options refer to the options of actual assets other than financial assets.

● Value Indicator Management

Value indicator management is a part of program integration management intended for program assessment platforms.

Definition

Value indicator management refers to the capability to set indices of program values, and to continuously measure value indicator indices at the planning stages, at any changes and key implementation milestones and upon completion, in order to maintaining or even increase the value of the program.

The scope of major activities and roles of value indicator management include the design of a basic framework, development of indicators, regular evaluation of program and projects, preparation of reports, proposals, reporting to stakeholders, examination of actual indicators and their feedback for improvement and data accumulation.

Basic Framework

Assessment is a systematic evaluation of programs. A basic assessment concept and measures are essential for assessment. This concept clarifies the efficiency, effectiveness and contribution to society of program management. In addition, economics, engaging stakeholder interest and sustainable global development should be taken into consideration. This concept has to be incorporated into projects that constitute a program.

The basis of assessment lies in whether the mission maintains its value as expected. The realization of this value is also related to the methods and results of integration management, and ways of assessment vary according to scheme, system and service models. The adoption of the five "E"s and two "A"s as common assessment indicators for the overall program facilitates balanced assessment of the program and its social significance. It is also important to examine and identify what indicators are common to projects or programs from the viewpoints of stakeholders, project team, innovation, process and cash flow. In the Balanced Score Card method, mission strategy objectives, goals, key factors for success, etc, are given in program models. Its basic framework is shown below.

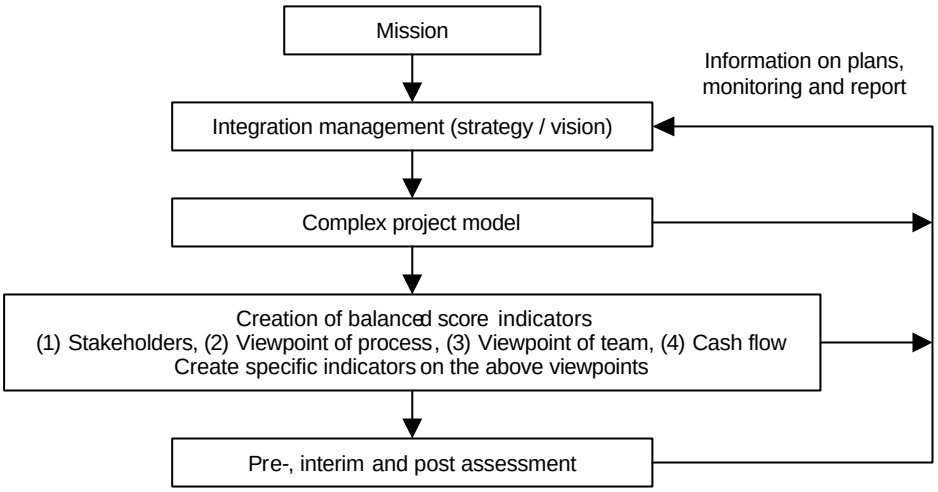

Figure 3-34: Framework of Balance Indicator Management

Value Indicator Application

(1) BALANCED SCORE CARD

The balanced score card was developed by Robert Kaplan and David Norton and is widely used as a business management indicator. The salient characteristic of this method is that management visions and strategies are not in management's hand only but are shared by employees, shareholders, customers and often community members, and incorporate balanced viewpoints of customers, finance, process and human resources.

When this assessment method is applied to a program, it will become clear what is expected and evaluated in project management. It also clarifies a mission, shows direction with a vision, and obtains stakeholders' support. The balance referred to in the Balanced Score Card is the value indicator expected in programs. Programs need the five "E"s and two "A"s instead of customer, finance, process and human resources.

(2) DEVELOPMENT OF STANDARD BALANCED INDICATORS

Balanced indicators may be developed by the person responsible for the program based on his/her own concept and benchmarks. Balanced Score Card based indicators are already in use in Northern Europe. Its software package is available for project management. The objective of assessment is to offer a means to judge current status and to detect any variances from plans to realize future results. Project management requires a strategic concept to coordinate the team capability in collecting information on situational changes. Balanced indicators incorporate strategic success factors into plans and an assessment system.

There may be cases based on balanced indicator evaluation where projects may be reduced in sizes or suspended until markets recover. Many projects, without periodical balanced value evaluation, lose the chance of exercising real options such as implementation deferment, suspension or cancellation and incur large losses. If harmonization is recognized as a common view in project management, the cycle of planning, implementation and assessment can be generated using quantitative and qualitative indicators from the integration aspects of strategies and visions. Combination of project models establishes a value creation process from the beginning to the end. For example, standard or reference models are divided into a scheme project, a system project and a service project, and are integrated into a program.

Project Model	Scheme Model	System Model	Service Model
Value	Concept value Innovation value	Realization value Value added by system delivery	Utilization value Value added by system utilization
Balanced indicator Key assessment factors Performance assessment factors	(1) Mission (2) Scenario (3) Alternative plan for change (4) Innovation value (5) Investment value (6) Definition of required function (7) Stakeholder requirements	(1) Client satisfaction (2) Stakeholder harmonization (3) Achievement of contract objectives (4) Satisfaction of required functions (5) Securing profit (6) Risk containment	(1) After-sales service (2) Acquisition of knowledge (3) Maintenance and preservation of assets (4) Cash flow (5) Preservation of required functions (6) Business opportunities
Efficiency (Internal measurement indicators)	(1) Contract objectives (2) Productivity of knowledge (3) Selection and decision by investors	(1) Contract objectives (2) Productivity of resources (3) Implementation of investment	(1) Contract objectives (2) Productivity of resources (3) Return on investment
Effectiveness (External measurement indicators)	Evaluation of economic effect	Design of economic effect	Realization of economic effect
Ecology	(1) Environmental preservation plans (2) Environmental consciousness	(1) Environmental design (2) Environmental aspects of contract	(1) Environmental management (2) Measurement of environmental load
Earned-value	Investment accounting	Management accounting	Financial accounting
Ethics	(1) Regulatory framework (2) Program ethic rules (3) Transaction rules	(1) Regulatory framework (2) Program ethic rules (3) Transaction rules	(1) Regulatory framework (2) Program ethic rules (3) Transaction rules
Accountability indicator Consistency Social acceptability Feasibility	(1) Coordination of mission and objectives (2) Multiple alternatives (3) Benefits versus costs (4) Information disclosure (5) Base for feasibility	(1) Requirements and goals (2) Options on situational changes (3) Benefits vs. costs (4) Contract clauses (5) Contract forms	(1) Requirements vs. performance (2) Contractual obligations (3) Assessment of benefits vs. costs (4) Development Harmonized with local community (5) Safety and trust of management
Acceptability	(1) Expected results (2) Expected reward (3) Expected chain effects	(1) Functions realized (2) Reward for realization (3) Acceptance according to contract	Management results Reward for performance Expanded utilization effect

Figure 3-35: Project Models and Value Indicators

Case ◆ Coordination with Stakeholders

The construction of an airport has a variety of missions such as safety in take-off and landing, benefit and convenience for users, access from international cities, and contribution to regional development. Complex projects including runways, a control tower, airport facilities, and access to railway(s) and other ground transportation should be concurrently undertaken. Also, harmonization with stakeholders' interests must be ensured, such as convenience and safety for air career people, pilots and passengers, consideration to noise abatement and environmental protection for local residents, and services and tariffs of airport authorities.

(3) DESIGN CONSIDERATION FOR INDICATOR APPLICATION IN PROJECT MODELS

Three are various key factors for success in service models. For example, after-sales service, data management, rapid response to customers, environmental response, harmonization with local residents, etc. are factors for success. It is important to quantify these success factors.

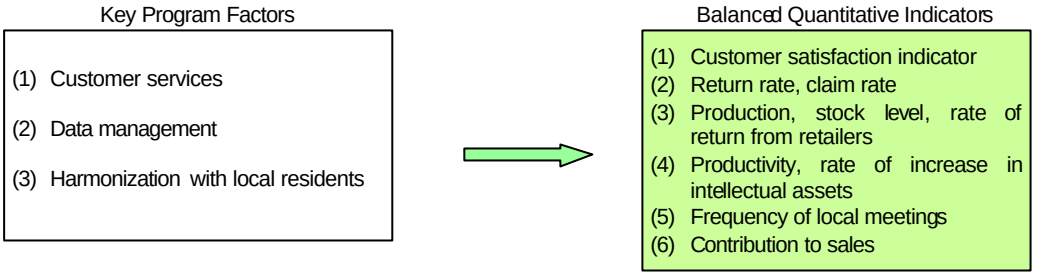

Figure 3-36: Design for Indicator Application

Process of Value Indicator Management

Value indicator management is based on the concept of management by key objectives i.e. what matters for effective value attainment is not the number of value indicators to be measured but the right selection of strategic indicators that shall materially govern or constrain program value. Systematic analysis by co-relating strategic management strategy, value engineering, standpoint of business process re-engineering, financial management, human resources management, is important. A suggested flow is as follows:

