



Multimedia is any combination o

A revolution is taking place
today in the way humans
access, learn, and interact
with information.

When you **weave** together the sensual elements of multimedia - ■

interactive control

media

chapter

What Is Multimedia?

- — dazzling pictures and animations, engaging sounds, compelling video clips — you can electrify the thought and action centers of people's minds.

in.forma.tion



M

MULTIMEDIA is an eerie wail as two cat's eyes appear on a dark screen. It's the red rose that dissolves into a little girl's face when you press "Valentine's Day." It's a small window of video laid onto a map of India, showing an old man recalling his dusty journey to meet a rajah there. It's a catalog of fancy cars with a guide to help you buy one. It's a real-time video conference with colleagues in Paris, London, and Hong Kong on your office computer. At home, it's an algebra or geography lesson for a fifth-grader. At the arcade, it's goggle-faced kids flying fighter planes in sweaty virtual reality.

Multimedia is any combination of text, graphic art, sound, animation, and video delivered to you by computer or other electronic means. It is richly presented sensation. When you weave together the sensual elements of multimedia—dazzling pictures and animations, engaging sounds, compelling video clips, and raw textual information—you can electrify the thought and action centers of people's minds. When you give them interactive control of the process, they can be enchanted. Multimedia excites eyes, ears, fingertips, and, most importantly, the head.



This book is about creating each of the elements of multimedia and about how you can weave them together for maximum effect. This book is for computer beginners and computer experts. It is for serious multimedia producers and their clients, as well. It is for desktop publishers and video producers who may need a leg-up as they watch traditional methods for delivery of information and ideas evolve into new, technology-driven formats. This book is also for hobbyists, who want to make albums and family histories on the World Wide Web; for mainstream businesses, where word-processed

documents and spreadsheets are illustrated with audio, video, and graphic animations; for public speakers, who use animation and sound on large monitors and auditorium projection systems to present ideas and information to an audience; for information managers, who organize and distribute digital images, sound, video, and text; and for educators and trainers, who design and present information for learning.

The implementation of multimedia capabilities in computers is just the latest episode in a long series: cave painting, hand-crafted manuscripts, the printing press, radio and television... These advances reflect the innate desire of man to create outlets for creative expression, to use technology and imagination to gain empowerment and freedom for ideas.

Glenn Ochsenreiter, Director, Multimedia PC Council

If you are new to multimedia and are facing a major investment in hardware, software, and the time to learn each new tool, take a gradual approach to these challenges. Begin by studying each element of multimedia and learning one or more tools for creating and editing that element. Get to know how to use text and fonts, how to make and edit colorful graphic images and animate them into movies, and how to record and edit digital sound. Read the computer trade periodicals that contain the most up-to-date information. Your skills will be most valuable if you develop a broad foundation of knowledge about each of the basic elements of multimedia.

Producing a multimedia project or a Web site requires more than creative skill and high technology. You need organizing and business talent as well. For example, issues of ownership and copyright will be attached to some elements that you wish to use: text from books, scanned images from magazines, audio and video clips. These require permission and often payment of a fee to the owner. Indeed, the management and production infrastructure of a multimedia project may be as intense and complicated as the technology and creative skills you bring to bear in rendering it.

D Definitions

Multimedia is, as described above, woven combinations of text, graphic art, sound, animation, and video elements. When you allow an end user—the viewer of a multimedia project—to control what and when the elements are delivered, it is *interactive multimedia*. When you provide a structure of

linked elements through which the user can navigate, interactive multimedia becomes *hypermedia*.

Although the definition of multimedia is a simple one, making it work can be complicated. Not only do you need to understand how to make each multimedia element stand up and dance, but you also need to know how to use multimedia computer tools and technologies to weave them together. The people who weave multimedia into meaningful tapestries are *multimedia developers*.

The software vehicle, the messages, and the content presented on a computer or television screen—together constitute a *multimedia project*. If the project will be shipped or sold to consumers or end users, typically in a box or sleeve or on the Internet, with or without instructions, it is a *multimedia title*. Your project may also be a *page* or *site* on the World Wide Web, where you can weave the elements of multimedia into HTML (Hypertext Markup Language) or DHTML (Dynamic Hypertext Markup Language) documents and use plug-ins like Macromedia's Flash, Adobe's LiveMotion, or Apple's QuickTime to display your multimedia work using a *browser* application such as Internet Explorer or Netscape Navigator. See Chapter 14 for more about multimedia and the Web.

A multimedia project need not be interactive to be called multimedia: users can sit back and watch it just as they do a movie or the television. In such cases a project is *linear*, starting at a beginning and running through to an end. When users are given navigational control and can wander through the content at will, multimedia becomes *nonlinear* and interactive, and is a powerful personal gateway to information.

