

Chapter 3. Multimedia Application Structure and Organization

Chapter Objectives

After completing this chapter you should be able to:

- Recognize the fundamental components used in the development of a multimedia application .
- Define the step in the planning the creative design of multimedia production
- Recognize the parameters involved in the design of a multimedia presentation.

Creative Concept Development

In Chapter 1 we discussed some general aspects regarding the initial planning steps of a multimedia application. At this stage you have an understanding of the essential multimedia applications design considerations, among these, the following were presented in Chapter 1:

- Defining the Target Audience
- Program Goals and Objectives
- Program Content
- Multimedia building blocks
- Application Intended Use
- Individual Use
- Group Presentations
- Branching
- Degree of Interactivity

This chapter presents other aspects concerning the planning of a multimedia application: the creative concept development. This chapter will present the following elements of the planning of a multimedia application:

- Combination of Media
- Program Production
- Program Story Board
- Producing Scripts for Audio, Text and Video
- Interface Design
- Sound, Music, Video and Graphic Production
- Copyrights
- Authoring
- Program Storage and Distribution
- Program Test Pilot, Evaluation and Revision
- Distribution of Final Product
- Multimedia Application Delivery

Open the Interactive Guide to Multimedia CD in Chapter 3 to learn and experience the above subjects presented in an interactive format.

Design Strategy: Combination of Media

As presented in Chapter 1, it's a fact of life that the audience of your multimedia application

most likely will have different learning styles. Thus, in the design of your application you must consider the use of several different multimedia building blocks that helps to convey your message. This section deals with the selection of those elements.

Open the Interactive Guide to Multimedia CD in Chapter 3 to experience the use of different multimedia elements.

Graphics

An ancient Chinese saying states that a picture is worth more than a thousand words. This might have been derived from the fact that people learn and retain more knowledge from pictorials than from other forms of information. When speaking about the integration of graphics into a multimedia application we are making reference to the following elements:

- Backgrounds
- Photos
- Three dimensional pictures
- Charts
- Flowcharts
- Organizational Charts
- Drawings
- Buttons

In order to understand the role of each one of these elements lets explore their role in reference to the overall structure of the multimedia application.

Backgrounds

The background used in a multimedia application is one of the most important graphic elements. In a way it establishes the tone and the theme of your application. In some instances also denotes the complexity of the production specially when using graphics which have required the use of 3-D graphic rendering.

Background design, complexity and richness is dependent on a number of factors such as:

- Theme of the application;
- Color display capacity of the projector or monitor to be used in the playback of the application;
- Storage capacity of the medium to be used for distribution purposes;
- Amount of text to be placed over the background.

These backgrounds varies from solid colors to highly complex graphics such as photographs, maps, corporate logos, and textured with borders among others.

Remember that the background design must provide the user a sense of the theme or goal of the application, in a business presentation it must reflect the image of the organization.

An example of a backgrounds application is presented in the following figure.

Figure 3.1. Nature background use for the Cosmology interactive instructional program.

A number of exiting, dramatic and very appealing backgrounds can be found in clip media, for example figures 3.2 and 3.3 presents some of the backgrounds available through Macromedia Authorware Professional Smart Clips.

Figure 3.2 Smat Clips backgrounds from Macromedia Authorware Professional.

Figure 3.3 Textile backgrounds from Macromedia Authorware Professional Smart Clips.

Pictures

Photos and slides are sources of graphic elements widely used in the assembly of multimedia applications. These pictures (photos and slides) are usually scanned technical details about this procedure will be discussed in Chapter 4. In occasions you might find collections of photographs commercially available for specific topics from various suppliers such as Comstock, Knight Rider, and Photo Disc among others. Be aware of the copyrights invalid in the use of these photo sources specifically when developing commercial applications.

Location of the photos and slides in the screen is important when consider its relation to text. It has been the experience of the authors that audiences respond better to pictures and text when in the screen composition pictures are located in the left hand side of the screen and text is in the right side of the screen.

Pictures can also be use as backgrounds, but be aware not to clutter the screen. It is recommended to blur the picture or change its transparency. In this way you will be able to place other multimedia building blocks on top of this picture background.

Figure 3.4 A picture of Michelangelo's David used a background. This picture was edited using Adobe Photoshop.

Figure 3.4 The background in the above screen was developed using a picture of the face of Michelangelo's David captured and digitized from a video tape and manipulated through a Photoshop filter. This screen is part of a Humanities interactive multimedia presentation produced by the Miami-Dade Community College, Wolfson Campus.