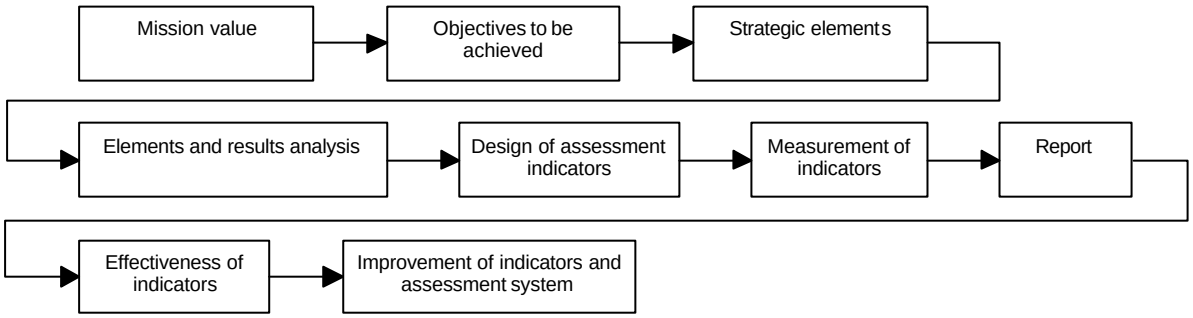

Figure 3-37: Value Indicator Management Process

There are many existing mathematical theories in some related areas. It is, however, the author's view that the Balanced Score Card based assessment is the most practical and comprehensive. This method is increasingly used by corporations and supports them in the introduction of program management.

- Value indicator management refers to the capability to assess mission requirements.
- Value indicator management includes the design of a basic framework, development of indicators, assessment of actual values, reporting to stakeholders, appraisal, improvement, and data accumulation.
- The five "E"s and two "A"s are adopted as common program assessment measures.
- Due attention should be paid to stakeholders, project team, innovation, process and cash-flow

Part IV. Domain Management
(Summary)

Chapter 1 Project Strategy Management

Outline

Project strategy management is a framework that clarifies the relation between corporate strategies (including public and non-profit corporations) and projects, and effectively incorporates project activity into corporate value creation. This framework needs two major systems, and formation of such systems will lead to realization of project strategy management. One is a system for companies to select a project and the other is a system to improve project environment for effective achievement of a project.

If a company selects a wrong project, it cannot attain a success as a company even if it successfully achieves a goal for the project. A success in a project could result in destruction of corporate value. Selecting a project is actually investment for companies. Therefore, it is necessary for companies to select a project that creates a value higher than the investment. In order to select a right project, a company vision that shows the direction for corporate value creation and the specific corporate strategy to realize it must be clarified. In other words, a vision and strategy can be a standard for selecting a project.

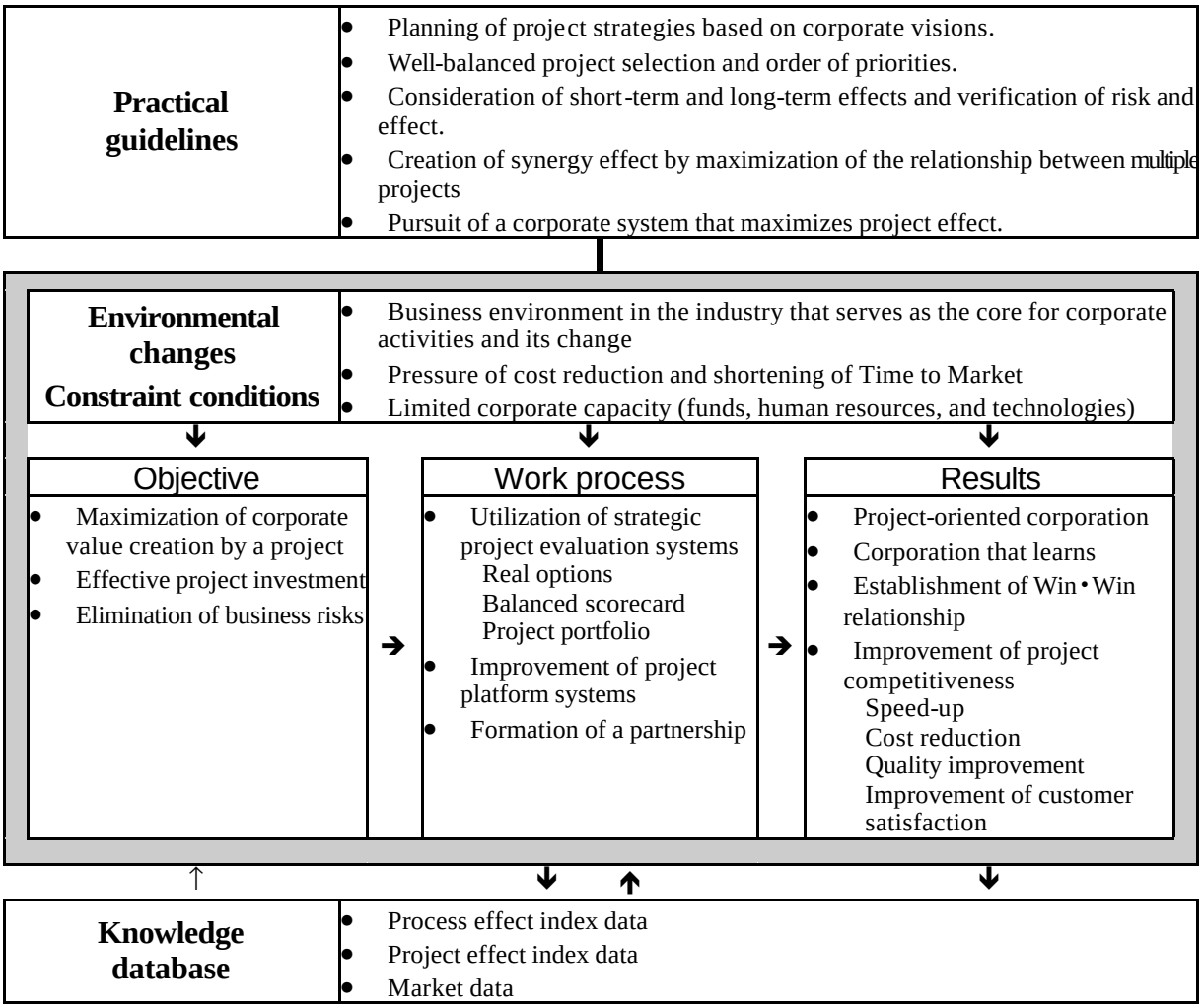

Figure 4-1-1: Overview of Project Strategy Management

Since goals of projects are becoming diversified these days, it is risky to select a project only on a basis of short-term interest. Enterprises also have objectives that contribute to corporate value on a long-term basis such as improvement of technology and reinforcement of relations with customers, so that they need to select a project from both short-term and long-term aspects. In companies, multiple projects

proceed concurrently, and the order of priority must be determined for human and financial investments in projects in consideration of respective investment effect. For effective investment, it is significant to determine the order of priorities through relative comparison including close examination of project risks and values, and to decide investment allocation according to the order of priorities. For such effective selection of projects, methods using the balanced score card or project portfolio are generally used.

The environment of enterprises for implementing a project has potential to seriously affect results of projects. In addition, an environment that supports the generation of project deliverables has potential to positively affect corporate competitiveness Particularly, aspects of corporate domains such as process, organizational structure, finance, and knowledge greatly influence performance of a project. In the project domain, corporate consistency in the relationship between programs positioned higher than projects and lower-positioned tasks will affect project results. Such approaches are expected to become increasingly important, increasing the synergy effect by effectively using project relationships in programs and applying deliverables from one project to others.

When corporate environments are drastically changing, resources needed by enterprises are also greatly changing. Therefore, there is inconsistency between resources held by enterprises and those required thereby. Meanwhile, enterprises have less time to foster these necessary resources by themselves, so this gap continues to increase. In such situations, it is becoming difficult for enterprises to rely on in-house resources only in order to perform projects. Therefore, it is becoming more significant to solicit necessary resources from outside enterprises, rather than being limited to in-house procurement. Hence, alliances with outside enterprises are becoming a critical element for successful projects.

Case ◆ Significance in Project Selection

Top management of a company ordered its development department to reduce software development cost by 10% in a year. The department considered it impossible to reduce the development cost by 10% in a year no matter what kind of improvements they tried to conduct. However, when they closely examined the causes for cost increase, they found that it was attributable to certain problem-causing projects and that the investigation upon receiving those orders was insufficient. Then, they made thorough examination of the risk of accepting orders together with the sales department and reduced the reception of such orders as far as possible. As a result, they reduced software development cost more than 10% in one year.

Case ◆ Difference in Project Performance Environment

In the pharmaceutical industry, the competition for new drug development is intensifying and the average period for developing a new drug is about 5.7 years in major global-scale companies in the U.S. and Europe. However, there is a great difference in development speeds among companies. Some companies develop new drugs in the shortest period of about 4 years. Such difference in development speed is caused by variance in environments for promoting projects. For reference, Japanese pharmaceutical companies generally spend 7 or 8 years for development and have a great difference in development environments.