Determining how a user will interact with and navigate through the content of a project requires great attention to the message, the *scripting* or *storyboarding*, the artwork, and the programming. You can break an entire project with a badly designed interface. You can also break a project with inadequate or inaccurate content.

Multimedia elements are typically sewn together into a project using *authoring tools*. These software tools are designed to manage individual multimedia elements and provide user interaction. In addition to providing a method for users to interact with the project, most authoring tools also offer facilities for creating and editing text and images, and they have extensions to drive videodisc players, videotape players, and other relevant hardware peripherals. Sounds and movies are usually created with editing tools dedicated to these media, and then the elements are imported into the authoring system for playback. The sum of what gets played back and how it is presented to the viewer is the *graphical user interface*, or GUI (pronounced “gooey”). This interface is just as much the rules for what happens to the

user's input as it is the actual graphics on the screen. The hardware and software that govern the limits of what can happen are the multimedia *platform* or *environment*.

D-ROM and the Multimedia Highway

Multimedia requires large amounts of digital memory when stored in an end user's library, or large amounts of *bandwidth* when distributed over wires or glass fiber on a network.

CD-ROM and Multimedia

CD-ROM (compact disc read-only memory, see Chapter 19) has emerged during the last few years as the most cost-effective distribution medium for multimedia projects: a CD-ROM disc can be mass-produced for pennies and can contain up to 84 minutes of full-screen video or sound. Or it can contain unique mixes of images, sounds, text, video, and animations controlled by an authoring system to provide unlimited user interaction.

Discs can be stamped out of polycarbonate plastic as fast as cookies on a baker's production line. Most personal computers sold today include a CD-ROM player, and the software that drives these computers is commonly available on a CD-ROM disc—applications that required inserting as many as 16 or more floppy disks one after another are now installed from a CD-ROM without muss or fuss. Multilayered Digital Versatile Disc (DVD) technology is on the way toward general usage and will increase the capacity and multimedia capability of current CD-ROM optical technology. CD *burners* are used for reading CDs and for making them too, in both audio and data formats.

In the very long term, however, CD-ROM and DVD are but interim memory technologies that will be replaced by new devices that do not require moving parts. As the data highway described below becomes more and more pervasive and users become more easily “connected,” copper wire, glass fiber, and radio/cellular technologies may prevail as the most commonly used delivery means for interactive multimedia.

The Multimedia Highway

Now that telecommunications networks are global, and when information providers and content owners determine the worth of their products and

how to charge money for them, information elements will ultimately link up online as distributed resources on a data highway (actually more like a toll road), where you will pay to acquire and use multimedia-based information.

Curiously, the actual glass fiber cables that make up much of the physical backbone of the data highway are, in many cases, owned by railroads and pipeline companies who simply buried the cable on existing rights of way where no special permits and environmental reports are necessary. One railroad in the United States invested more than a million dollars in a special cable-laying trenching car; in Great Britain, there is talk of placing a fiber-optic cable backbone along the decaying 19th-century canal and barge system. Bandwidth on these lines is leased to others, so competing retailers such as AT&T, MCI, and Sprint may even share the same cable.

Full-text content from books and magazines will be accessible by modem and electronic link; feature movies will be played at home; real-time news reports from anywhere on earth will be available; lectures from participating universities will be monitored for education credits; street maps of any city will be viewable—with recommendations for restaurants, in any language—and online travelogues will include testimonials and video tracks. This is not science fiction; it is happening now. Each of these interfaces or gateways to information is a multimedia project just waiting to be developed.

*http://www.movieone.com
http://www.nyfood.com
http://www.travelocity.com
http://www.nytimes.com*

Show times for many major cities, restaurants, vacation trips, and current news items are quickly available on the Web

In a few years, interactive multimedia will be delivered to many homes throughout the world. Interest from a confluence of entertainment megacorps, information publishers and providers, cable and telephone companies, and hardware and software manufacturers is already driving this inevitable evolution, and profound changes in global communications strategy are on the drawing boards. What will be piped through this new system are the very multimedia elements discussed in the chapters of this book: text, graphics, animation, sound, and video. The software tools for making and editing these elements are discussed in Part 3; the methods for delivering these elements on the Internet are described in Chapter 14.

Entertainment companies that own content easily converted to multimedia projects are teaming up with cable TV companies such as QVC or Viacom (owner of MTV, Showtime, and Nickelodeon). Film studios such as Disney and Warner Brothers are creating new divisions to produce interactive multimedia, and wealthy talents like Spielberg, Katzenberg, and Geffen (DreamWorks) have formed new companies to join the action. Already, large media corporations are uniting to create huge conglomerates that will control the content of tomorrow's information. Disney has merged with Capital Cities/ABC, Time Warner has purchased Turner Broadcasting, and Microsoft has joined forces with NBC. Indeed, Microsoft's interests in the growing Internet are so pervasive that it risks breakup and reorganization by the government under antitrust and monopoly laws, as was required of AT&T, the telephone giant.