Three Dimensional Graphics

Three dimensional graphics such as 3D-titles, logos, walkthroughs and architectural renderings (facades), among others help to provide realism and depth to the application. When considering the composition of the screen, it is recommended to use 3D-graphics sporadically. Due to the richness and complexity of these graphic elements they tend to catch the eye of the audience. Take advantage of this fact by incorporating them into your screen composition.

Charts

In business and training related multimedia applications charts are the best way to present facts and figures. Charts are developed using electronic spread sheets, statistical programs or in some instances integrated applications and some presentation programs integrate chart making capabilities into their programs.

When considering the use of charts in your application, make sure that when presenting data or numerical information in the form of charts you select the chart type that best represents your information. Among the various kinds of charts available we have the following:

Figure 3.5 Pie Charts

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Figure 3.6 Bar Charts

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Figure 3.7 Line Charts

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Figure 3.8 Area Charts

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All of the above charts were develop from the same data set. The best chart that represents the sales information for each one of the quarters is the bar chart. The multimedia development team member in charge of making such decisions and recommendations is the Content Specialists.

Remember that when integrating a chart in your screen, the chart background must match the screen background. Usually solid colors, such as black, are the best for this purpose.

Flowcharts

Flowcharts are used to graphically represent a sequential or logical process designed to reach a result or goal. When developing the flow charts think about the possibility of integrating the interactive capabilities of multimedia technology into the presentation of the flowchart. For example, let's examine figure 3.9 in this flow chart it might be important to provide the user or your audience the capability and opportunity to explore more into one of the steps as presented. Once the user clicks on that particular box, he or she will receive more information.

Figure 3.9 Flow chart example

When designing a flow chart, keep it simple. Do not try to include all information into a single screen, specially if your presentation is designed for a large group. Split the flowchart into several screens if possible.

Organizational Charts

Organizational charts are a graphic representation of the organizational structure of any given group, institution, corporation or governmental entity. This chart presents the units composing the organization, the people in charge of such units and the reporting and supervisory relationships among the components of the organization. Please note that when drawing an organizational chart all units, offices or individuals with the same level of reporting or authority are represented with aligned boxes as presented in figure 3.10.

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Figure 3.10. Organizational Chart sample.

If during the planning stage of your interactive multimedia application, one of the objectives was to provide information to the audience or program user about each one of the organizational units or corporate officers represented by boxes, each one of the boxes representing these units or individuals must be developed as separate and distinct graphic object. This will make possible the selection of each one of them and the subsequent execution of the linkage of that object with another part of the application which in turn will provide more information about the subject of this box.

Drawings (Computer Graphics)

Depending upon the goals and design characteristics of your application a number of computer generated graphics can be developed. The purpose of these graphics are to illustrate an idea or convey specific information to the application user. Among these we can identify:

Maps:

Titles

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This graphic was developed using Microsoft Word Art

Clip Art

Commercially developed drawings are known as clip art. They are available for almost all topics and are copyright free. Some examples of clip art are as follows:

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Figure 3.11. Clip Art - The multimedia Architect

The use of clip art in some business training related multimedia applications and in some educational applications is acceptable. The prevalent use of clip art is in slide type applications. Using of clip art pictures will be considered amateurish when integrated in most other applications.

Buttons

Buttons or navigational aides are graphics or text which have a script assigned. A script is composed of computer commands or code lines written in the programming language of the authoring program. These commands establish what will happened once the button is selected and click (mouse down).

In an interactive laser disc multimedia educational application this button was used to navigate from the main menu to one of the units of the instructional program.

This button was developed as a “VCR” type button to control a laser disc player

from the computer.

Usually in most interactive applications there is a main menu. This button was used in a Humanities interactive application to link (or navigate) one screen with the program main menu.

This button was used in the interactive version of this book for a variety of purposes. Each button had assigned a different script allowing different types of actions.

Usually you can use professionally developed buttons and sliders (to control audio levels, etc) available in the clip media such as the ones available in Macromedia Authorware Professional. The advantage of using these clip media buttons and sliders is that they have associated to them the logic or programming to control a number of functions within the applications. Some of these buttons and sliders are presented in figure 3.12 and 3.13.

Figure3.12 Stone buttons (from Macromedia Authorware Professional Smart Clips).

Figure3.13 Stone sliders (from Macromedia Authorware Professional Smart Clips).

When creating buttons (graphics) in Macromedia Director (an authoring application), these buttons by themselves will not work as navigational aids unless they have a script or code line assigned. These are developed using the authoring language lingo. For example in MacroMedia Director the following represent an example of a script:

```
on mouse up
go to frame "start" of movie "main.dir"
mouse down
```

This script is assigned a button such that when selected and click with the mouse the program will go to a frame labeled "start" in a movie (file) named "main". Like this example there are infinite number of possibilities for the development and assignment of scripts to buttons. Please note that the words frame and movie were utilized. MacroMedia uses a movie or theatrical metaphor in the conceptualization of their authoring program.

