

Distinctive Expertise: Multimedia, the Library, and the Term Paper of the Future

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Multimedia will have a profound effect on libraries during the next decade. This rapidly developing technology permits the user to combine digital still images, video, animation, graphics, and audio. It can be delivered in a variety of finished formats, including streaming video on the Web, video on DVD/VCD, embedded digital objects within a Web page or presentation software such as PowerPoint, utilized within graphic designs, or printed as hardcopy. This article examines the elements of multimedia creation, as well as requirements and recommendations for implementing a multimedia facility in the library.

The term *multimedia*, which some may remember being used in the early 1970s as the name for slide shows set to music, now is used to describe “a number of diverse technologies that allow visual and audio media to be combined in new ways for the purpose of communicating.”¹ Almost all personal computers sold today are capable of viewing multimedia; many can, with minor modifications, also create multimedia.

One of the most important features of multimedia is its flexibility. Multimedia creation has several distinct elements—inputs, processes performed on those inputs, and outputs (see figure 1). Each element can be described as follows.

- **Inputs**—New video can be recorded, or existing video, stored on a hard disk, CD/DVD, or tape can be imported. The same is true of audio, with the added flexibility of creating soundtracks or sound effects later, during the editing process. Digital still images can be used, either shot on a camera or created by scanning an existing picture. Digital artwork or animated sequences created in other software also can be brought in.
- **Processing**—Regardless of the source, these digital inputs are loaded into the editing software. At this stage, the user will select and arrange the images and sounds, and the software may permit special effects to be created. In addition, the editing software may compress the file so that it is easier to use than the large file sizes used in raw video and audio recording.
- **Outputs**—At this point, the user has more choices to make. The new multimedia file can be sent to a program that will encode it for a streaming video in any

one of a variety of popular formats, such as Windows Media, RealMedia, or ClipStream. Then it can be mounted on a Web site (either a regular page or within courseware such as WebCT or Blackboard), or the file could be burned onto a CD or DVD, or it could be used within presentation software such as Microsoft PowerPoint. Or the output file from the editing process could be encoded and embedded so that it is an Avatar running as part of a Web page with a product such as Rovion Bluestream. The possibilities are nearly endless.

All of this is made possible by advances in technology on a variety of fronts. One of the happy anomalies in technology is that greater performance is frequently accompanied by lower costs. This is certainly the case with much of the activity surrounding multimedia. The following factors have fostered advances in multimedia:

- increase in processing power and decrease in cost of computer hardware;
- quality and affordability of video equipment;
- compression of multimedia files;
- consumer broadband Internet access; and
- current multimedia editing software

The first two technology factors concern the equipment involved in multimedia production. Leading off is the familiar, ever-increasing speed of processors and improved memory and hard-drive space, all delivered for less money. This trend is something that many people take for granted, but a reality check is sometimes in order. The processor in the typical desktop machine on advertised special today is approximately forty-four times as fast as the first Pentium processor sold ten years ago, and is equipped with sixteen times as much RAM and 117 times as much hard-drive space—at 20 percent of the cost of the old machine (not even adjusted for inflation!). The second factor is the incredible quality available in consumer-market video equipment at reasonable costs. While the images produced with consumer-grade video would not play well at the local megaplex movie theater, they look very good on the small screens found on computers, televisions, and classroom projectors.

The third factor is that tremendous compression of multimedia files can be achieved during the editing process. An incoming raw-video file (in the standard .avi format) can be compressed with editing, encoding, and dedicated third-party compression software to an incredible 1 to 2 percent of its original size, and it will still retain very good quality as a digital object on the Web and in other desktop viewing applications.

The fourth factor is extremely critical for the success of multimedia Web applications. Home access is shifting away from dial-up access to broadband, with its greatly increased transfer rates. Half of all United States homes with Internet access are already using broadband, and the

