Chapter Two

2. Multimedia Authoring and Tools

2.1 What is Multimedia Authoring

Authoring is the process of creating multimedia applications. *An authoring system* is a program which has pre-programmed elements for the development of interactive multimedia presentations.

Authoring tools provide an integrated environment for binding together the different elements of a Multimedia production.

Multimedia Authoring Tools provide tools for making a complete multimedia presentation where users usually have a lot of interactive controls. Multimedia presentations can be created using:

➢ simple presentation packages such as PowerPoint

➢ powerful RAD tools such as Delphi, .Net, JBuilder;

➢ True Authoring environments, which lie somewhere in between in terms of technical complexity.

Authoring systems vary widely in:

Orientation

Capabilities, and

Learning curve: how easy it is to learn how to use the application

2.2 Some useful editing and authoring tools

Multimedia Authoring Tools provide tools for making a complete multimedia presentation where users usually have a lot of interactive controls.

Why should you use an authoring system?

➢ Can speed up programming i.e. content development and delivery

➢ Time gains i.e. accelerated prototyping

➢ The content creation (graphics, text, video, audio, animation) is not affected by choice of authoring system

Authoring Vs Programming

There is big distinction between authoring and programming

Authoring	*Programming*
Assembly of multimedia	Involves low level assembly of multimedia
High level graphical interface design	Construction and control of multimedia
Some high level scripting e.g. lingo, ActionScript	Involves real languages like C and Java

Table 1 Authoring vs. Programming

Characteristics of Authoring Tools

A good authoring tool should be able to:

◆ integrate text, graphics, video, and audio to create a single multimedia presentation

◆ control interactivity by the use of menus, buttons, hotspots, hot objects etc.

◆ publish as a presentation or a self-running executable; on CD/DVD, Intranet, WWW

◆ Be extended through the use of pre-built or externally supplied components, plug-ins etc

◆ let you create highly efficient, integrated workflow

◆ Have a large user base.

2.3 Authoring paradigms

Multimedia Authoring Paradigms

The *authoring paradigm*, or *authoring metaphor,* is the methodology by which the authoring system accomplishes its task.

There are various paradigms:

➢ Scripting Language

➢ Icon-Based Control Authoring Tool

➢ Card and Page Based Authoring Tool

- ➢ Time Based Authoring Tool
- ➢ Tagging Tools

Scripting Language

- ✓ Closest in form to traditional programming. The paradigm is that of a programming language, which specifies:
  - ➢ multimedia elements,
  - ➢ sequencing of media elements,
  - ➢ hotspots (e.g. links to other pages),
  - ➢ Synchronization, etc.
- ✓ Usually use a powerful, object-oriented scripting language
- ✓ Multimedia elements and events become objects that live in a hierarchical order
- ✓ In-program editing of elements (still graphics, video, audio, etc.) tends to be minimal or non-existent.
- ✓ Most authoring tools provide visually programmable interface in addition to scripting language.
- ✓ media handling can vary widely

Examples

• The Apple's HyperTalk for HyperCard,

• Asymetrix's OpenScript for ToolBook and

• Lingo scripting language for Macromedia Director

• ActionScript for Macromedia Flash

Here is an example lingo script to jump to a frame

global gNavSprite

on exitFrame

go the frame

play sprite gNavSprite

end

Iconic/Flow Control Tools

In these authoring systems, multimedia elements and interaction cues (or events) are organised as objects in a structural framework.

- ✓ Provides visual programming approach to organizing and presenting multimedia
- ✓ The core of the paradigm is the icon palette. You build a structure and flowchart of events, tasks, and decisions by dragging appropriate icons from icon palette library. These icons are used to represent and include menu choice, graphic images, sounds, computations, video, etc.
- ✓ The flow chart graphically depict the project logic
- ✓ Tends to be the speediest in development time. Because of this, they are best suited for rapid prototyping and short-development time projects.
- ✓ These tools are useful for story boarding because you can change the sequence of objects, restructure interaction, add objects, by dragging and dropping icons.

   Examples:

   - Authorware

   - IconAuthor

Card and page Based Tools

In these authoring systems, elements are organised as pages of a book or a stack of cards.

The authoring system lets you link these pages or cards into organized sequences.

You can jump, on command, to any page you wish in a structured navigation pattern.

- ➢ Well suited for Hypertext applications, and especially suited for navigation intensive applications
- ➢ They are best suited for applications where the bulk of the content consist of elements that can be viewed individually
- ➢ Extensible via XCMDs (External Command) and DLLs (Dynamic Link Libraries).
- ➢ All objects (including individual graphic elements) to be scripted;

➢ Many entertainment applications are prototyped in a card/scripting system prior to compiled-language coding.

➢ Each object may contain programming script that is activated when an event occurs.

Examples:

- ✓ HyperCard (Macintosh)
- ✓ SuperCard(Macintosh)
- ✓ ToolBook (Windows), etc.

Time Based Authoring Tools

In these authoring systems elements are organised along a time line with resolutions as high as 1/30th second. Sequentially organised graphic frames are played back at a speed set by developer. Other elements, such as audio events, can be triggered at a given time or location in the sequence of events.