Text

Text is one of the most widely used multimedia building blocks. The intensity of text usage will depend greatly upon the intended use of the program. Text can be used and presented in different forms to conform to different purposes. These are some possibilities:

- Titles
- Buttons
- Bullets
- Paragraphs
- Scrolling text

From a planning perspective the use of text in a program is interrelated to other multimedia building blocks. For example, when planning placement of text over a background you must consider font color, font size and its contrast against the background. If the fonts are not recognizable against the background you might have to place the text over a text box with a solid or semitransparent color.

The use of text and the integration in the multimedia application will be extensively discussed in Chapter 4.

Video

The integration of video resources as part of an interactive multimedia application is possible through the use of number of different technologies such as:

- Digitized video;
- A video window displaying the output of a laser disc or video tape player;
- A video window displaying a live TV signal or a broadcast signal using PCTV.

A number of factors should be considered during the planning stage of the application in order to adequately select the most appropriate form of displaying video. Among these factors are:

- Goals of the proposed application.
- Length of the video (footage) to be displayed;
- Hardware configuration of the playback equipment;
- Available video projection equipment;
- Available budget;

Lets examine each one of the above items in regards to their implications in the planning of the multimedia application.

The goals of the proposed application are critical in deciding how intensive will be the use of video. For example, if the application to be developed is related to the training of medical personnel in the implementation of surgical procedures this type of application will require extensive video segments, high resolution video with probably full size video windows and probably overlay graphics. In this case budget is critical in the decision making. Depending upon the budget video can be storage in a laser disc and displayed either in a video window (video cards will be needed in the computer), or displayed through a video monitor next to the computer (this is a lower budget solution, no additional hardware is necessary). Long videos can be also stored in a digitized compressed format in a large hard drive.

If the proposed application requires only short videos (30 seconds to a few minutes) an on-screen digitized video format is recommended. The playback equipment configuration when using digitized video will be required to have a least 8 MB of memory and a processing speed of at least 33 MHz. In terms to the size of the video screen it will depend upon the quality of the digitized video when captured and also the hardware configuration of the playback equipment. It is advised as a rule of thumb to use a 1/4 screen size video window for maximum performance and image quality. Capturing of digitized video will be extensively discussed in Chapter 5.

Sound

Lets review the definition of multimedia: refers to the integration of multiple media, such as the visual imaginary, text, video, sound and motion, which together can multiply the impact of our message... Not all the information provided to the application user needs to be in the form of text

or visuals. Sounds can be used to enhance the application appealing to auditory learners.

In the planning of your application think about when and how to integrate sound into the application and what purpose should it perform. In this regard the type and goal of the application is a critical parameter in the determination of the use and integration of sound. Some forms of sounds that can be use are:

- Special sound effects;
- Narrations;
- Audio tracks from analog or digital sources (beware or copyrights);
- Background music or musical performances sources (beware or copyrights);
- Background or ambient sounds.

Special sound effects such as alert sounds (“beeps” door slams, explosions, etc.) can be used in association to buttons to indicate the user that the button was activated and an action must be expected. In some other instances when text is animated, text entering the screen at speed can go in preceded by a jet or “whoosh” sound. The integration of alert sounds and special effects sounds provides an additional dimension to the application.

The use of narrations and their length depends upon the purpose of the application. For example, if the application is intended to be used as a business presentation or a classroom presentation, narrations should be kept to a minimum. The presenter must provide the explanation of what is displayed. It is recommended in this situation to limit the use of narrations to testimonials. On the other hand, if the application is going to be used by an individual, extensive narrations can be integrated. These extensive applications play the role of the presenter or facilitator.

Audio tracks from CD's can be played back from a multimedia application. In this case, plan to develop and use a script in the authoring application to play a specific track or segment of an audio CD. In such cases, a script in the authoring application, an X-object must be in place in the application directory or folder. The following is an example of the script required in Director to play the audio CD.

Init CD

Audio on

Play Track 2

Scripts and lingo will be discussed in detail in Chapter 12.

Program Production Planning

At this point, you must have a good idea of what is multimedia, the potential applications, the development team composition, and the multimedia building blocks. It is time now to discuss the essentials of the planning of the production of the proposed application.