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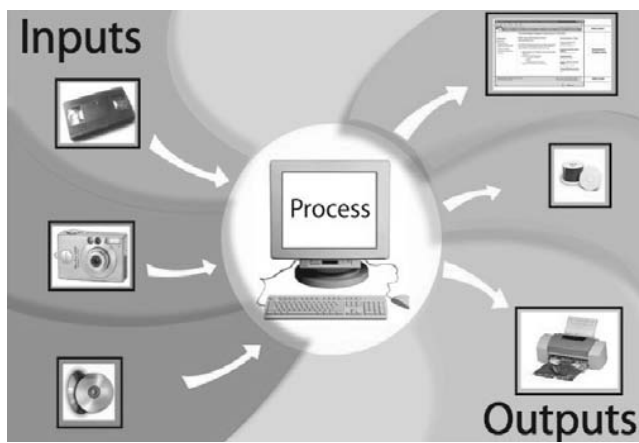


Figure 1. Multimedia Creation Process

forecast is for steady increase in these numbers.² Although not all broadband is created equal, it is all significantly faster than dial-up access.

The final technology factor concerns the software that is currently available to the multimedia Web developer. A developer can achieve some quite professional results with even the most basic products, and then can grow into more complex software that supports increasing levels of expertise. Once again, this software is being sold in the price range that typical consumers can afford.

Small Really Is Beautiful

Creating a multimedia lab in the library need not be a large, complex undertaking. In fact, it can be very low cost and as simple as a single workstation. So it is scalable, allowing the library to start small and build in complexity and cost as time, money, and human resources will permit.

At the bare-bones minimum, a multimedia lab would consist of a workstation with the software necessary for acquiring, editing, and outputting the files. For practical purposes, though, the workstation should be equipped with a network connection, a CD/DVD burner, a scanner, and a webcam with microphone. Another very useful option is an analog-digital bridge device, which enables the capture of analog input (such as VHS tape) into digital files for the editor. To achieve better-quality video when shooting original content, a digital-video camera, tripod, wireless microphone, and portable light kit would be recommended. Since more time typically is spent at the editing station than with the camera, the lab can be expanded with additional workstations before investing in another camera. Experience at the author's institution has shown that it is possible to operate a lab with ten workstations and only

three video cameras and three still cameras. Finally, output from the editing process will likely be printed, so a photo-quality printer is another convenient option.

This illustrates that the entry into multimedia work need not be a large expense, especially if an existing workstation and any other equipment is already available. If a fairly recent workstation is available to dedicate to the project, the library's total startup cost could range from \$200 to \$1,000. Not many new library services can be launched for as little as that. Rather than dwell on equipment specifications, as that is not the intent of this discussion, the reader may consult the excellent tutorials available from *Desktop Video* and *PC Magazine's* online product guide.³

Finally, the creation of a studio is a worthwhile option. Although some video will need to be shot on location, many times it is possible to set up and shoot in just one place. A studio is the best place in which to work because it is a controlled environment. It does not need to be large or complicated, and a quiet office or study room can be set up with little effort and expense. The studio gives the users control over the sound and the lighting, and involves minimal setup time for projects.

The Research Paper of the Future

Multimedia has begun to attract attention in the library community. Joe Janes, chair of Library and Information Science at the Information School at the University of Washington and the person responsible for developing the Internet Public Library, recently stated he foresees a growing role for multimedia in the library. It will replace much of the traditional, text-based communication that people are accustomed to. For example, multimedia projects can become the research paper of the future for students.⁴ It is the media in which many library customers will be working.

Experience from the author's institution with creating a multimedia lab would seem to confirm his observation. During the first year and a half of operation, use of the lab has steadily increased (see figure 2).

Collaboration

The multimedia lab opens the doors to collaborative opportunities with faculty and students from a variety of disciplines across campus. This is because multimedia, like Geographic Information Systems (GIS) or other electronic information and communication technologies, is a tool and is not discipline-specific. As important as it is to make the connection with faculty, this media is something with which the students will frequently lead the

way. They are, after all, the MTV generation, and multimedia has an incredible appeal to their visual orientation. Faculty themselves have used it to augment their Web-based courses as well as traditional classroom instruction. The author's library has even initiated a multimedia résumé service for graduating students. The students can record a video introduction of themselves, encode this as a Rovion Bluestream Avatar, and post it with their résumés on the Web. This creates a much stronger impression than a standard résumé, hopefully giving the students an edge in promoting themselves on the job market.

Even more impressive is the variety of projects that are created in the lab by the students. One might expect to see interest from students in art and communications classes, but students come from many other disciplines as well. For example, business students have effectively used multimedia in their graduate-school business-plan presentations, while biology students like to use the graphics capabilities to study close-ups of slides. Education students have employed it to produce multimedia instructional aids, and a sociology student put together a presentation on underserved, low-income neighborhoods. The library supplies the facility and instruction—only the imagination of students is needed.