Some companies will own the routes for carrying data, other companies will own the hardware and software interfaces at the end of the line, at offices and homes. Some will knit it all together and provide supply-on-demand and billing services. Regardless of who owns the roadways and the hardware boxes, multimedia producers will create the new literature and the rich content sent along it. This is a fresh and exciting industry coming of age, but one still faced with many growing pains.

Where to Use Multimedia

Multimedia is appropriate whenever a human interface connects a human user to electronic information of any kind. Multimedia enhances minimalist text-only computer interfaces and yields measurable benefit by gaining and holding attention and interest; multimedia improves information retention. When properly woven, multimedia can also be profoundly entertaining.

Multimedia is a very effective presentation and sales tool. If you're being driven somewhere in the back seat of a car, you may not remember how you got to your destination; but if you had been driving the car yourself, chances are you could get there again. Studies indicate that if you're stimulated with audio, you will have about a 20 percent retention rate, audiovisual is up to 30 percent, and in interactive multimedia presentations where you are really involved, the retention rate is as high as 60 percent.

Jay Sandom, Einstein & Sandom

Multimedia in Business

Business applications for multimedia include presentations, training, marketing, advertising, product demos, databases, catalogues, and networked communications. Voice mail and video conferencing will soon be provided on many local and wide area networks (LANs and WANs) using Internet protocols.

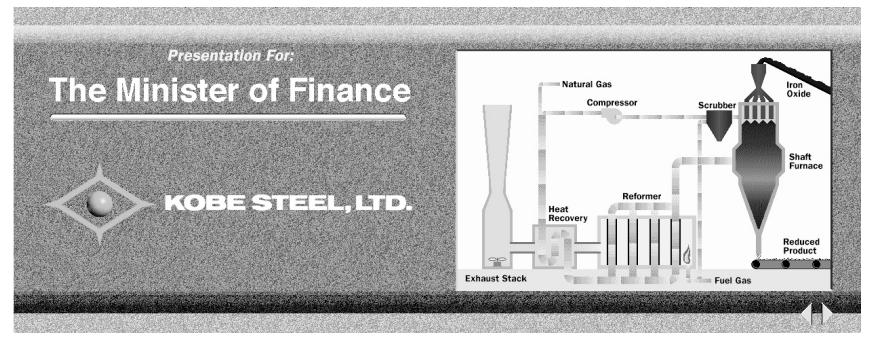
After a morning of mind-numbing 35 mm slide and overhead presentations delivered from the podium of a national sales conference, a multimedia presentation can make an audience come alive. Most presentation software packages let you add audio and video clips to the usual “slide show” of graphics and text material (see Chapter 6).

Multimedia is enjoying widespread use in training programs. Flight attendants learn to manage international terrorism and security through simulation. Mechanics learn to repair engines. Salespeople learn about product lines and leave behind software to train their customers. Fighter pilots practice full-terrain sorties before spooling up for the real thing. Figure 1-1 is from an animated project made with Macromedia’s Director that describes the process of making steel.

Multimedia around the office has become more commonplace. Figure 1-2 shows VideoLabs’ FlexCam, an inexpensive add-on video camera and stereo microphone unit. Connectix’s popular QuickCam lets you add a gray-scale camera to your PC or Mac for less than \$100, and Nokia sells a high-resolution Trinitron monitor (the “447K”) that integrates a video camera, a microphone, and full-range stereo speakers. Such video capture hardware can be used for building employee ID and badging databases, for video annotation,

FIGURE 1-1

Animated instructional and training multimedia can simulate the real thing, allowing trainees to actually turn valves and flip switches



and for real-time teleconferencing. Laptop computers equipped with the fastest processors come complete with CD-ROM drives and are ready for multimedia presentations on the road.

As companies and businesses catch on to the power of multimedia, and the cost of installing multimedia capability decreases, more applications will be developed both in-house and by third parties to allow businesses to run more smoothly and efficiently.

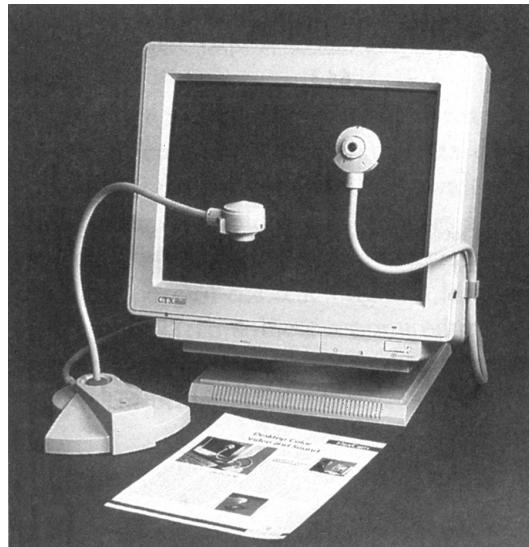
Multimedia in Schools

Schools are perhaps the most needy destination for multimedia. Many schools in the United States today are chronically underfunded and occasionally slow to adopt new technologies, but it is here that the power of multimedia can be maximized for the greatest long-term benefit to all.