In the developing a multimedia application, it is a major mistake to initiate the development of a program by starting the authoring process without planning all the components of the project. Assuming that the purpose of the proposed application has been defined (as discussed in Chapter 2), the next steps you need to take in order to initiate the development of your project are:

- Development of the program script
- Outlining your program
- Development of a flow chart
- Development of the program storyboard
- Preparation of scripts for narrations, text, and video
- Copyrights considerations
- Plan the production of music, audio, video
- Prepare the project timelines and budget
- Plan the user interface

It has been the authors' experience that when training multimedia team members, one of the areas that most people have difficulty with is developing the skill to translate the project goal to an interactive multimedia application. In order to facilitate this process, we have developed the following process:

- First, define the program goal(s);
- Second, develop an outline;
- Third, translate the outline into a flow chart;
- Fourth, develop the storyboard with all the details necessary for the production team to

develop the application.

This step-by-step process is presented in figure 3.15

Figure 3.15 Logic process to translate the program goals into a multimedia storyboard.

This section discusses in detail the above planning phases.

Application Goals and Script

The application script is a written description of the proposed multimedia project. The purpose of the script is to describe the actions of all components of the application. By developing the script you will be able to put in words the proposed project, this might help you to clarify your ideas or your clients ideas and goals regarding the proposed project. On a later production step it will help the multimedia developing team members to have a clear understanding of the purpose and intention of the program.

The following is a segment of the definition of goals and script of an application to teach the Latin American Art of XIX Century, this script was prepared by Prof. Yamile Quintana of the Interamerican Center of the Miami-Dade Community College in Miami, Florida:

The Miami-Dade Community College (M-DCC) has one of the largest Hispanic and international student enrollments in the nation. At the Wolfson Campus, approximately 71% of our enrollment is composed of Hispanics students; 3% are Haitians students. The textbooks and instructional materials for the HUM 1020 course emphasize mainly European and North American art forms. None or very little reference is made to the art forms of Latin America and the Caribbean.

The high attrition rate for minorities, specifically Hispanic and Black students, is well documented. One of the characteristics of academic high risk students is the lack of self esteem. If the goals of the Humanities courses are to impart knowledge and the wisdom of the ages, to improve intellectual skills, to eradicate prejudicial ignorance, and to cultivate the courage to search for truth, we must not only expose our international student body to the European cultural experience but also to a broader cultural representation. We expect that by making a direct correlation between the universal principles and the development of a familiarity with their society's history, philosophies, art, and literature, the students will be able to better understand these principles and at the same time feel proud of their roots. By the latter, it is expected to help build the individual self esteem and a greater appreciation of their cultural heritage. A potential outcome would be to reduced attrition rates among these students.

The proposed project will develop new instructional strategies to supplement the instruction of HUM 1020 with the Latin American and Caribbean cultural experience. Two approaches will be taken, the first one will be the development of a laser disk interactive module. The second will foster the use and integration of the Cultural Activities program of the Wolfson Campus as instructional resources for teaching Humanities.

Through the implementation of the proposed project, computer multimedia technology (Macintosh II multimedia and interactive laser video technology) will be utilized as the media to trace, historically and conceptually, the major eras in the art forms of Latin America and the Caribbean, beginning with the 19th century and concluding with the 20th century.

Project Anticipated Outcomes

The primary objective of the proposed project is to develop one experimental module organized by historical periods and art forms (literature, drama, architecture, and painting) of Latin America. The period to be included for the experimental module will be from 19th century to the 20th century. This module will be used by Humanities instructors in a classroom setting for supplementing the curriculum of HUM 1020 with the cultural experience of Latin America and the Caribbean.

Integration of multimedia (text, audio, animation, full motion video and computer graphics) in the teaching of Humanities will allow the instructor to reach students with a diversity of learning styles, supplementing the lecture format. The module will be tested in the classroom and evaluated during the present academic year. It will be revised on the basis of evaluation by faculty and students. If the proposed instructional strategy is favorably evaluated, resources will be sought for its full implementation for the classroom setting during 1992-93 academic year.

The second objective of the proposed project will be the creation of a framework (outline) for the development of "teaching packets" to accompany each of the Cultural Affairs programs. It is expected that these packets will include, among others, the following components: information regarding geographical background of the author and / or performers, historical time frame, pre and post-performance questions for students, contextualizing information, techniques, and video or slides, for selected cultural events. This format will be utilized by the Community / Academic liaison of the Cultural Affairs Department of the Wolfson Campus to prepare the teaching packets. These packets will be made available to the Humanities faculty of the Wolfson Campus to promote the integration of these activities as part of the teaching / learning experience.