Case ◆ Value Creation under Favor of Relationship with Higher-level Programs

The automobile industry has achieved speed-up and cost reduction in development of new vehicles by effective application of synergistic relationship between projects . This is seen in development models that incorporate common parts. For instance, sharing of an automobile chassis with a number of models enables not only reduction in development cost but also in development and production time.

Outline

Project finance management refers to a project control method aimed at building a structure for procuring funds for implementation of a project. A project can be started for the first time when a structure is ready for contribution of funds that are necessary for performing the project. Project finance management is not just a technique for fund procurement, it aims to create a feasible system in consideration of an efficient funds contribution structure in line with the creation of a structure for a project.

To establish such system, a scenario will be considered where funds contribution is mainly supported by a project (business). A sole project entity (project, company, investor, fund lender, etc.) does not guarantee debt repayment on a standalone basis but instead various stakeholders involved with the project and multiple project entities that support the project provide various types of security so that the project itself supports the debt. For this purpose, a concept for a basic structure should be first established, and then optimum factors for giving shape to this concept should be chosen from the market. In consideration of restrictive factors, a feasible structure should be created after adjustment, and through this process, optimization of risk sharing among stakeholders should be examined. With assessment and adjustment of this structure, a final system should be created.

However, concerning the creation of such system, it is desirable to select the best factors through trials and errors and form a total structure. In addition, concerning selection of a particular factor, it is prerequisite above all things that its feasibility and business eligibility are constantly assessed and that its results are expected as a feasible structure. A procedure is adopted by which a concept is planned based on a certain objective and it is completed as a feasible system in consideration of fund procurement for the project.

Incidentally, each factor of the work process has correlations as follows. While each factor goes back and forth along a certain flow, there always exists an assessment axis and decisions are made after obtaining a certain assessment.

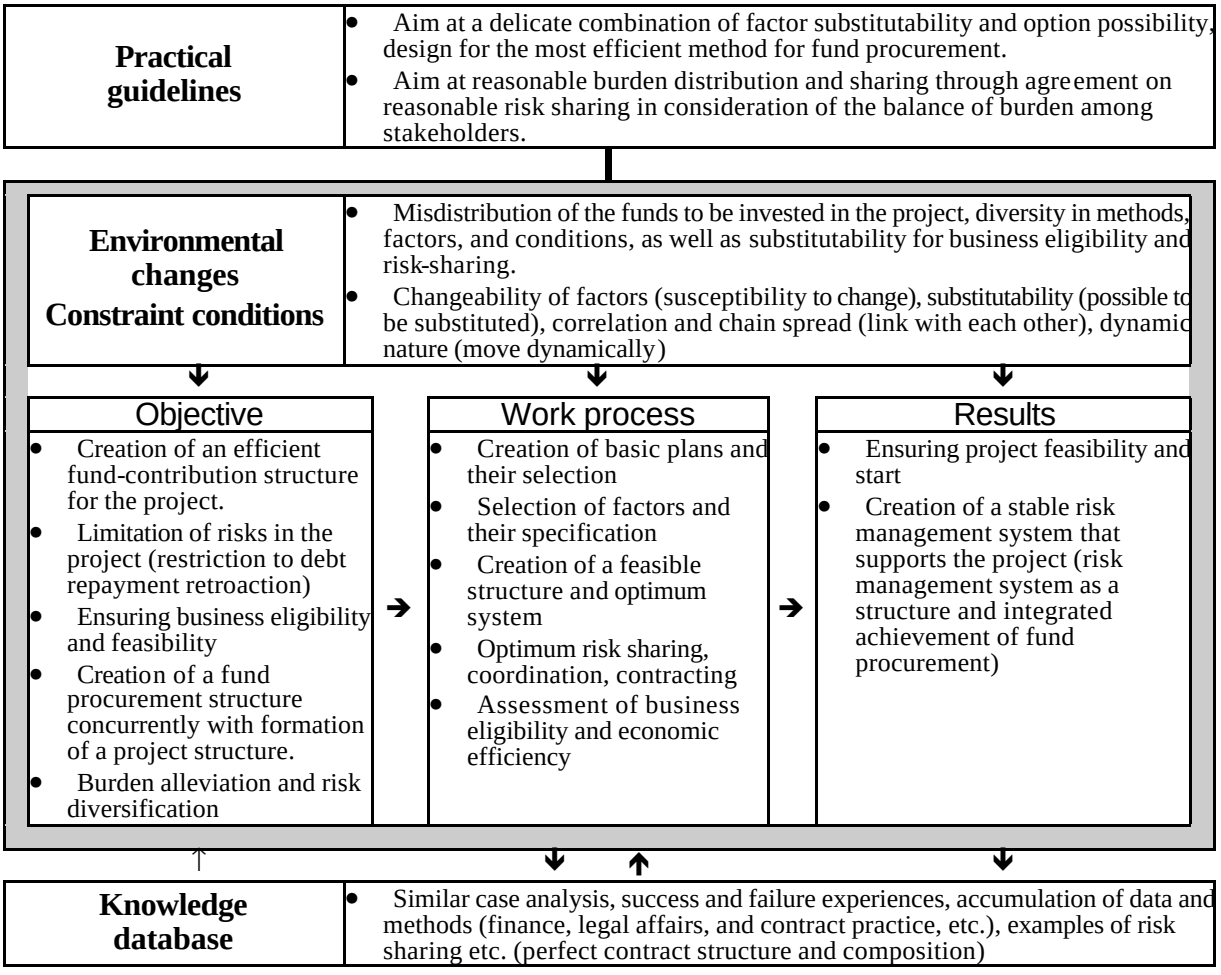

Figure 4-2-1: Overview of Project Finance Management

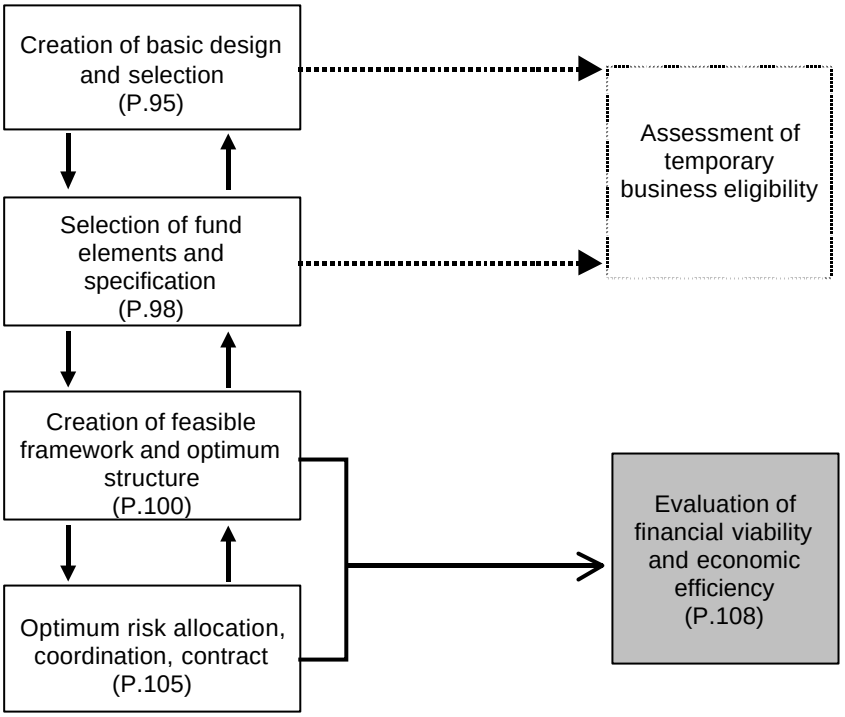

Figure 4-2-2: Correlations among Work Process Elements

Chapter 3 Project Systems Management

Outline

In planning and/or managing a project, one may encounter things that are uncertain or unexpected situations. Even if you know there are problems to be solved, there are more than a few cases where forming a project, one cannot put a hand on the clue that leads to the solution of the problems. Also, after a project started to move, the job to be carried out become unclear and quite often one may become aware of holding a job which was not initially supposed. As one of thinking processes in order to avoid such a problem as possibly as one can, you have Systems Approach.

This is an approach of problem solving based on the concept of systems and making clear the entire framework, taking things and objectives as a system – conglomeration of various elements having order, and making clear the relationships among its structural elements, a thinking process that examines continually the details of the elements. It is to realize, not only project activities, clarification of the project's assignment and range, planning project activities, and management including results and service mechanism that a project provides.

In view of engineering and management, each is called Systems Engineering and Systems Management. Both try to grasp things in the framework of system. When a project is seen through the concept of Systems Management, outline of project management system is as shown in Table 4-3-1.

