

Basic Principles of Multimedia Design and Development

As the line between disk and web-based projects continue to blur, it becomes easier to communicate effectively using either or both. Capture and hold attention with multimedia. Combine audio, video and animated graphics with the written word, to deliver interesting, entertaining and compelling messages.

Detailing what it takes to do it right, this article describes some basic design principles, delineates the phases of development, demonstrates appropriate analysis and defines some basic multimedia terms.

Design

Interactive design is probably the most exciting feature of multimedia projects. And though it's nice for multimedia to be aesthetically pleasing and entertaining, visual elements ought to be more than "eye-candy". It's imperative to use images and layout to help guide the user's eyes to what's important and know what to do next.

Graphic design is important but not the main scope of this article. Artists spend years practicing their trade, learning the rules and knowing when to break them. The basic principles of color, form, texture, balance, contrast, continuity, etc. all apply to electronically delivered media, too.

Navigational design determines how users get around. Using a relatively flat structure makes key information accessible from a single interface.

Keep people from having to dig down through too many layers to

find what they want. The best navigation is highly intuitive. Often web pages provide alternate paths (e.g. - buttons, image maps, hypertext.)

Textual content should be designed for accessibility and readability. Depending on the kind of project, text may also need to be printable and changeable.

During design it is also important to consider technology issues, such as: bandwidth, throughput, system requirements, etc.

Development

Here are the activities involved during each phase of multimedia development. At the end of each section is a list of the deliverables or milestones.

Blueprint Phase

- Discuss and Verify Strategic and Project Planning
- Determine Feasibility - Study Present System (Cost-Benefit & R.O.I.)
- Conduct Analysis (Needs, Goals, Audience, Subject Matter)
- Define Run-Time Requirements and Technical Specifications
- Determine Parameters for Duplication, Labels and Packaging
- Create a Content Outline (What already exists and what needs to be created)
- Draft a Statement of Work with a Project Plan, Proposed Budget and Schedule

Milestones - Analysis Report, Outline, Statement of Work

Design Phase

- Begin Design (Interface, Navigation, Graphics, Text Treatment)
- Draft Flowcharts and Storyboards
- Review and make any necessary revisions to designs, etc.
- Define and Build Rapid Prototype(s)
- Conduct Test of Rapid Prototype(s) with typical end users

Milestones - Flowcharts, Storyboards, Prototype, Usability Test Results

Production Phase

- Make any required changes to Prototype Designs
- Prepare current and/or Draft new Textual Assets
- Capture or Create and Convert Graphics (2D, 3D, Stills, Animation)
- Coordinate Logistics for Audio and Video Production (if applicable)
- Capture, Edit and Convert Audio and Video Assets
- Authoring and Programming (CD-ROM & Website)
- Design and Print Labels and Packaging
- Prepare Digital Prototypes for approval (Beta Version)

Milestones - Treatment of Media Assets, Digital Prototype, Labeling, Packaging

Implementation Phase

- Conduct Quality Assurance Testing and Evaluation
- Make any necessary changes (design, graphics, content, etc.)
- Finalize any software licensing agreement issues
- Install and Integrate Systems (e.g. - Upload Website to Host Server)
- Burn a Gold Master disk
- Produce Documentation
- Press disks and Assemble complete CD-ROM packages

Milestones - labeled, packaged, shrink-wrapped, and boxed CD-ROMs, DVDs or live Website

Evaluation should occur throughout the entire project to constantly measure activities against desired outcomes.

Analysis

Analysis usually occurs during the Blueprint Phase and can carry over into other areas of development. Getting stakeholder involvement and conducting analysis, helps ensure success. It is much easier to hit a target when you know what it is. For a sense of reality, we will use the example of converting facilitated classroom training into an interactive multimedia program.

Needs Assessment

Needs Assessment helps to clearly explain the problem, identify the audience, ascertain the actual situation, determine optimal conditions, discover the challenges or barriers to achieving the optimal

situation, and provide recommendations.