Outlining

Once you have defined the goals, the scope of work of the project and described the program the next step is to identify and define the branching of the program. Keep in mind that an interactive multimedia presentation has one major difference from a slide or video presentation and that is its capacity to do branching. Slide and video presentations are linear (one event or slide after another). One of the difficulties of some people working for the first time in the development of an interactive multimedia project is how to define and identify the branches of the program. The most simple way of defining this is by developing and outline. The responsibility of developing an outline belongs to the Content Specialist.

Developing an outline for an essay is no different from developing an outline for an interactive multimedia project. The difference will be the translation of the outline structure (entries) into branches (points of decision) in the screen. For example, the major headings in the outline will be the options available to the user in the main menu of the program, once the user selects one of the headings, the entries associated with the selected major heading will be presented on the screen.

Following-up the example of the Latin American Art of XIX Century instructional multimedia module the following will be a portion of the outline for this program:

Latin American Art of XIX Century

1.0 General Historical Events

1.1 Latin America

1.2 Europe

2.0 Literature

2.1 Introduction

2.2 Neoclassicism

2.2.1 Definition

2.2.2 Characteristics

2.2.3 Andres Bello

2.2.4 Olmedo

2.3 Romanticism

2.3.1 Definition

2.3.2 Characteristics

2.3.3 Bartolome Hidalgo

2.4 Realism

2.5 Modernism

3.0 Art

3.1 Romantic

3.2 Mexican Academy

3.3 Costumbrista

4.0 Architecture

5.0 Program Resources

5.1 Geography (Map)

5.2 Glossary

The major headings (entries in red) will become the buttons or options available to the user in the interface to be developed as part of the main menu of the program. This outline can be further developed to include some of the information to be provided to the user, possibly in the form of text, video, pictures, drawings, charts, maps, music etc. in each one of the screens to be designed.

Logic Flow Chart

Once you have developed your script, and outline, the next step is to develop a logic flow chart. The logic flow chart is very important specially when your program has interactivity. Graphically speaking the flow chart will provide to the multimedia developing team member in charge of authoring a road map of the proposed application. This chart illustrates the choices that the application user will have in each one of the screens. The degree of complexity of these flow charts will be variable depending upon the type of application to be developed. One of the most complex flow charts will be those illustrating games.

The following flow chart illustrates the connections in a program designed to present different art periods in the Latin American Art of XIX Century.

Figure 3.15 Flow chart of an instructional multimedia application presenting the Latin American Art of XIX Century.

Program Storyboard

The storyboard is a graphic representation of the proposed multimedia project. The story board is an extension of the ideas presented in the program script. In other words is a graphic representation of the script.

Based upon the authors multimedia production experience we have developed some templates for the development of a multimedia application. Due to the complexity of these applications we have developed several templates, each one of them serve a different purpose. The enclosed templates are:

- Logic Flow and Branching Sequence
- Story Board Template
- Animation Sequence Template
- Button Description Template
- Audio Description Template

Each one of these templates provides examples on how to use them. These templates will help you in keeping a production log. We recommend to keep all these templates in a three ring binder for quick reference.

It is highly recommended that once you or your team have completed each one of the scenes, make a screen print and keep it part of the production log. This way you will know what has been accomplished.

The information contained in these templates along with the information provided by the content specialist should provide to the members of the multimedia development team enough information to initiate the development process. It is recommended that during the authoring process the development team should discuss the progress with the client and or with members of the application target group. This process will ensure compliance with the expected goals.

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The above template use a theatrical metaphor presenting the computer screen as the stage.

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Production Scripts for Text, Audio and Video

The next step into the production of the interactive multimedia application is the development of specific and detailed scripts for text, audio (narrations) and video. As it will be presented in the following chapters, the development of each of these multimedia building blocks require a number of production steps, but in the planning process of production we must have to define the characteristics, the purpose and the content of such elements.

As presented in the outlining section, the program outline must be expanded and developed. This will be performed by identifying how different multimedia buildings blocks will be utilize to convey the proposed message of the program.

For example, in the Latin American Art of XIX Century program, some of the entries of the outline can be further developed by using text bullets. The following represents and example of the above.

Historical Events - Latin America

Hispanic America Scenario at the Beginning of the 19th Century

- Influence of the European Enlightenment
- Influence of the American Revolution (1776)
- Influence of the American Revolution
- Wars of Independence follows the Napoleons Invasion to Spain in 1808
- Growth of Nationalism
- Development of the American Identity

Neoclassicism

General Characteristics

- Revival of the Greco-Roman Influence
- Return to the classics
- Intellectualism: Power of human reason over imagination and sensibility
- Objectivity
- Controlled emotions
- Emphasis in critical thinking and didactic analysis

- Emphasis in clarity, order and balance
- French influence on Spain under the power of the Bourbons
- Prosaic poetry
- Few emphasis in the lyric, novel and play writing
- outgrowth of fable, history, and didactic

At this stage is critical to have in mind the proposed use of the program. In the above example, please note the use of text bullets. This program was intended to be used as a classroom presentation and as a result text must be limited to bullets. If your application is designed to be used by an individual interacting with the computer text can include paragraphs, even pages if necessary.