Practical guidelines	• Project has many inherent uncertainties in the technical and planning area • Utilizing systems approach, organize project ideas
Environmental changes Constraint conditions	• Econo-environmental change • Human resource, shortage of experienced • Budget • Development, compression of project term • Technical development • Higher level of requested specifications
Objective	• Organization of complicated assignments inherent in project • Realization of requested specification • Prevention of problem generation • Value improvement of planning and result • Improvement of project income
Work Process	• Systems management • Systems engineering • Soft systems approach ex: systems thinking, problem solving method, modeling method
Results	• Reachable project planning • Organized and conformed project concept • Improvement of project management quality • Improvement of result and productivity • Satisfaction of client
Knowledge database	• System concept • Will determinism • Concrete example of systems approach • How-to of methods

Table 4 -3-1: Overview of Project Systems Management

The most well known applied example of systems approach can be said to be Apollo Mission project. In this, only the mission of "Send human race to the moon within 60's and return them safely" was decided and what needs to be done was discussed in complete darkness and many projects were planned for its realization. Further in individual projects, uncertain elements and objectives were clarified and resolved respectively toward the final goal.

In a concrete form, not only how to launch a large a rocket but human physiology in space and human psychology when a man is trapped in a critical environment were simultaneously researched and studied, a number of projects were each individually resolved and finally in July of the last scheduled year man was successfully sent to the moon. The approach there and its thinking process are valid for not only projects not yet experienced but for sufficient utilization of improvement of result and management qualities in general project.

Outline

In projects, value creation activity is carried out with cooperative participation of multiple individuals, teams, departments, corporations, groups, etc., which have the same objective so that the projects result in a success. Project organizations are different from stationary organizations such as companies and public corporations in that the former is temporarily formed by members who directly participate in a project to achieve its goal. In addition, project and stationary organizations are also characterized by their activities in parallel with each other. Changes in the environment surrounding companies and projects are increasingly intensified, so project organization management that is flexible and prompt in coping with situational changes is required. Stationary organizations should make continuous endeavors to improve the level of the organization (degree of maturity) that performs project management for keeping competitiveness.

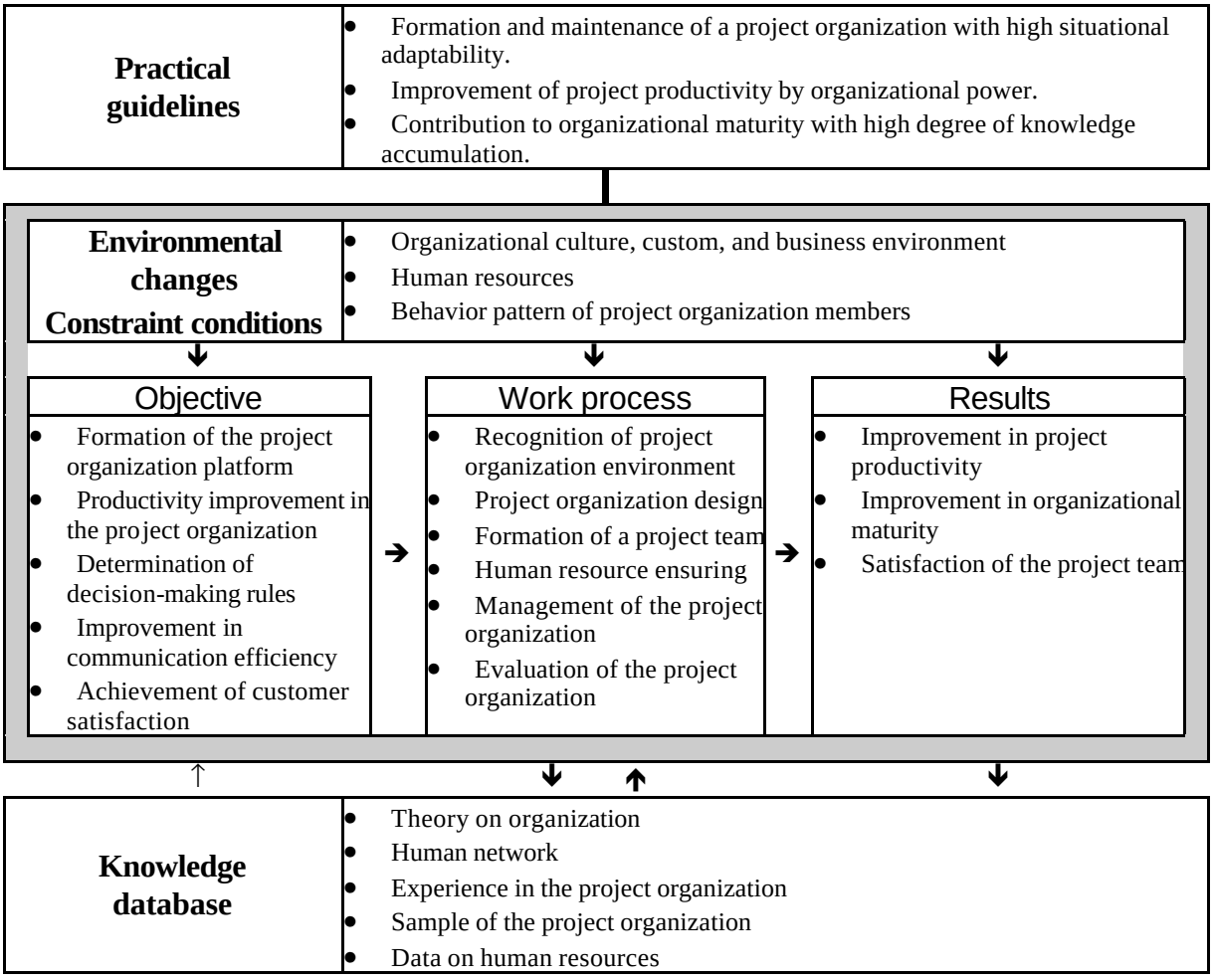

Figure 4-4-1: Overview of Project Organization Management

In projects, value creation is ultimately performed through accumulation of people's (individuals) contribution. Accordingly, senses of achievement, mission, and satisfaction of individuals who join the project organization greatly influence efficient management of the project and its success. Enhancement of purpose awareness and demonstration of leadership are significant factors to move people and are a core part in project organization management as well. This chapter also describes the role of the project manager, a core existence in a team, by considering that a project team is a group of individuals in the project organization who are directly involved with the performance of the project.

Outline

The function of project objectives management can be likened, as it were, to a car navigator. A car navigator identifies a road map from several choices, which gives the cheapest charge and requiring the shortest time, to fit the purpose of the drive and destination. Also, it has a function to choose an optimum bypass and give notice if there is any traffic hindrance on the way.

The same applies to objectives management in project performance. It can be said that the function of objectives management lies in providing a route map for balanced accomplishment by assuming a process from each point in time leading up to the completion under the constraints of contractual conditions, resources and others.