In March 1995, the White House challenged the telecommunications industry to connect every classroom, library, clinic, and hospital to the information superhighway by the year 2000. The White House has also taken steps to provide governmental support for state-of-the-art technology in low-income rural and urban school districts.

FIGURE 1-2

VideoLabs' FlexCam
(neatly implemented
by Worrell Design
of Minneapolis,
MN) can be
used for video
capture and
videoconferencing



.....
Technological literacy must become the standard in our country. Preparing children for a lifetime of computer use is just as essential today as teaching them the basics of reading, writing, and arithmetic.
.....

Bill Clinton, Former President of the United States

.....
<http://www.wvaworldschool.org>
<http://www.svi.org/>

Verizon's WORLD SCHOOL Project is connecting more than 700 West Virginia schools to the Internet; Smart Valley, Inc., is a nonprofit Silicon Valley consortium providing advice and technical support to schools on the Internet
.....

Multimedia will provoke radical changes in the teaching process during the coming decades, particularly as smart students discover they can go beyond the limits of traditional teaching methods. Indeed, in some instances, teachers may become more like guides and mentors along a learning path, not the primary providers of information and understanding—the students, not teachers, become the core of the teaching and learning process. This is a sensitive and highly politicized subject among educators, so educational software is often positioned as “enriching” the learning process, not as a potential substitute for traditional teacher-based methods.

.....
An interactive episode of Wild Kingdom might start out with normal narration. “We’re here in the Serengeti to learn about the animals.” I see a lion on the screen and think, “I want to learn about the lion.” So I point at the lion, and it zooms up on the screen. The narration is now just about the lion. I say, “Well that’s really interesting, but I wonder how the lion hunts.” I point at a hunt icon. Now the lion is hunting, and the narrator tells me about how it hunts. I dream about being the lion. I select another icon and now see the world from the lion’s point of view, making the same kinds of decisions the lion has to make—with some hints as I go along. I’m told how I’m doing and how well I’m surviving. Kids could get very motivated from experiencing what it’s like to be a lion and from wanting to be a competent lion. Pretty soon they’d be digging deeper into the information resource, finding out about animals in different parts of the world, studying geography from maps displayed on the screen, learning which animals are endangered species...
.....

Trip Hawkins, Chairman & CEO, 3DO Company

Multimedia for learning takes many forms. Figure 1-3 shows Mercer Meyer's pioneering and award-winning classic "Just Grandma and Me," aimed at three- to eight-year-olds. Reading skills grow through word recognition: a mouse click on any word plays it back. The computer reads the story aloud, sometimes spelling words individually. Click on the mailbox and a frog jumps out; the chimney coughs smoke; the telephone rings, but nobody is home, and you hear Grandma's answering machine. Wait 'til you get to the beach! Figure 1-4, at the other end of the educational continuum, shows the title screen from an advanced electronic teaching tool prepared by Yale University School of Medicine. It provides physicians with over 100 case presentations and gives cardiologists, radiologists, medical students, and fellows an opportunity for in-depth learning of new clinical techniques in nuclear cardiac perfusion imaging. Adults, as well as children, learn well by exploration and discovery.

An interesting use of multimedia in schools involves the students themselves. Students put together interactive magazines and newsletters, they make original art using image editing tools (see Chapter 10), they interview students and townspeople and coaches and teachers, and they make QuickTime movies (see Chapter 5). They design and run Web sites.

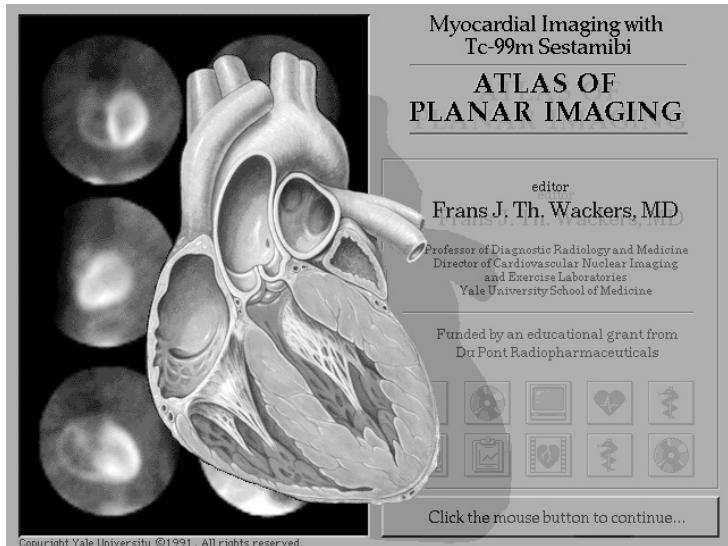
FIGURE 1-3

"Just Grandma and Me" is aimed at developing reading skills, but it also entertains with interactive sights and sounds