If your application will include narration you must request the Content Specialist to prepare the script for the narration. The following represents an example of a simple narration script:

Scene No.	Background Sound	Script
1	Music: Vivaldi, Four Seasons	Music starts, continues for 10 seconds, then fades out. Female Voice: Welcome to the ACME Corporation New Employee interactive multimedia training system. Music: Vivaldi, Four Seasons

Music after continues after narration ends for 10 seconds, then fades out.

When including videos you must also request the Content Specialist to prepare the script for the use of the video. Due to the fact that there are several different possible video formats and sources, the Content Specialist will have to provide a list of video sources for each topic, and a relation of the sequence of frames to be played if applicable. For example, if your application video source its a laser disc and the video playback will be controlled by the multimedia application, the Content Specialist must provide the frames to be played in the following suggested format:

Source: The Acme Corporation Assembly Plant Process
Format: Laser Disc

Scene No.	Topic	From Frame No.	To Frame No.
2	Production Assembly Line	5036	6089
6	Quality Assurance	9067	12059

When planning do integrate some digitized video clips as part of your presentation there are basically two options: use clips from available footage or to shot your own footage. In the first instance a table like the one presented for laser disc should be provided by the Content Specialist. If video needs to be produced a video script must be developed. The following represents an example of a simplified video script:

Scene No.	Background Sound	Location	Action	Dialog
1	Background music	Office	Zoom out Smith enters stands in front of desk, zoom in	Hello, I'm John Smith, VP of Human Resources. Let me welcome you to our great organization. I hope that you will learn about or corporation by using this need more information, please
			Zoom out Video fade out	call my office.
				program. If

User Interface Planning

In an interactive application you must provide the user of your program an easy, clear, consistent and intuitive way of interacting with the program content. When planning the design and development of the application interface it is recommended to consider the following:

- What is the theme of the project?
- Based upon the application logic flow, how many buttons are necessary per screen?
- What type of monitor you are developing for (12" or 14")? Monitor size is important this will provide you with a sense of how much screen space you have available for development.
- What color depth (8, 16, or 24 bits) the playback computers will have? These will provide you some parameters in terms of color selection and resolution.
- Never clutter the screen with too many graphics or text.
- Location, type, shape of buttons should be consistent throughout the program;
- If text is used as part of a button or as a button it must be legible.
- The color of the buttons should contrast with the screen background.
- Provide always a button that allows the user to escape or quit the program.
- Consider to provide a help button.

Figures 3.14 and 3.16 are examples of program interfaces:

Figure 3.14 World of Information Technology user interface.

Figure 3.15 Vanishing Ozone user interface.

Please note that in each one of the above interfaces there is harmony between the application theme, background and buttons.

Copyrights

In the planning and development of multimedia applications you must be aware of a number of issues related to copyrights. A number of Internet homepages presenting resources and discussions of copyrights and intellectual property issues are presented in Appendix 3 you are encouraged to surf through these web pages to learn more about this subject. It is advised during the planning stages of your application to consider the following in regards to copyrights:

- When possible and feasible develop your own graphics, take pictures, shot movies, and record sound effects;
- Acquire and use copyright free digitized pictures, sounds, music, and digitized videos from commercial sources;
- If copyrighted materials needs to be used, request permission from the authors or copyrights owners.

Project Proposal

When planning a project proposal there are four main questions that needs to be addressed: (1) what we want to accomplish, (2) how, who and when it will implemented, (3) how much it will cost, and (4) how it will be financed. Once the concept of what we want to develop has been defined, we must plan how it will be implemented, in defining the implementation strategy one of the tools that we could use is a Work Plan Matrix.

The Work Plan Matrix components are: project goals, objectives, activities, person or unit responsible for each activity, cost of activity will implementation, timeline and evaluation criteria. A successful contract seeker first develop the project work plan before writing the proposal narrative. There are a number of advantages to this action. Once the work plan is developed the sections regarding project goals, objectives, implementation strategy, project evaluation, milestones, project key personnel, budget narrative and budget will be a simple straightforward process. The following section will help you to determine the project timelines, cost estimating and budgeting. All of these elements will be necessary for the preparation of the contract proposal. More information about contract proposal development are presented in Appendix 4.