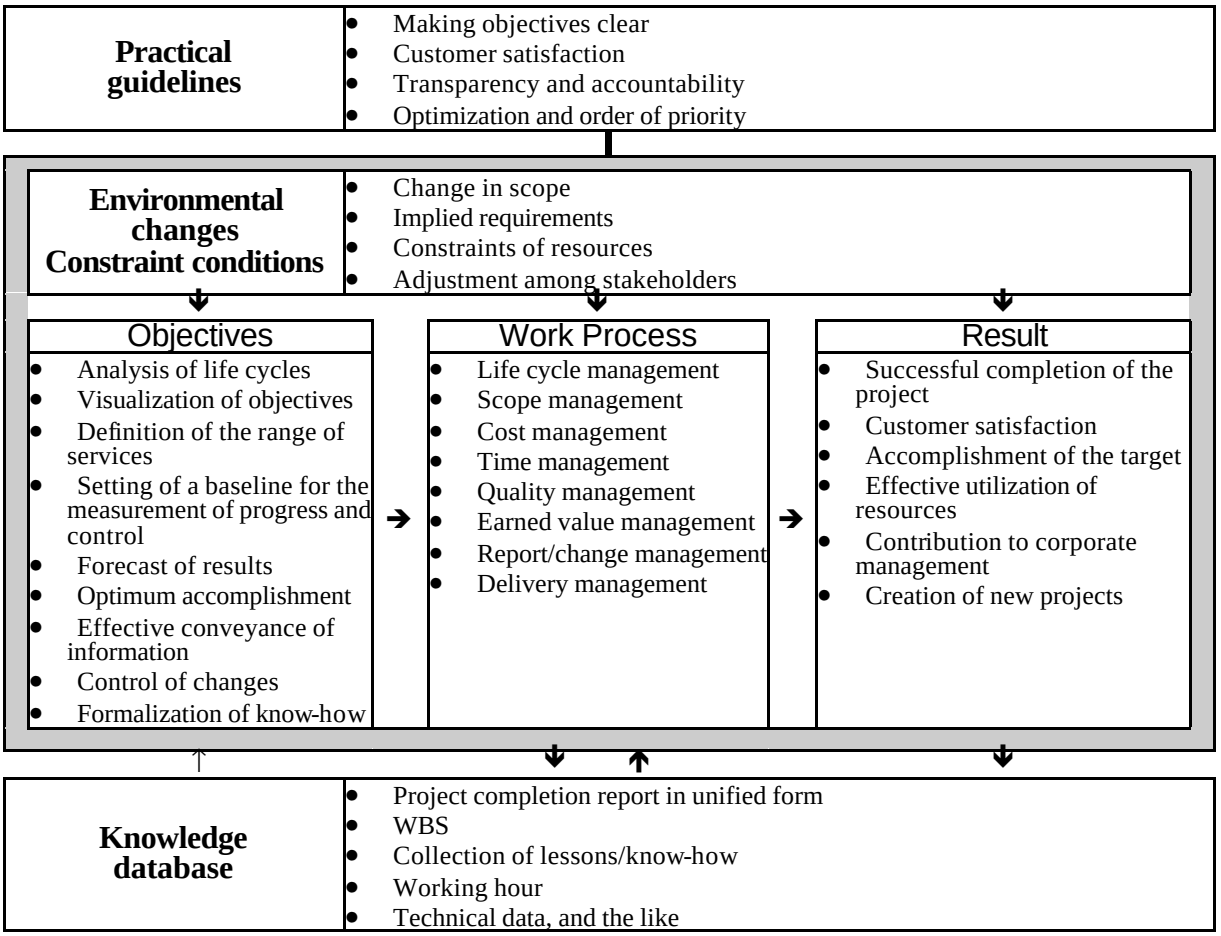

Table 4-5-1: Overview of project objectives management

Project objectives management is the work process that forms the core of project management, and as shown in the outline of project objectives managementconsists of life cycle management, scope management, cost management, time management, quality management, earned value management, report/change management and delivery management.

What is important in project performance is: (1) to unify the route and target of all the members of the project team by making the target definite and concrete, (2) to give assurance and reliability throughout the period of performance of the project for the customer, sponsor and project team members, by conveying a report on the present situation and the policy of solution about problems, (3) to maintain transparency and accountability (responsibility for giving fruit) of the operation of the project for the customer, sponsor and project team members, and (4) to seek optimization for achieving the target by determining order of priority. It is the aim of a successful project to devise a plan for performing the project by using these as a basic policy of performance.

The life cycle plan is to manage the conception of a project up to the realization of the target by dividing them into several phases, an example of which is to show the guideline of searching for an optimum life cycle cost on the balance of the acquiring cost and the operation/maintenance cost through analysis.

The main purpose of scope management is to make the target intended by the project concrete and to make the range of services definite. To attain this, it is also necessary to carry out initial design and make the specifications definite, which is called front-end planning.

Also, as shown in the interrelations among objectives management processes in Table 4-5-2, scope management plays the role of supplementing management by having an optimum balance in terms of integration, through dividing up the services into fragments of the level of work packages by means of the WBS (work breakdown structure), the relations of cooperation or tradeoff among the work processes such as cost management, time management, quality management, etc. by the work packages. Progress management is also carried out by making comparisons in time series among allocation plans of various resources, results and outputs, referring to the WBS as the standard.

The exchange of information and reporting(internal or external) the management of reporting changes occurring at all times, together with the management of the delivery of the fruit of the project, are also important functions as part of the project management work.

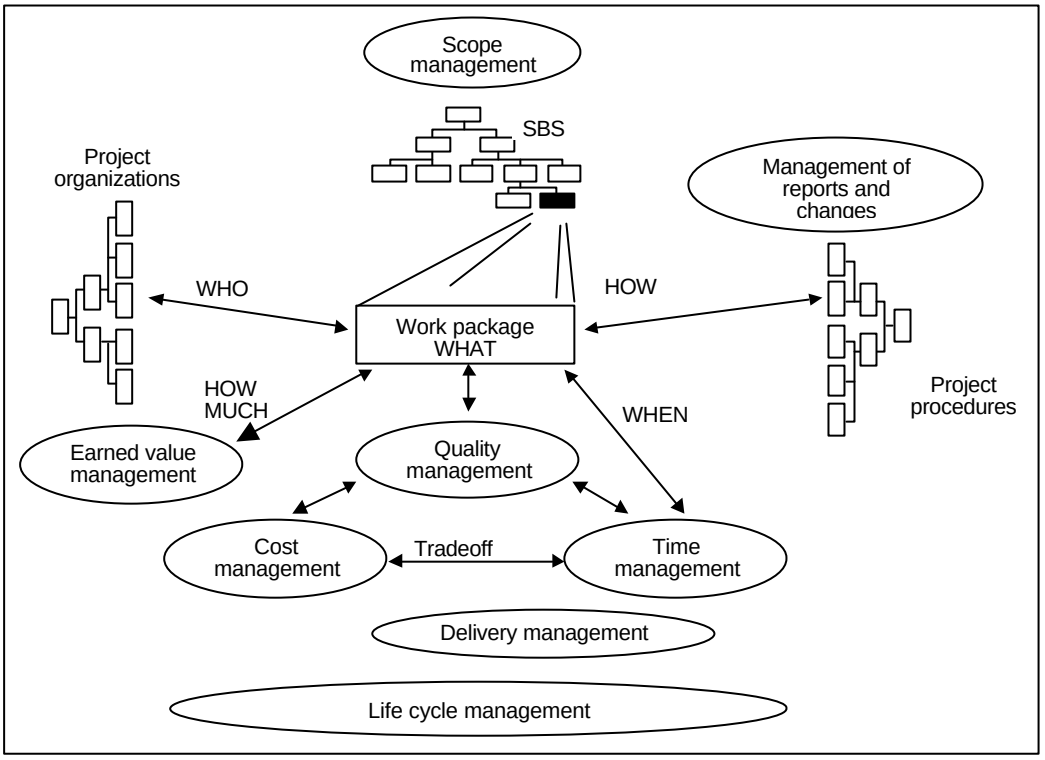

Table 4-5-2: Interrelations among objectives management processes

Outline

As shown in "II. Project Management," project resources consist of six types: material, platform, human, intellectual, information, finance.

Assuming that the various processes and techniques that constitute project management correspond to the software in a computer system, resources can be compared to the hardware that supports the system. Needless to say, a project will not function if either is omitted. A project can only be completed when adequate resources are secured at an appropriate time under management of the overall project. Project resource management refers to the management function that clarifies and adequately secures resources necessary for the project.

That part of resource management relating to "human resources," management and concerning human development is described in detail in Chapter 4, "Project Organization Management," while "financial resources" is described in detail in Chapter 2, "Project Finance Management."

The process of resource management has four objectives as shown in Fig. 4-6-1: work process, results, and knowledge database.