Libraries have always been involved in the students' research and writing process, by providing content, instruction, and facilities for producing the final research product. The same is true in the multimedia environment, although implementing a multimedia lab calls for some new skills for librarians. These include familiarity with basic principles of videography, learning how to use the cameras and other equipment, and gaining some mastery of the editing and encoding software.

Why Put It in the Library?

In addition to the research-paper analogy, the author believes that librarians can point with pride to the values and value that libraries offer their communities. It is a central and neutral location—not in one department's or college's turf. Libraries are conveniently open for many hours per week. Many of the information resources that students might use to prepare the presentation are in the library. And librarians have a professional ethic that drives them to provide instruction and assistance for the services the library offers. Since multimedia production does have a learning curve and most new users need help in mastering the technology, it does not fit very well with the typical 24/7 drop-in computer lab that the campus information technology (IT) often operates. This is a good opportunity for librarians to recognize some of their strengths and capitalize on them.

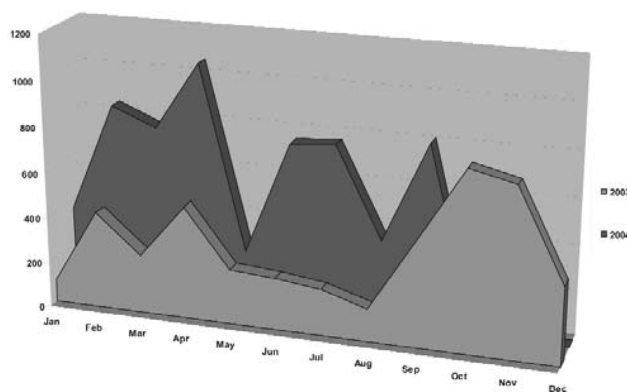


Figure 2. University of Texas—Pan American Library Multimedia Lab Usage

In addition, this can be a breath of fresh air for librarians. Here is an opportunity to learn about something new and creative. Most people find that they have less room for creativity as time goes by.⁵ With a multimedia lab in the building, it will offer the librarians the opportunity to create multimedia productions for the library, besides assisting students and faculty with their projects.

Potential Problems

There are some obstacles to overcome, of course. They need not be seen as major, but it is best to be realistic when beginning any new venture. It is almost always a good idea to start small, with a pilot project that will yield valuable lessons before venturing into anything big.

- **Equipment**—Define what specifications are needed, see what is already available to use or borrow, then figure out what you will actually need to buy.
- **Software**—Check out the variety of software for editing and production; think about how you want to begin using multimedia (primarily on the Web, in presentation software such as PowerPoint, as stand-alone videos on CDs and DVDs).
- **Money**—If funding permits, a library can invest several thousand dollars in a high-end multimedia computer, associated peripherals such as a color printer and one or more scanners, and a software suite to meet initial anticipated demands for multimedia creation and editing. If funding is scarce, you may want to investigate what existing equipment could be used in support of a pilot project.
- **Location**—This needs some space of its own, accessible to students and monitored by staff. Although the

editing workstation could be in an area with other computers, a quiet area is needed for shooting video so that there will not be interference from noise and unwanted foot traffic through the shots.