✓ Are the most popular multimedia authoring tool

✓ They are best suited for applications that have a message with beginning and end, animation intensive pages, or synchronized media application.

Examples

- Macromedia Director
- Macromedia Flash

Macromedia Director

Director is a powerful and complex multimedia authoring tool which has broad set of features to create multimedia presentation, animation, and interactive application. You can assemble and sequence the elements of project using cast and score. Three important things that Director uses to arrange and synchronize media elements:

Cast

Cast is multimedia database containing any media type that is to be included in the project. It imports wide range of data type and multimedia element formats directly into the cast. You can also create elements from scratch and add to cast. To include multimedia elements in cast into the stages, you drag and drop the media on the stage.

Score

This is where the elements in the cast are arranged. It is sequence for displaying, animating, and playing cast members. Score is made of frames and frames contain cast member. You can set frame rate per second.

Lingo

Lingo is a full-featured object oriented scripting language used in Director.

✓ It enables interactivity and programmed control of elements

✓ It enables to control external sound and video devices

✓ It also enables you to control operations of internet such as sending mail, reading documents, images, and building web pages.

\Macromedia Flash

✓ Can accept both vector and bitmap graphics

✓ Uses a scripting language called ActionScript which gives greater capability to control the movie.

✓ Flash is commonly used to create animations, advertisements, to design web-page elements, to add video to web pages, and more recently, to develop Rich Internet Applications. Rich Internet Applications (RIA) are web applications that have   the features and functionality of traditional desktop applications. RIA's uses a client side technology which can execute instructions on the client's computer (no need to send every data to the server).

Flash uses:

Library: a place where objects that are to be re-used are stored.

Timeline: used to organize and control a movie content over time.

Layer: helps to organize contents. Timeline is divided into layers.

ActionScript: enables ineractivity and control of movies

Tagging

Tags in text files (e.g. HTML) to:

✓ link to pages,

✓ provide interactivity, and

✓ Integrate multimedia elements.

 Examples:

 • SGML/HTML

 • SMIL (Synchronized Media Integration Language)

 • VRML

 • 3DML

✓ Most of them are displayed in web browsers using plug-ins or the browser itself can understand them.

✓ This metaphor is the basis of WWW

✓ It is limited but can be extended by the use of suitable multimedia tags

Selecting Authoring Tools

The multimedia project you are developing has its own underlying structure and purpose. When selecting tools for your project you need to consider that purpose.

Some of the features that you have to take into consideration when selecting authoring tools are:

1) Editing Feature: editing feature for multimedia data especially image and text are often included in authoring tools. The more editors in your authoring system, the less specialized editing tools you need. The editors that come with authoring tools offer only subset of features found in dedicated in editing tool. If you need more capability, still you have to go to dedicated editing tools

 (e.g. sound editing tools for sound editing).

2) Organizing feature: the organization of media in your project involves navigation diagrams, or flow charts, etc. Some authoring tools provides a visual flowcharting facility. Such features help you for organizing the project.

e.g IconAuthor, and AuthorWare use flowcharting and navigation diagram method to organize media.

3) Programming feature: there are different types of programming approach:

i)Visual programming: this is programming using cues, icons, and objects. It is done using drag and drop. To include sound in your project, drag and drop it in stage. Advantage: the simplest and easiest authoring process. It is particularly

useful for slide show and presentation.

ii) Programming with scripting language: Some authoring tool provide very high level scripting language and interpreted scripting environment. This helps for navigation control and enabling user input.

iii) Programming with traditional language such as Basic or C. Some authoring tools provide traditional programming tools like program written in C. We can call these programs to authoring tools. Some authoring tools allow to call DLL (Dynamic Link Library).

iv) Document development tools

4) Interactivity feature: interactivity offers to the end user of the project to control the content and flow of information. Some of interactivity levels:

i) Simple branching: enables the user to go to any location in the presentation using key press, mouse click, etc.

ii) Conditional branching: branching based on if-then decisions

iii) Structured branching: support complex programming logic such as nested if-then sub- routines.

5) Performance-tuning features: accomplishing synchronization of multimedia is sometimes difficult because performance varies with different computers. In such cases you need to use authoring tools own scripting language to specify time and sequence on system.

6) Playback feature: easy testing of the project. Testing enables you to debug the system and find out how the user interacts with it.   Not waste time in assembling and testing the project

7) Delivery feature: delivering your project needs building runtime version of the project using authoring tools. Why run time version (executable format):

✓ It does not require the full authoring software to play

✓   It does not allow users to access or change the content, structure, and programming of the project.

        Distribute-->run-time version

8) Cross platform feature: multimedia projects should be compatible with different platform like Macintosh, Windows, etc.

This enables the designer to use any platform to design the project or deliver it to any platform.

9) Internet playability: web is significant delivery medium for multimedia. Authoring tools typically provide facility so that output can be delivered in HTML or DHTML format.

10) Ease of learning: is it easy to learn? The designer should not waste much time learning how to use it. Is it easy to use?