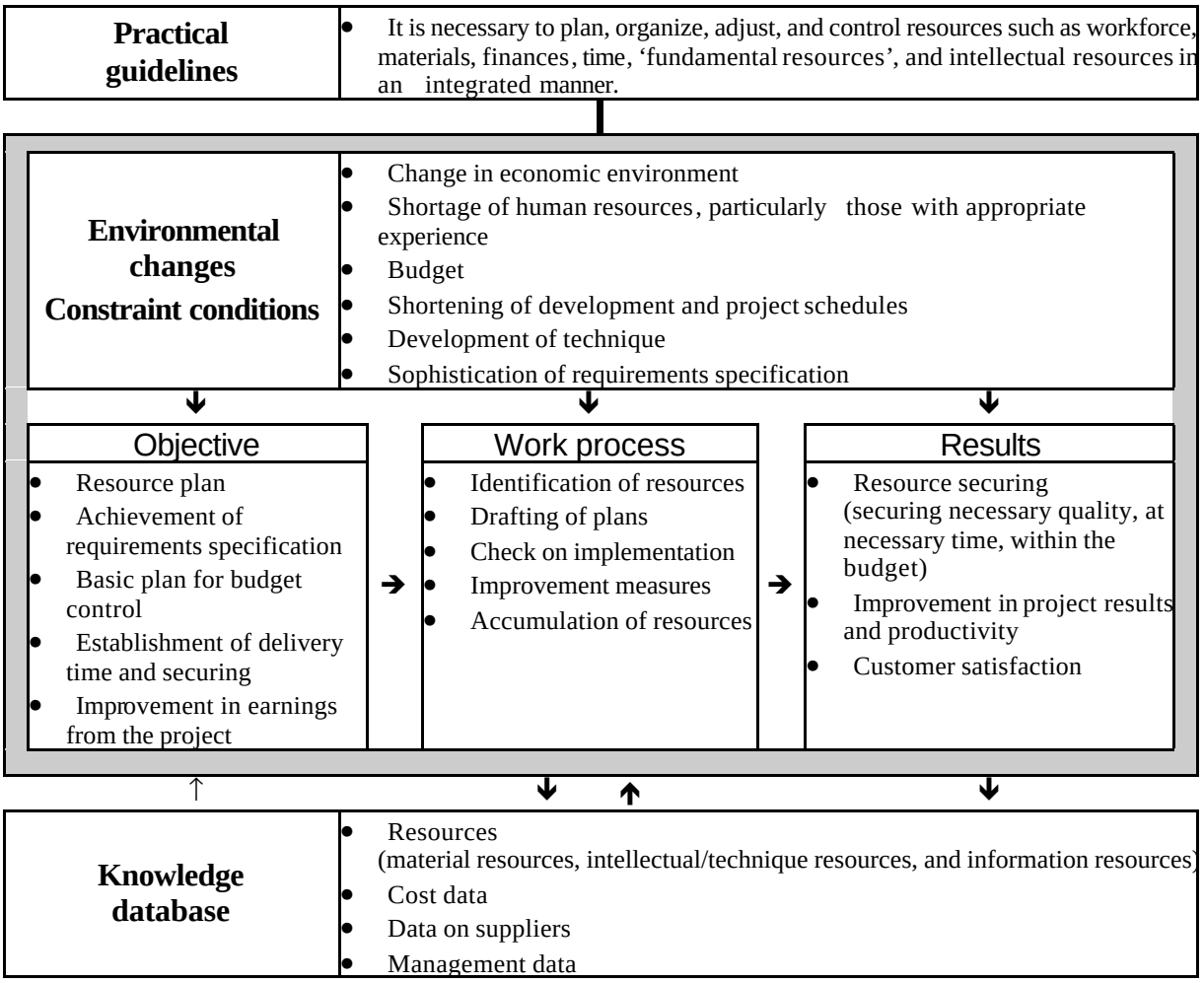

Figure 4-6-1: Overview of Project Resources Management

Chapter 7 Risk Management

Outline

Projects are accompanied by uncertainty as their basic attribute which always contains risk, and, if no measures are taken for dealing with risk, successful results cannot be obtained from projects. In this regard, it should be understood that risk can be managed to some extent. Compared with Europe and the the U.S., due to its historical and cultural backgrounds, Japan is said to be behind in risk prediction, risk control and countermeasures, and risk management as an important aspect of project management.

This is attributable to the fact that large-scale state projects are based on the national budget for each single fiscal year, so risk management over the project life cycle has not been required. Further, accountability to stakeholders was not so seriously required in Japan because projects under fixed-amount contract type agreement (lump-sum contract type agreement) have been the norm, rather than actual-cost-amortization type agreement and unit-price agreement type projects, which are popular in the U.S. and Europe.

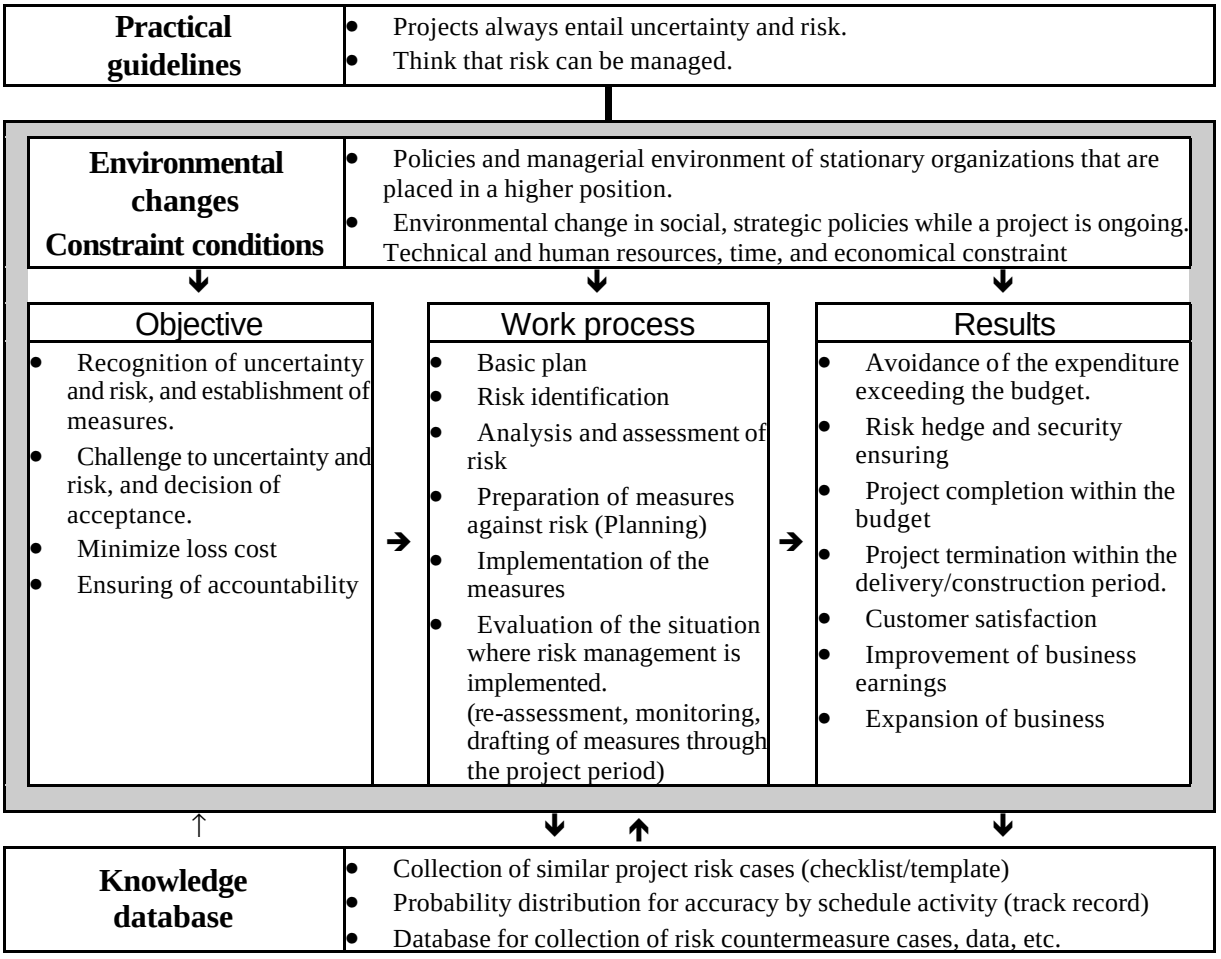

Figure 4-7-1: Overview of Risk Management

In such circumstances, measures to deal with risk has not been valued in enterprises and as a result, great risks have been tolerated. However, in the modern age, characterized by fast technical innovation; increasing demand for financial reform in state and private-sector projects; reduced project timescales and budgets; and intensified competition, the demand for accountability is expected to become increasingly strong. In this sense, more extensive use of risk management is considered inevitable.

Chapter 2, "Project Finance Management" also describes arrangement of the scheme for reasonable risk sharing and reduction among project stakeholders. This Chapter (7), explains practical basic knowledge and methods for managing risk in any project situation. In projects, implementation of risk management leads to control of many risk events and may lead to realization of an opportunity that enables better results and development.

Risk management starts with drafting a risk management policy for the relevant project based on the environment where the project is placed, such as project policy (plan, contract). Then, risk events are

identified by analyzing the constraint conditions and uncertainty that are included in the overall project policy, agreement documents, etc. Through quantitative analysis and assessment, countermeasures are prepared, they are implemented and the status of implementation is assessed and monitored throughout the project lifecycle.

These are principally performed repeatedly, not only once at the initial stage of the plan. In the same way as seen in other practical areas of project management, the lessons on risk learned in this process have to be arranged and utilized by creating a database. The knowledge on risk management thus learned should be used through integration as practical skills in the phases of project planning and implementation.

Outline

In this chapter, we explain how information and information technology (IT) should be utilized in the work of project implementation.

In recent years many projects have become more creative and of a more complex system than before requiring the consideration of global environmental issues and the creation of business under an environment of global competition, etc. as well as the demonstration of results in a short period of time. Therefore, while it is a matter of course that a project should be put into practice efficiently, it is a must that not only the technology, knowledge and know-how of the organization of one's own, but those existing in the world at large should also be put to use as much as possible, thereby enabling prompt and appropriate decision making to be reached. What will exert great power in creating an environment to meet these requirements is the information technology (IT), which is also the objective of this chapter.

In this chapter, we explain the concept of information systems in relation to the project work, the function of information systems to be applied to the project work and the construction of project information systems.