- **Staffing and training**—A multimedia lab is not a good candidate for self-service. Librarians and staff who will provide the service need to learn how to use the equipment and software. Make sure that they all have an acceptable level of competence and confidence so that the library can shine with its new service, but expect that everyone will need to continue to learn and grow in their proficiency. If your library plans to produce its own multimedia sessions as well, it would be a good investment to attend a class on television or video production.
- **Hours**—How many hours per week will the new service be available? If it is the entire time the library is open, be prepared to train plenty of staff. Repeat users will need less help as their skills increase (by the way, some of these students can be great work-study employees).
- **Instruction**—Plan to offer formal orientation and instruction sessions to faculty and their classes. If your lab is small, this is challenging, but it can be accomplished with some creativity. For example, a general instruction session on concepts can be done in a classroom, followed up by a series of small groups working by appointment for the applied-learning component in the multimedia lab. The author and a colleague have even done instruction outside the library using laptops and cameras, creating a de facto mobile studio.
- **Copyright**—If there are already VCRs or photocopiers in the library, you have had to deal with this issue. The Pan American Library at University of Texas does not allow people to use its lab to copy movies, which is a request that surely will come to you, and we post the usual copyright notices just as we do at our photocopiers. For some excellent information on copyright, visit the American Library Association Web site (www.ala.org).
- **Evaluation**—Plan on at least basic evaluation of the service. This can include an assessment of the effectiveness of the instruction sessions, a survey of satisfaction with the lab itself, a questionnaire on the intended uses of the multimedia projects, demographic data on the students, or other student input. Logs of the number of uses and peak-demand periods are extremely useful for planning and for justifying further expenditures and staffing requests.
- **Flexibility for the future**—Whatever you do in a pilot phase, always keep in mind that you want to keep an open mind—you are trying to learn from the experience so that you can make good decisions for the direction of this new service. It may not go

exactly the way you originally thought, because of serendipity, or changes in technology, or very strong demand from some segments of the campus instead of others, or other environmental factors.

Conclusion

Benefits to the library from the multimedia lab are many. One of the most important benefits is that it keeps the library involved in the process of academic communication, as the medium of the communication changes with technology. By being involved in this evolving medium at its early stages, the library is poised to pounce on opportunities to employ it to the benefit of the library in instruction and content delivery. The library also would position itself on campus as a key player in IT and the leading local expert in the growing field of multimedia. Since multimedia is a tool that crosses the entire range of subject disciplines on campus, it opens the doors of faculty to collaborate with librarians in exciting new ways. Just as many campuses already have learning and collaborative communities that grew around their Web courseware or GIS endeavors, so too can one develop around multimedia. The appendix offers a list of multimedia Web sites to consider.

Libraries are more than warehouses of books and periodicals. As more and more of our resources have been made available electronically, and indeed more of higher education has moved to electronic delivery, many libraries have been faced with declining gate counts, circulations, and reference statistics. As someone observed, we are victims of our own success. So what is the role of the library? We are intrinsically involved in the process of instruction, academic research, and communication. As Kling observed, "One important strategic idea is that libraries configure their IT services and activities to emphasize the distinctive expertise of their librarians rather than simply concentrate on the size and character of the documentary collection."⁷ It is imperative therefore that libraries pick out the new trends that will allow them to excel by capitalizing on their traditional strengths.

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Appendix. For Further Reading: A Multimedia Web-Site Tour

The following is a sampling of some of the most popular and interesting multimedia software, with examples of completed productions. This is not an official endorsement of any one product over another, whether listed here or not. A look at these sites will, however, give the reader an idea about the power and possibilities of multimedia communications.

Adobe (www.adobe.com)

The well-known makers of some of the most powerful and popular editing software packages for graphics and video.

Camtasia (www.camtasia.com)

Easy to use, this is a good example of the type of software that does screen capture and recording, which is handy for producing online tutorials.

Clipstream (www.clipstream.com)

An excellent example of the type of newer encoding software that achieves incredible compression of video and delivers it over the Web with no viewer or plug-ins required for the user.

FinalCut Pro (www.apple.com/finalcutpro)

A perennial favorite among the Mac crowd, this software is relatively easy to learn and lets the developer achieve dramatic results.

Flashants (www.flashants.com)

A handy program that converts Flash animation into .avi video format so that you can integrate animated sequences into a video production.

Macromedia (www.macromedia.com)

The makers of Flash and Director, which are some of the most popular graphics, animation, and multimedia editing tools in the business.

Pinnacle (www.pinnaclesys.com)

What FinalCut Pro is to the Mac, this package is for the PC environment. Easy to use, yet sophisticated in the results achieved.

Rovion (www.rovion.com)

Rovion Bluestream is an encoder that enables the creation of Avatar characters to appear live on your Web page. A plug-in is required for the user, but this approach definitely gets attention.

Serious Magic (www.seriousmagic.com)

An award-winning software package that allows you to turn a workstation into a studio, complete with teleprompter capability, sound effects, graphics, and editing.

University of Texas—Pan American Library (www.lib.panam.edu/libinfo/media.asp)

Links to multimedia projects at the author's institution, including productions made by staff and students.