FIGURE 1-4

This multimedia project from Yale University School of Medicine lets physicians and radiology professionals learn new technologies at their own pace



<http://www.elibrary.com>
<http://www.lib.umich.edu/chhome.html>
<http://sunsite.unc.edu/cisco/cisco-home.html>
<http://www.ucalgary.ca/~dkbrown/index.html>
<http://web66.coled.umn.edu/schools.html>
<http://gda.org>

From homework helpers to literature guides to school registries to home pages and information servers, education is finding a place on the World Wide Web

At one time, laserdiscs brought the greatest amount of multimedia to the classroom—in 1994, there were more than 2,500 educational titles available on laserdisc for grades K–12, the majority aimed at science and social science curricula. Use of laserdiscs has been supplanted as schools have purchased more computers with CD-ROM players. And as schools become part of the Internet, multimedia arrives by glass fiber and network.

Multimedia at Home

From gardening to cooking to home design, remodeling, and repair to genealogy software (see Figure 1-5), multimedia has entered the home. Eventually,

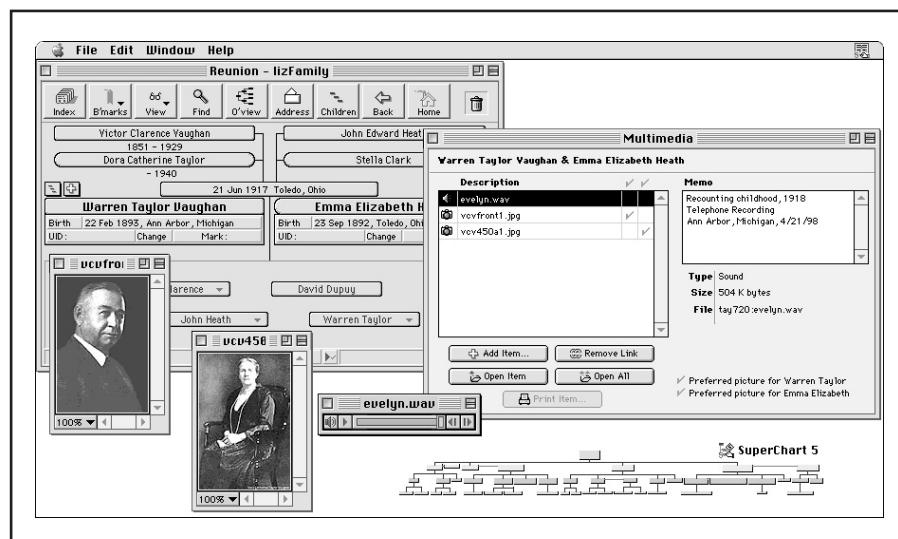
most multimedia projects will reach the home via television sets or monitors with built-in interactive user inputs—either on old-fashioned color TVs or on new high-definition sets (see Chapter 12). The multimedia viewed on these sets will likely arrive on a pay-for-use basis along the data highway.

Today, home consumers of multimedia either own a computer with an attached CD-ROM drive or a set-top player that hooks up to the television, such as a Sega or Nintendo or Sony game machine. There is increasing convergence of computer-based multimedia with entertainment and games-based media traditionally described as “shoot-em-up.” Nintendo alone has sold over 100 million game players worldwide and more than 750 million games.

Live Internet pay-for-play gaming with multiple players has become popular, bringing multimedia to homes on the data highway, often in combination with locally inserted CD-ROMs. Microsoft’s Internet Gaming Zone and Sony’s Station Web site boast more than a million registered users each—Microsoft claims to be the most successful, with tens of thousands of people logged on and playing every evening.

The home of the future will be very different when the cost of computer hardware and multimedia televisions becomes mass-market affordable and the multimedia connection to the data highway is widely available. When the number of multimedia households increases from hundreds of thousands to many millions, a vast selection of multimedia titles and material will be required to satisfy the demands of this market, and vast amounts of money will be earned producing and distributing these multimedia products.