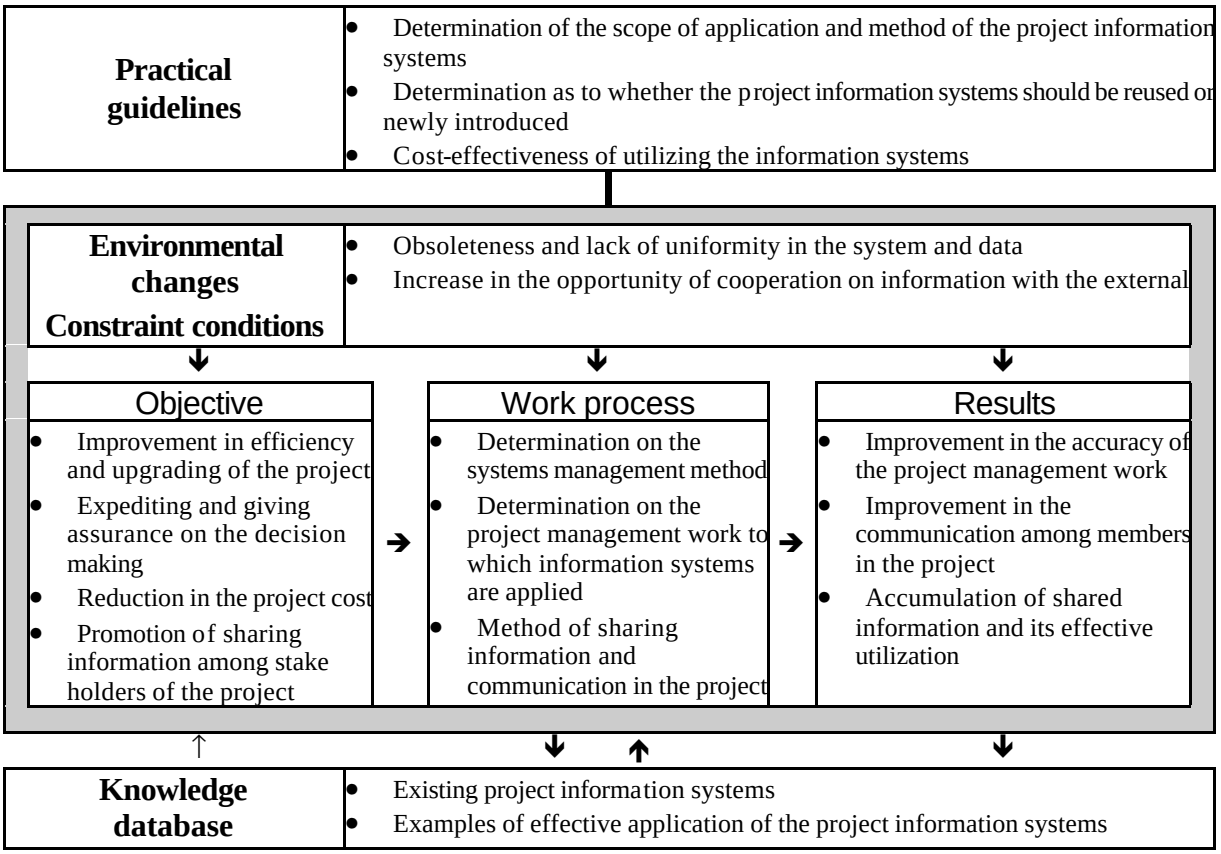

Table 4-8-1: Overview of Project Information Management

Outline

Relationship management refers to a series of operational processes that define the type of relationship between stakeholders who are involved with a project, and maintains good conditions to guide the project successfully. Its objective is to achieve the project to the satisfaction of customers/stakeholders and to further aim for the maintenance and development of the project in a continuous and sound relationship with stakeholders.

In the operational processes of relationship management, three steps are considered: "planning", "maintenance", and "restructuring" of relationship. When it comes to relationships in a project, the first thing to do is to define what stakeholders become involved with the project in what positions. For instance, in a project of constructing a building, a property owner, a builder, tenants, local residents, architect's office, contractors, and banks will be involved. They are stakeholders and the process of defining their lineup and a manner to associate with them is called the "design of relationship."

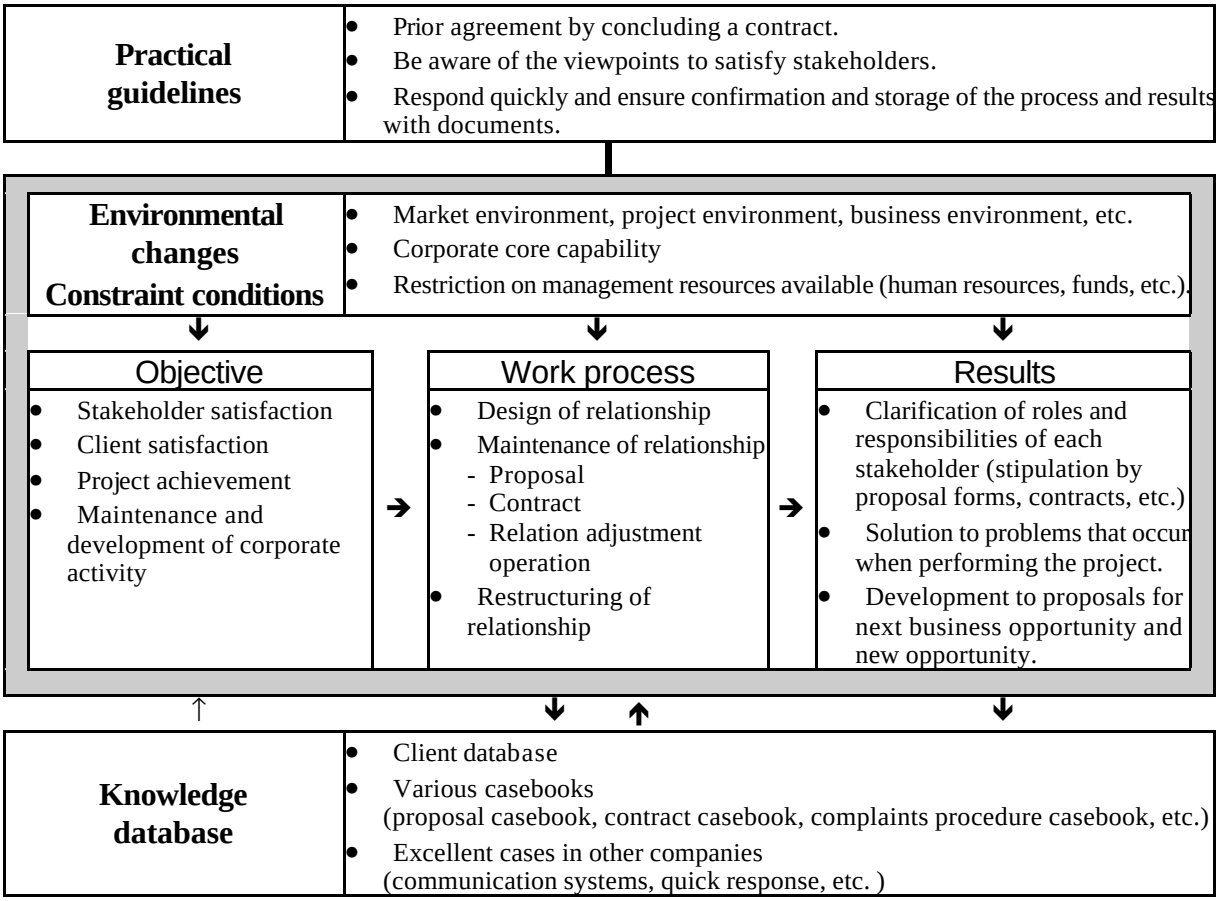

Figure 4-9-1: Overview of Project Relationships Management

With a defined relationship, the project manager facilitates the daily performance of the project to the satisfaction of stakeholders, and, if conflict occurs, they try to settle it based on the contract and pursuit of the objectives for sharing, etc. This process is called "maintenance of relationship."

Although a design of relationship formed in a project is temporary, the activity of each stakeholder as an enterprise is continuous. In the previous example of building construction, the contractor will try to maintain the relationship with the builder to acquire next business opportunities or maintenance service for the building. Accordingly, in actual business, the relationship designed for a project is applied to similar projects repeatedly, or continues through changes and reconstruction according to business environments. This process is called "restructuring of relationship."

Deliverables obtained from these operational processes include the agreement on roles and responsibilities by stakeholders which are stipulated as a "contract", solution to the problems caused by conflicts among stakeholders in performing the project, and development of business that leads to future opportunities.

The individual that first designs relationship and maintains it is, in many cases, a "client" who needs

the project, or a "project executer" who plays a major role in performing the project. Therefore, the type of relationship is greatly affected by the business environment, core competencies, managerial resources available, etc. of the client or project executer, in addition to the terms particular to the project (overall market environment the relevant project is related to or environment unique to the project).

Client database should be the knowledge database that is obtained or to be used in the process of each step of relationship management. In company-to-company relations, there are various relationships other than that for the relevant project, so the project manager cannot be indifferent to such information. In recent years, some companies have worked on forming a system that allows for integrated management of various relations and consistent response to clients as enterprise. Moreover, it is also effective to arrange or use various casebooks and refer to other companies' excellent cases as required.

In conclusion, three practical guidelines are mentioned. First, "prior agreement with a contract." This is the most significant and effective operation in relationship management to obtain as precise contract as possible in advance concerning the events that could cause a conflict later among stakeholders. Second, "be constantly aware of the viewpoints of stakeholders such as clients." What matters most is to notice a sign of conflict and resolve it beforehand. Third, if a trouble occurs in spite of the endeavors mentioned above, a response should be made quickly and the confirmation and storage of the process and results should be included with the documents." Quick response and confirmation/storage of the process and results are the most important actions in preventing enlargement or rehash of the problem and minimize its influence.

Hereafter are described the three operational procedures in relationship management: "Design of relationship" "Maintenance of relationship", and "Restructuring of relationship"

Outline

As defined in "II. Project Management," projects are a value creation undertaking with a specific mission. The specific missions of projects can be defined as provision of specific values to specific stakeholders. Successful termination of a project means that a value the project aimed at has been achieved.