During needs assessment, we will explore where this project fits with the big picture. We will also answer: How many units will be needed right away? Will the program ever need to be updated? If so, when and how often? What will be the best way to distribute the program to learners? How else might we use video elements for other purposes?, etc.

Goal Analysis

Goal Analysis involves narrowing broad goals into objectives to be measured by performance. For each goal, we will write a complete statement describing acceptable performances in terms of nature, quality and amount. We will continue clarifying everything until we can answer yes to the following question: "If the learner achieved or demonstrated each of the desirable performances, would we be willing to say he or she has achieved the goal?"

We intend to analyze overall goals for the entire training program, as well as, specific goals within each section of instruction. By stating specific objectives, we will be able to define the target and know when we ve hit it.

Audience Analysis

Audience Analysis entails interviewing past, present and future learners to gain insights.

We will talk with users and trainees (different levels within the targeted markets) to determine: What must be on tape, in print and/or on the computer for the training to be effective? Under what conditions would using a new program be optimal? How do (or will) you know you got it? What worked and what

didn t work for you with current training? etc.

Subject Matter Analysis

Subject Matter Analysis involves consulting multiple sources to determine optimal content and optimal structure of that content.

For example, we will research current training and have our team of writers, trainers, designers, and graphic artists meet to review each segment of training, and determine how best to convert everything from instructor-lead to self-paced—the right combination of video, workbooks, exercises, simulations, etc.

Multimedia Terms

Basic terms and activities involved in the multimedia development process, in chronological order:

Analysis - to determine exact scope and other aspects and needs of the project

Requirements Specifications - lists technical and functional requirements for the program

Statement of Work - document outlining all the parameters of our working relationship, including: objectives, assumptions, definitions, general description of work, work specifications, constraints, terms, schedule, budget, etc.

Project Plan - description of how we will meet your goals, objectives and specifications

Content Outline - organized description of what will be re-used and what will be created

Flowchart - visual depiction of entire program, it maps out connections among elements

Storyboards - initial designs showing colors, fonts, layouts, navigation tools, etc.

Rapid Prototype - a model of the finished program with sample designs for approval

Convert Media Assets - stills, graphics, audio, video, etc. turned into usable digital files

Usability Testing - to get feedback from people who would be actually using the program

Programming - creating source code linking design elements to match the approved technical and functional specifications

Digital Prototype - a working model used for testing and evaluation purposes

Quality Assurance - testing to verify everything looks and works the way it is supposed to

Software licensing agreement - if a CD-ROM is delivered with QuickTime or HTML, for example, third party vendors may require a separate licensing fee per unit

Gold Master disk - final version used to duplicate or replicate the CD-ROM or DVD copies.

Developers follow these principles and processes in order to create successful interactive multimedia projects.

Benefits of Multimedia

From an International Television Association article with case studies highlighting the effectiveness of multimedia (and other media) in different situations. (As referenced in the Digital Video Professionals Association's listserv - Sept. 00) the benefits of multimedia:

1) Reduced Learning Time: Self-Paced, Immediate Interaction, Feedback And Personalized Instruction Can Reduce Training Time 50% (avg.)

2) Reduced Costs/Student: in the classroom, the major expense is delivery, i.e., the instructor's salary. Federal express expects to save more than \$100 million by using an interactive system.

3) Instructional Consistency

4) Privacy: the student avoids embarrassment, and the 'patience' of the interactive system encourages the student to ask questions.

5) Mastery Of Learning: the instruction won't move on until the student has mastered the lesson.

6) Increased Retention: the reinforcement of the interactive lessons increases learning.

7) Increased Safety: the technology allows exploration of 'dangerous' subjects which would be difficult or impossible in the classroom.

8) Increased Motivation: the responsive feedback and individual involvement makes the student a more willing participant.

9) Increased Access: student instruction is not confined to times when the instructor is available.

10) Learners Enjoy Interactive Learning

11) Efficient, Effective, Flexible

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