CHAPTER 04: MULTIMEDIA AUTHORING TOOLS

:: Authoring Tools ::

~ Simple Authoring ~
~ Programming Language ~
~ Simple Interactive ~
~ Complex Interactive ~
Authoring Tools

Introduction to Authoring Tools

- **Authoring**: assembly and synchronization of all the media components that have been prepared for final multimedia application.

- Two basic features:
  - Ability to create and edit a product
  - Presentation scheme for delivering product

- The selection of an authoring tool (software application) based on how it works and what it does can be one of the most critical elements of multimedia product development.
Authoring Tools

- Four main perspectives in multimedia authoring tools:
  - **Tool** (any software package that could authors multimedia product)
  - **Product** (the result of combining all multimedia components)
  - **Developer** (designers, programmers, and multimedia authors)
  - **End user** (customer or viewer)
Programming Language

- Multimedia product still can be developed using programming language.
- Quality is about the same.
- Learning curve for programming very steep.
- Amount of work to code every element and function in the product can be extensive and labor-intensive.
- But authoring tools offer much easier future !!! -> drag and drop..
- Authoring tools can save a lot of time and money !!!
Multimedia Tool Selection

• The criteria for selecting tool include
  • Function: a complete understanding of how the product will work.
  • Content: nature, volume, format, and types of data that will be incorporated into the product.
  • Hardware: platforms expected to run a product.
  • Software: requirement of operating system or software application such as database manager and flash.
  • Performance: speed and efficiency expected -> critical for gaming and fast-paced presentations.
  • User interface: screen layout, data presentation, positioning of control and visual and audio for end user.
Multimedia Tool Selection

- The criteria for selecting tool include
  - **Database:** will the product support a huge access of information?
  - **Reliability:** essential within the product itself and how the product behaves with other products.
  - **Maintenance and Update:** support for a lifetime product to avoid having to recast into another tool.
  - **Others:** Personnel Skills, Cost, and Schedule.
Multimedia Tool Features

Page

• Different environments use different term of page such as frame, stage, template, or window.

• Acts as a container for other features or objects (text/images) or controls (buttons).

• Main page may be palette manager that can control the remaining pages.
Multimedia Tool Features

Controls

- Enables interaction between user and product.
- Managing or direct sequences of events (data collection, data objects)
- 3 categories of controls:
  - Navigation (buttons, hot spots, hypertext)
  - Input (radio button, check box, list box, text)
  - Media Controls (video and audio)
Multimedia Tool Features

**Advanced**

- Automatically load images
- Enable Java
- Enable JavaScript
- Enable style sheets
- Enable AutoInstall
- Send email address as anonymous FTP password

**Cookies**

- Accept all cookies
- Accept only cookies that get sent back to the originating server
- Disable cookies
- Warn me before accepting a cookie

[Image of a computer screen showing a webpage and a window with options for multimedia tool features.]
Multimedia Tool Features

Data

- Data may be stored internally as part of the application program or as external files that are accessed during program execution.
- Internally stored -> data usually means faster data presentation and easier transport of the application and the data.
- Externally stored -> small executable programs + faster program startup + data can be changed independently.
Multimedia Tool Features

- Data types include:
  - **Text**: may be stored as ASCII/RTF etc.. E.g: captions, headers, text boxes (provide scroll bar for long text)
  - **Graphic** (*.bmp  *.jpeg)
  - **Audio** (*.midi *.AIFF *.RIFF)
  - **Video** (*.avi *.mpg)
  - **Database** (*.db)
Multimedia Tool Features

Execution

• The process that controls the presentation and sequencing of the application.

• Can take one or more of the following mechanisms:
  - Linear sequenced: presentation is controlled by the user
  - Program controlled: presentation is controlled by the code / script in the application
  - Temporal controlled: presentation is controlled by a timer that will initiates events
  - Interactively controlled: presentation waits for the user to select a function such as pressing a button
Categories of Authoring Tools

Simple Authoring and Delivery Tools

• Basic authoring.
• Delivering text product with a few graphics on screen.
• Graphical user interface (GUI) are able to incorporate text and graphics (also video and audio).
• Word Processors: provide tools at the most basic level (display text in a variety of font types, sizes, and color).
Categories of Authoring Tools

Programming Languages

• Form the basis for all other authoring languages.