FIGURE 1-5
Genealogy software such as Reunion from Leister Productions lets families add text, images, sounds, and video clips as they build their family trees



Multimedia in Public Places

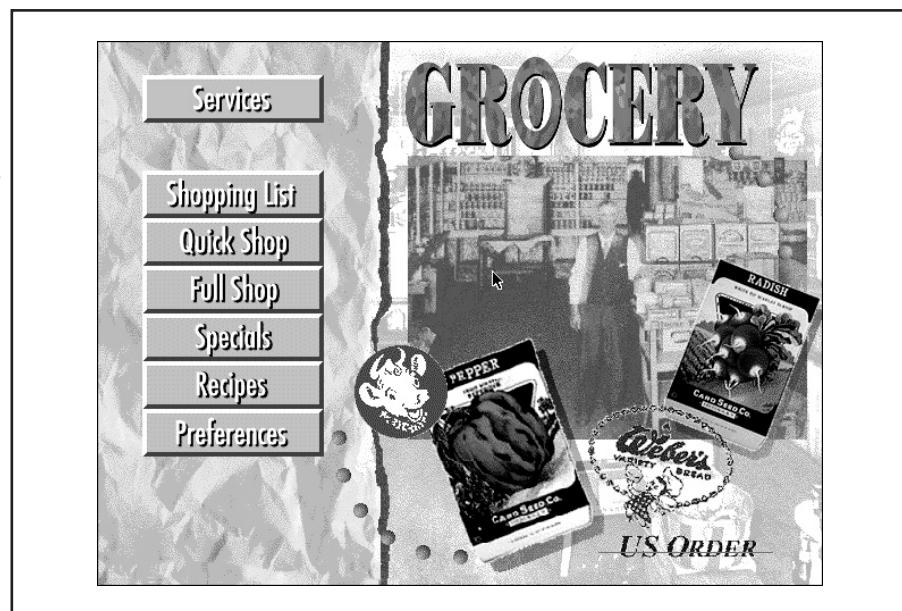
In hotels, train stations, shopping malls, museums, and grocery stores, multimedia will become available at stand-alone terminals or kiosks to provide information and help. Such installations reduce demand on traditional information booths and personnel, add value, and they can work round the clock, even in the middle of the night, when live help is off duty.

Figure 1-6 shows a menu screen from a supermarket kiosk that provides services ranging from meal planning to coupons. Hotel kiosks list nearby restaurants, maps of the city, airline schedules, and provide guest services such as automated checkout. Printers are often attached so users can walk away with a printed copy of the information. Museum kiosks are not only used to guide patrons through the exhibits, but when installed at each exhibit, provide great added depth, allowing visitors to browse through richly detailed information specific to that display.

The power of multimedia has been part of the human experience for many thousands of years: the mystical chants of monks, cantors, and shamans accompanied by potent visual cues, raised icons, and persuasive text has long been known to produce effective responses in public places. Scriabin, the 19th-century Russian composer, used an orchestra, a piano, a chorus, and a special color organ to synthesize music and color in his Fifth Symphony, *Prometheus*. Probably suffering from synesthesia (a strange condition where a

FIGURE 1-6

Kiosks in public places can make everyday life simpler



sensory stimulus, such as a color, evokes a false response, such as a smell), Scriabin talked of tactile symphonies with burning incense scored into the work. He also claimed that colors can be heard; Table 1-1 lists the colors of his color organ.

Prometheus premiered before a live audience in Moscow in 1911, but the color organ had proved technologically too complicated and was eliminated from the program. Then Scriabin died suddenly of blood poisoning from a boil on his lip, so his ultimate multimedia vision, the Mysterium, remained unwritten. He would have reveled in today's world of MIDI synthesizers (see Chapter 9), rich computer colors, and video digitizers, and, though smell is not yet part of any multimedia standard, he would surely have researched that concept, too. The platforms for multimedia presentation have much improved since Scriabin's time.

Virtual Reality

At the convergence of technology and creative invention in multimedia is virtual reality, or VR. Goggles, helmets, special gloves, and bizarre human interfaces attempt to place you "inside" a lifelike experience. Take a step forward, and the view gets closer, turn your head, and the view rotates.

Frequency (Hz)	Note	Scriabin's Color
256	C	Red
277	C#	Violet
298	D	Yellow
319	D#	Glint of steel
341	E	Pearly white shimmer of moonlight
362	F	Deep red
383	F#	Bright blue
405	G	Rosy orange
426	G#	Purple
447	A	Green
469	A#	Glint of steel
490	B	Pearly blue

TABLE 1-1 Scriabin's Color Organ ■

Reach out and grab an object; your hand moves in front of you. Maybe the object explodes in a 90-decibel crescendo as you wrap your fingers around it. Or it slips out from your grip, falls to the floor, and hurriedly escapes through a mouse hole at the bottom of the wall.

VR requires terrific computing horsepower to be realistic. In VR, your cyberspace is made up of many thousands of geometric objects plotted in three-dimensional space: the more objects and the more points that describe the objects, the higher the resolution and the more realistic your view. As you move about, each motion or action requires the computer to recalculate the position, angle, size, and shape of *all* the objects that make up your view, and many thousands of computations must occur as fast as 30 times per second to seem smooth.