For an enterprise that aims to create something through a project and maintain and develop business, it must recognize what stakeholders, in particular the client, intend to pursue through the project, i.e., what the perceived value is, and how to achieve that value. Management resources such as experience and information are the source of values and abundant sources are the driving force of value creation. There are various processes for converting a value source to a form to provide the value, many examples and knowledge obtained through best practice are useful for this.

Value management refers to a value circulation process where knowledge and experiences deriving from aforementioned typical and project activities of enterprises are accumulated as value sources and are used as feedback for projects (i.e., new value creation). Hereafter are described value management and relevant knowledge by classifying it into three stages: "Value Recognition and Evaluation," "Value Source" and "Value Provision."

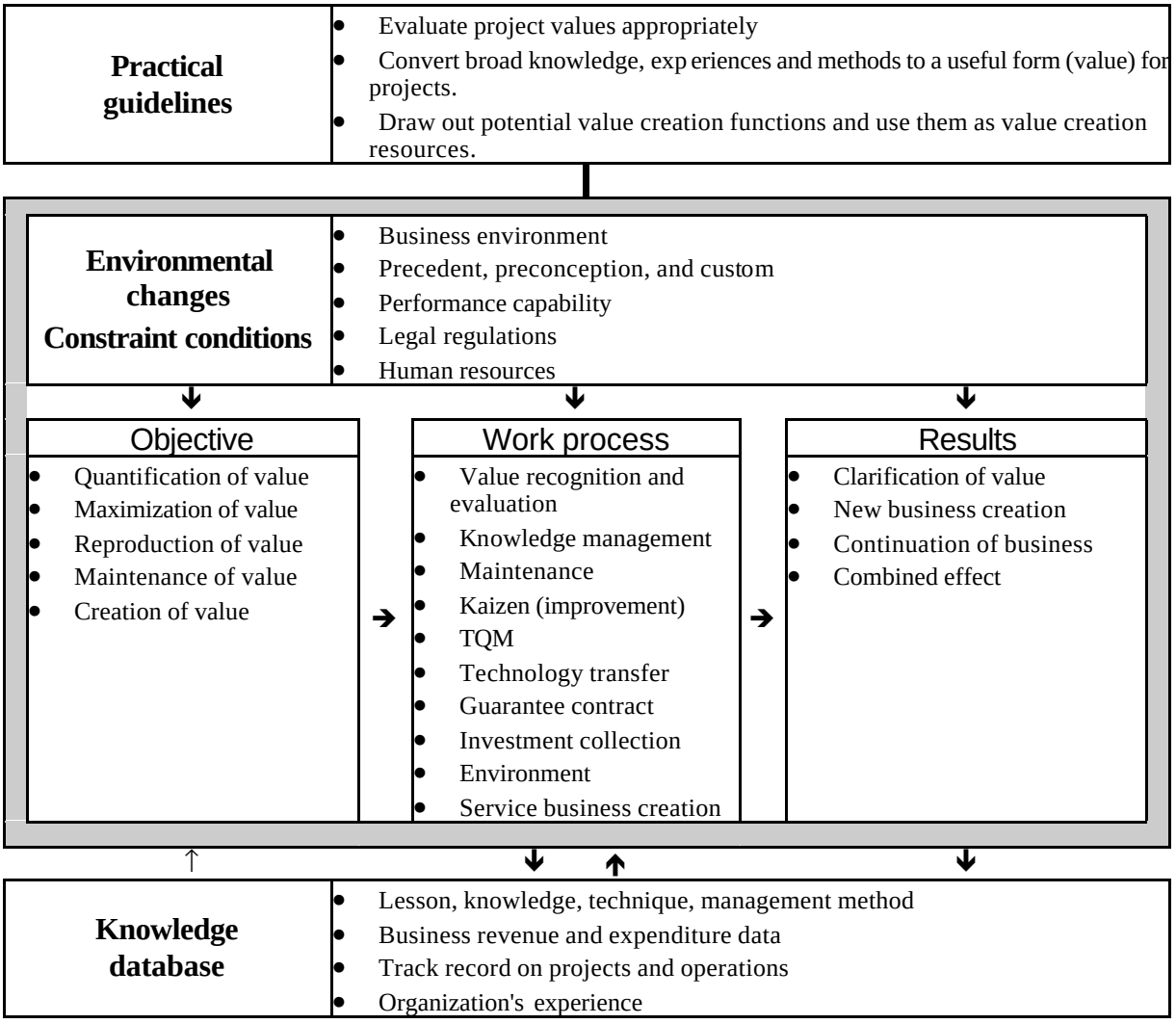

Figure 4-10-1: Overview of Value Management

Outline

In the twentieth century, with rapid globalization, we are now in the age of diversity. It has become increasingly common that, across the borders and generations, people from various cultural backgrounds and with different ideas and value standards are working in one same project. In this context, management of communication to promote better understanding among project members is one of the major factors in influencing project success. In addition, it is important to accurately keep track of real situations and solve various problems arising from a project through communication. Thus successful management of a project in a proactive manner is largely attributable to communication management.

In this chapter, focusing on "cross-cultural communications", we discuss basic matters of communication and involvement based on practical experiences. By respecting differences in cultures, and accepting each other, we can develop a hybrid type of communications that has characteristics of both cultures.

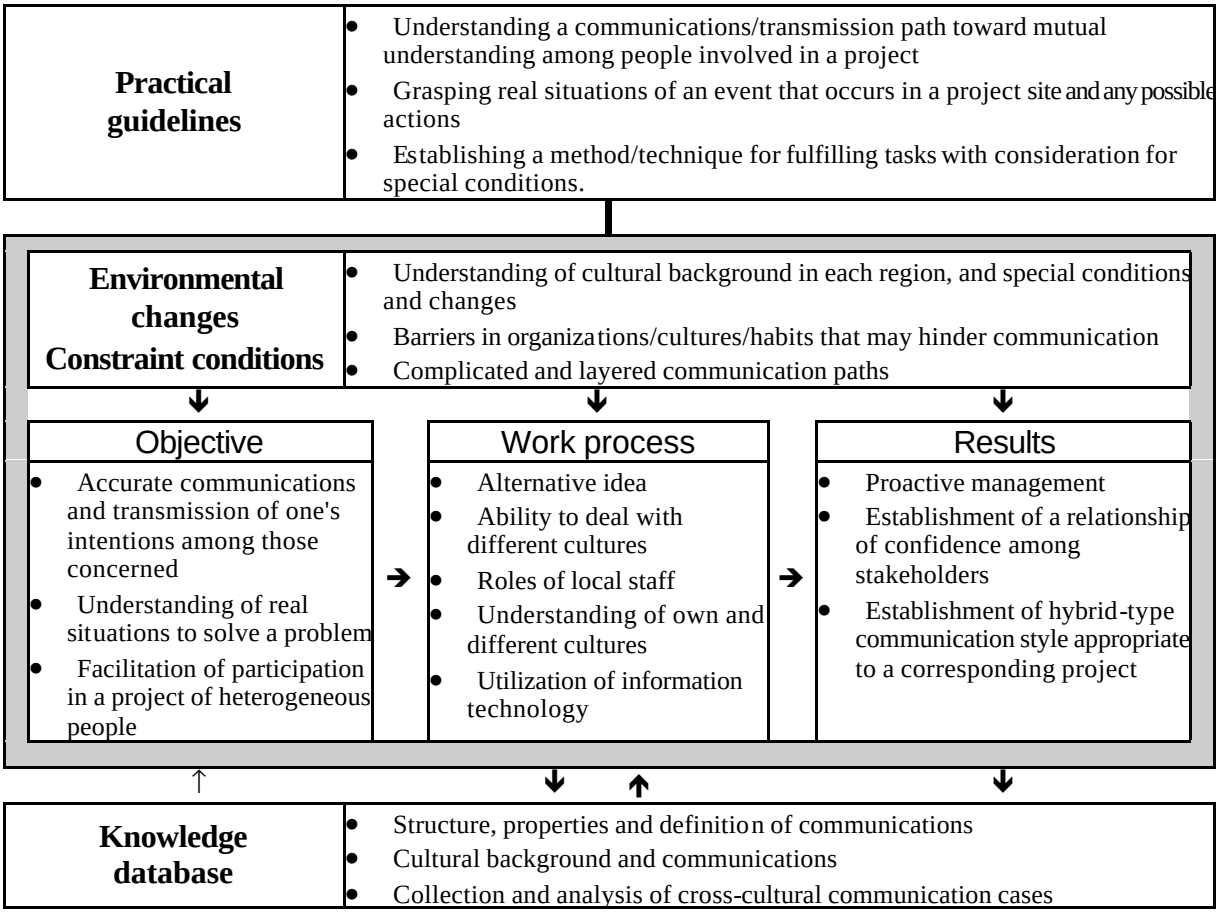

Figure 4-11-1: Overview of Project Communications Management

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