• Advantages of implementing multimedia products using programming tools:
  • very efficient and fast
  • a fine degree of control over the environment
  • easier integration with other software and operating system
  • no dependency on a third party tool developer
  • Product maybe ported to similar compilers on other platform
Categories of Authoring Tools

Programming Languages

• Disadvantages of implementing multimedia products using programming tools:
  • Multimedia products are complex software programs
  • Programming expertise is always needed
  • Much more code required – long term maintenance (difficult & expensive)
  • Can become platform based on the choice of language
Categories of Authoring Tools

Simple Interactive Authoring Tools

- User is able to interactively navigate through a product.
- Capable of presenting text, graphics, audio, and video in a very integrated, easy to use environment.
- Always depends on pressing button or hot spot to navigate between pages.
- Very easy to learn (new beginner)
- Functionality is limited.
Categories of Authoring Tools

Simple Interactive Authoring Tools
Categories of Authoring Tools

Complex Interactive Authoring Tools

- Combine features found in simple interactive AT and programming language.
- Offer more complex creation and editing functions.
- Some programming is accomplished by attaching code to objects.
- The capabilities of programming functions:
  - Declaration of variables on a variety of data types
  - Establishing math and data functions
  - Control structures for decision support
Complex Interactive Authoring Tool

Page-based Authoring Tools

• Very similar to the “simple interactive AT”, but it contains scripting to various objects.

• Scripting handles specialized functions.

  ```
  to handle buttonClick
    if object of target is button then
      beep 1
    end if
  end buttonClick
  ```

• All the presentation objects are in sequence of slides/pages.
Complex Interactive Authoring Tool

Page-based Authoring Tools

• Navigation is referred to the number of page – index in table of contents.
• Each page consists of layer(s).
  • Background
  • Foreground
Page-based Authoring Tools – Multimedia Toolbooks
(http://www.agocg.ac.uk/reports/mmedia/toolbook/text/sima5.htm)
Complex Interactive Authoring Tool

Temporal (time) - based Authoring Tools

- Has the ability to develop an application like a movie.
- Frames are created with objects that are sequentially played or halted.
- Can create complex animation and transitions.
- Include the following features:
  - A scene or display frame on which all objects are placed.
  - An array for keeping track of each page/frame.
  - A controller for playing, stopping, pausing, etc.
- Eg: Director, Flash
Temporal-based Authoring Tools

[Diagram of time-based authoring tool interface with timelines and actions for adding and modifying employees, retrieving data from the server.]

- Labels
- Actions
- UserProm...
- Forms

Timeline:
- 0:00 to 10:00
- Init, Listing, Forms

Scene 1:
- Add New Employee
- Modify an Employee
- (Select an employee from the list)

Retrieve data from the server...
Complex Interactive Authoring Tool

Icon-based Authoring Tools

• Enables complex interaction and layering of multimedia products.

• Developer can select objects, timing, and sequencing in the form of icons and placing them on a layout screen.

• Major advantage: the ability to graphically design complex interactions for repetitive applications.

• Templates can be reused for different applications.

• E.g: Macromedia Authorware
Icon-based Authoring Tools

Icons are dragged onto a window and connected to describe the functional flow of the applications.
Icon-based Authoring Tools

[Diagram showing a flowchart and properties of calculation icon]
Selecting the right authoring paradigm

How do you choose the best tool for your project?

- Internal expertise versus requirements
- Prototyping with different tools
- Cross-platform tools and product
Selecting the right authoring paradigm

Tool selection is based on **product requirement**

- If requirements are thorough, tool selection can be mapped to functionality of tools.
- Allows emerging technologies to be applied to applications.
- Opportunity to look at a number of tools providing broader expertise for development team.
- If requirements not complete, tool selection could be erroneous.
- Development team may have to learn the selected tool requiring additional development time.
Selecting the right authoring paradigm

Tool selection is based on **internal expertise**

- Development team is already trained on the tool.
- May have reusable templates or prototype code, which could reduce cost.
- Tendency to force fit old habits and techniques into a new project.
- Limits exploration of new ideas or approaches.
- Available tools may be outmoded or commercial availability is waning.
Selecting the right authoring paradigm

Prototyping with different tools

- Applying the different tools selected to the development processes.
- This approach is useful because non-technical personnel can present ideas on the computer without requiring them to have advanced multimedia authoring skills.
Selecting the right authoring paradigm

Cross-platform tools and products

- Data formats are not always directly transportable between different platforms.
- System level functions that are used on one platform may not exist on the other platform.
- Performance may vary from platform to platform impacting things such as program loading and video playback.
- Must always test the product to ensure compatibility and stability.