On the World Wide Web, standards for transmitting virtual reality worlds or “scenes” in VRML (Virtual Reality Modeling Language) documents (with the file name extension .wrl) have been developed. Intel and software makers such as Macromedia and Adobe have announced support for new 3-D technologies. See Chapter 14 for more about 3-D on the Internet.

Using high-speed dedicated computers, multi-million-dollar flight simulators built by Singer, RediFusion, and others have led the way in commercial application of VR. Pilots of F-16s, Boeing 777s, and Rockwell space shuttles have made many dry runs before doing the real thing. At the California Maritime Academy and other merchant marine officer training schools, computer-controlled simulators teach the intricate loading and unloading of oil tankers and container ships.

Specialized public game arcades have been built recently to offer VR combat and flying experiences for a price. From Virtual World Entertainment in Walnut Creek, California, and Chicago, for example, BattleTech is a ten-minute interactive video encounter with hostile robots. You compete against others, perhaps your friends, who share couches in the same Containment Bay. The computer keeps score in a fast and sweaty firefight. Similar “attractions” will bring VR to the public, particularly a youthful public, with increasing presence.

BattleTech is pretty cool. I've played the one in Chicago. The key to winning is getting a unit where the controls work smoothly, otherwise you wind up running in circles until someone puts you out of your misery.

Rich Santalesa, Editor, *NetGuide Magazine*

The technology and methods for working with three-dimensional images and for animating them are discussed in Chapters 10 and 11. VR is an extension

of multimedia—it uses the basic multimedia elements of imagery, sound, and animation. Because it requires instrumented feedback from a wired-up person, VR is perhaps interactive multimedia at its fullest extension.

People who work in VR do not see themselves as part of “multimedia.” VR deals with goggles and gloves and is still a research field where no authoring products are available, and you need a hell of a computer to develop the real-time 3-D graphics. Although there is a middle ground covered by such things as QuicktimeVR and VRML that gives multimedia developers a “window” into VR, people often confuse multimedia and VR and want to create futuristic environments using multimedia authoring tools not designed for that purpose.

Takis Metaxis, Assistant Professor of Computer Science, Wellesley College

Chapter 1 Review

■ Chapter Summary

For your review, here's a summary of the important concepts discussed in this chapter.

Define common multimedia terms such as multimedia, integration, interactive, HTML, and authoring

- Multimedia is any combination of text, graphic art, sound, animation, and video delivered by computer or other electronic means.
- Multimedia production requires creative, technical, organizing, and business ability.

Describe the two primary multimedia delivery media—CD-ROM and DVD versus the World Wide Web—and their primary differences

- Multimedia projects often require a large amount of digital memory; hence they are often stored on CD-ROM or DVDs.
- Multimedia also includes web pages in HTML or DHTML (XML) on the World Wide Web, and can include rich media created by various tools using plug-ins.
- Web sites with rich media require large amounts of bandwidth.

Describe several different environments in which multimedia might be used and several different aspects of multimedia that provide a benefit over other forms of information

- Multimedia is appropriate wherever a human interacts with electronic information.

- Areas in which multimedia presentations are suitable include education, training, marketing, advertising, product demos, databases, catalogs, entertainment, and networked communications.

Qualify various characteristics of multimedia: nonlinear versus linear content

- Multimedia presentations can be nonlinear (interactive) or linear (passive).
- Multimedia can contain structured linking called hypermedia.
- Multimedia developers produce multimedia titles using authoring tools.
- Multimedia projects, when published, are multimedia titles.

Cite the history of multimedia and note important projected changes in the future of multimedia

- The promise of multimedia has spawned numerous mergers, expansions, and other ventures. These include hardware, software, content, and delivery services.
- The future of multimedia will include high-bandwidth access to a wide array of multimedia resources and learning materials.

■ Key Terms

authoring tools (2)

bandwidth (2)

browser (2)

burners (3)

CD-ROM (3)

content (2)

convergence (9)

DHTML (2)

digitally manipulated (1)

distributed resources (3)

DVD (3)

environment (2)

font (1)

graphical user interface (GUI) (2)

HTML (2)

hypermedia (1)

integrated multimedia (2)

interactive multimedia (1)

ITV (7)

linear (2)

multimedia (0)

multimedia developers (1)

multimedia elements (4)

multimedia project (1)

multimedia title (2)

nonlinear (2)

platform (2)

scripting (2)

storyboarding (2)

web site (1)

XML (2)

■ Key Term Quiz

1. _____ is any combination of text, graphic art, sound, animation, and video delivered to you by computer or other electronic means.
2. _____ allows an end user to control what and when the elements are delivered.
3. _____ is a structure of linked elements through which the user can navigate.
4. A _____ multimedia project allows users to sit back and watch it just as they do a movie or the television.
5. _____ tools are software tools designed to manage individual multimedia elements and provide user interaction.
6. The sum of what gets played back and how it is presented to the viewer on a monitor is the _____.
7. The hardware and software that govern the limits of what can happen are the multimedia _____.
8. The information that makes up a multimedia presentation is referred to as _____.
9. CD and DVD _____ are used for reading and making discs.
10. HTML and DHTML web pages or sites are generally viewed using a _____.