Project Timelines And Budgeting

Early in the production planning process you need to develop a project timelines (or production schedule) and a budget. The project timelines should be developed after the project scope of work has been defined. When developing the project timelines you must consider the activities needed to be taken, who is responsible and when they should start and be completed. The following is an example of a timeline for the development of a particular portion of a program:

Activities
Timeline
Responsible

Person or Unit

A.1.1. Finalize programming the English

Jan. - Feb. 96

J. Smith

Colonial Architecture module.

J. Smith

A.1.2. Test run the courseware.

Mar-96

M. Sanders

J. Smith

A.1.3. Evaluation of the product by the

faculty, and revision as appropriate.

Mar-96

M. Sanders

J. Smith

A.1.4. Transfer equipment to Bldg. II

.

Feb. 96
T / L Center

A.1.5. Train the department faculty into

the use of interactive module.
Mar. -May '96
J. Smith

A.1.6. Pilot the multimedia program.
May - July '96
Faculty

A.1.7. Evaluate the results of users

and trainers satisfaction on the use of
M. Sanders

the multimedia program.
July 96.
J. Smith

Once the project timeline or schedule is ready the next step is to prepare the project budget. The process of developing a budget is an exercise of interest mainly to the project director or producer, but we believe that it is important for you to understand that in the development of a project time and money are not infinite resources.

The most important budget entries to be considered during budget preparation are: personnel costs, consultants, legal expenses, talent, equipment acquisition and rental, software, video and audio production and post-production expenses, materials and supplies, communication expenses, travel, and indirect costs. Budget preparation is directly related to the scope of the project, time that will be necessary to develop the project, available resources and personnel.

The following represents a template for budget preparation.

Project Name: _____
Project No.: _____
Client: _____
Date : _____
Budget Prepared by: _____

Personnel:

Full-time Personnel	00.00
Fringe Benefits (___%)	00.00
Subtotal Full-time Personnel	00.00

Part-time Personnel

_____ hours x hourly rate	00.00
Fringe Benefits (___%)	00.00
Subtotal Part-time Personnel	00.00

Total Personnel 00.00

Consultants 00.00

Equipment 00.00

Software 00.00

Graphic and Audio Materials 00.00

Royalties 00.00

Materials and Supplies 00.00

Printing 00.00

Communication Expenses 00.00
(Mail, Phone, On-line Services)

Travel 00.00

Indirect Costs (___ %) 00.00

Total Costs 00.00

In order to provide you with some guidelines that will help to determine personnel cost for your project the following table present wage rates for some of the multimedia development team members. The applicable wages must then be considered in the preparation of the above budget.

Position	Low	Average	High
Producer	\$15/hr.	\$30/hr.	\$75/hr.
Manager	\$20/hr.	\$30/hr.	\$50/hr.
Content Specialist	\$20/hr.	\$35/hr.	\$50/hr.
Storyboard artist	\$15/hr.	\$20/hr.	\$30/hr.
Clerical support	\$6/hr.	\$8/hr.	\$15/hr.
Photographer	\$7/hr.	\$15/hr.	\$35/hr.
Comp. Graphic Artist	\$15/hr.	\$20/hr.	\$50/hr.
Voice Talent	\$15/hr.	\$30/hr.	\$40/hr.
Actor	\$100/day	\$200/day	variable
Musician	\$15/hr	\$25/hr	\$75/finished minute
Video Specialists	\$8/hr	\$15/hr	\$200/day
Audio Specialists	\$8/hr	\$15/hr	\$75/finished minute
Multimedia Architec	\$12/hr	\$25/hr	\$35/hr
Computer Animator	\$15/hr	\$20/hr	\$500/finished model
Programmer	\$15/hr	\$30/hr	\$45/hr
Audiovisual Specialists		\$7/hr	\$15/hr \$25/hr
Gopher (scanning, etc.)		\$5/hr	\$8/hr \$15/hr

Based on the authors production experience the following parameters can help you in the determination of some production cost related to personnel:

1. Scanning one picture or slide and performing minor manipulations takes approximately 10 minutes.
2. Developing one minute of computer animation takes approximately 10 hours of work.
3. One page of text take approximately 5 minutes to type into a word-processing application.

Hardware Considerations

As part of the planning of any application you must consider the “tools” necessary and available to develop and playback the application. It is as if you were going to build a new car in a

manufacturing plant where new machinery might need to be used.

During the planning stage of your application, you must first examine the scope of work for the project in regard to hardware needs. Questions such as the following must be answered during the planning stage.

- What is the expected outcome of the project?
- How are the goals expected to be accomplished?
- What technologies will be necessary to accomplish the goals of the application according to the script?
- Do you have the hardware, software and personnel required to accomplish these goals?
- If not, how much would it cost to have access to these technological resources?
- What would be required to playback or present this application once developed?

Once these questions are answered you will be able to assess equipment needs and include them into your planning process.

Program Storage and Distribution

One of the production elements that needs to be considered during the planning stages of your application is how and where do you plan to store and distribute your application. This obviously will have to be related to the scope of work of your application. Questions such as the following must be answered during the planning process in order to help you determine what needs to be in place to store the application multimedia elements while in development, and how it will be distributed.

- How large does your application in its final form is expected to be?
- Do you have the equipment to store the multimedia building blocks?
- Do you plan to share and distribute some of the building blocks for their development by a group? What storage media is used commonly by the individuals or groups that will collaborate in the development?
- Do you plan to develop collaborative work and share files via networks or E-Mail?
- How do you plan to distribute your final work (floppies, CD's, Internet or other)?
- Do you have the equipment to record a master CD?

As mentioned above, the answers to these questions will help to plan more effectively the logistical aspects of your application.

Program Test Pilot, Evaluation, Beta Testing and Revision

One of the most critical steps in the development of the proposed applications is the need to test pilot, evaluate and revised your product. It would be a major mistake to assume that you are capable of working in isolation without the feedback and evaluations of others during the development of your application. It is highly recommended that depending on the scope of work of your application to test pilot portions or segments of your applications with a selected group of the proposed audience or users. The feedback and recommendations provided by this group should be taken into consideration in the revision of the proposed application.

The following form is an example of how to request comments and suggestions from application users during the test pilot process:

Multimedia Presentation

Program Evaluation

Please take a moment to complete this evaluation form. Your comments are important to the

instructional technology specialists as we strive to improve the program. Please complete the form

at the end of the presentation; your comments will be appreciated.

Name of the Program:

Subject: _____

Excellent

Good

Fair

Poor

1. Overall effectiveness of program.

(Broadening your understanding)

2. Program organization and execution.

3. Do you like this instructional method better

than the traditional lecture.

4. The graphics, sounds and text used in the

program help me to better understand the

concepts.

5. General comments and suggestions:

6. Features that would make the program better :

It is also highly recommended to involve your client during all steps of your application development. This involvement will ensure that development is progressing with the “blessing” of your client. The result of not involving your client might be the rejection of work and the resulting increase in costs and eventual losses in revenues.

Once the project is in a final draft form copies should be provide to a group of representative users, this group is called beta testing group. Beta testing will provide you with extremely valuable feedback about your application. Overlooking this step or not using beta testing feedback into the application revision process is a call for failure. The following is a sample form to be submitted to the beta testing group for compiling their evaluation, problems (bugs), comments and suggestions.

Beta Testing Reporting Form
Beta Testing Performed By:

Name: _____
Title: _____
Company: _____
Address: _____

E-mail Address: _____

System Configuration:

Platform: _____ Clock Speed: _____ Mhz. Hard Disk Capacity: _____
RAM: _____ MB. Operating System: _____ CD-ROM Speed: _____

Overall Performance of the Application:

Bugs:

Suggestions:

Your evaluation and suggestions are highly appreciated, please fax, E-mail or mail your evaluation to:

Mary Evaluator
Multimedia Architect
The Great Multimedia Development Co.
787 Somewhere Drive
Anycity, FL 33324-3509
Phone: (954) 999-9999
Fax: (954) 999-9fax
E-Mail: mary@gmdc.com

Exercise: Creating Your First Multimedia Application - Presentation Structure and Organization

Using the information provided in this chapter you will have to continue the development an interactive multimedia presentation for your imaginary client. As part of the process of planning the application you must define the structure of the application. With the support of you instructor answer the following questions. At the end of this process you will have completed the planning of you first multimedia application. Remember: keep a paper trail of all documents and screen prints of your project in a three ring binder.

- Define the concept of this project?
- How much time do you have to develop and deliver the presentation?
- What is the budget (financial resources) assigned to the program (project)?
- You will need to submit your client a proposal with a budget tomorrow, can you write this proposal? You won't get the contract unless you specify all development aspects such as structure, timelines, and costs.
- Once the contract is awarded, develop the project outline, logic flow and storyboard.
- Which elements should you use to illustrate or present the application content?
- What was provided to you by the content specialist? (In this exercise you will have to act as the content specialist)

- How should these elements be used and integrated in such way that the presentation appeals to members of the audience with different learning styles?
- Do you have the expertise and resources to effectively develop these elements? Do you need to contract outside production assistance to develop these elements (in this case either you will need to learn the skills or ask a classmate to form a team with you).