■ Multiple Choice Quiz

1. LAN stands for:
 - a. logical access node
 - b. link/asset navigator
 - c. local area network
 - d. list authoring number
 - e. low-angle noise
2. A browser is used to view:
 - a. program code
 - b. storyboards
 - c. fonts
 - d. Web-based pages and documents
 - e. videodiscs
3. The “ROM” in “CD-ROM” stands for:
 - a. random-order memory
 - b. real-object memory
 - c. read-only memory
 - d. raster-output memory
 - e. red-orange memory
4. The software vehicle, the messages, and the content presented on a computer or television screen together make up:
 - a. a multimedia project
 - b. a CD-ROM
 - c. a web site
 - d. a multimedia title
 - e. an authoring tool
5. A project that is shipped or sold to consumers or end users, typically in a box or sleeve or on the Internet, with or without instructions, is:
 - a. a CD-ROM
 - b. an authoring tool
 - c. a multimedia project
 - d. a multimedia title
6. The 19th-century Russian composer who used an orchestra, a piano, a chorus, and a special color organ to synthesize music and color in his Fifth Symphony, *Prometheus* was:
 - a. Rachmaninoff
 - b. Tchaikovsky
 - c. Scriabin
 - d. Rimsky-Korsakoff
 - e. Shostakovitch
7. Which one of the following is *not/are not* typically part of a multimedia specification?
 - a. text
 - b. odors
 - c. sound
 - d. video
 - e. pictures
8. VR stands for:
 - a. virtual reality
 - b. visual response

- c. video raster
 - d. variable rate
 - e. valid registry
- 9.** According to one source, in interactive multimedia presentations where you are really involved, the retention rate is as high as:
- a. 20 percent
 - b. 40 percent
 - c. 80 percent
 - d. 60 percent
 - e. 100 percent
- 10.** Which of the following is displayable on a web page after installation of a browser plug-in?
- a. Windows 98
 - b. Adobe Flash
 - c. Mozilla
 - d. Internet Explorer
 - e. Netscape Navigator
- 11.** PDA stands for:
- a. primary digital asset
 - b. processor digital application
 - c. personal digital assistant
 - d. practical digital accessory
 - e. portable digital armor
- 12.** The glass fiber cables that make up much of the physical backbone of the data highway are, in many cases, owned by:
- a. local governments
 - b. Howard Johnson
- c. television networks
 - d. railroads and pipeline companies
 - e. book publishers
- 13.** DVD stands for:
- a. Digital Versatile Disc
 - b. Digital Video Disc
 - c. Duplicated Virtual Disc
 - d. Density-Variable Disc
 - e. Double-View Disc
- 14.** At one time, the technology that brought the greatest amount of multimedia to the classroom was the:
- a. beta videotape
 - b. DVD
 - c. SmartMedia card
 - d. broadband connection
 - e. laserdisc
- 15.** Which of the following is *not* a technology likely to prevail as a delivery means for interactive multimedia files?
- a. copper wire
 - b. glass fiber
 - c. radio/cellular
 - d. floppy disk
 - e. CD-ROM

■ Essay Quiz

1. Briefly discuss the history and future of multimedia. How might multimedia be used to improve the lives of its users? How might it influence users in negative ways? What might be its shortcomings?
2. You are a marketing director for a small telecommunications company. You are considering using multimedia to market your company's product. Put together an outline detailing the benefits and drawbacks of using a CD-ROM presentation, a multimedia web site, or a television advertisement.
3. Multimedia is shifting from being localized (contained on a CD-ROM) to being distributed (available on the Word Wide Web). What are some of the implications of this? Who will have access to the presentation? How will you keep it secure? How will you distribute it?

Lab Projects

Project 1.1

You have been given the task of creating an interactive Web presentation for marketing a new bicycle. Visit four different bicycle web sites using a suitable search tool. For each web site you visit, write in the table below the name of the site, its URL, and:

1. Describe each site in terms of its multimedia incorporation.
2. Discuss whether its multimedia content is appropriate and where and how additional media content might improve the site.
3. Describe what multimedia presentation formats it uses. Video? Virtual reality (or QuickTime VR)? 3-D animations?

Site 1		Site 3	
URL (address):		URL (address):	
Describe the GUI. What navigational elements does it have? What colors does it use? Is it cluttered?		Describe the GUI. What navigational elements does it have? What colors does it use? Is it cluttered?	
Describe any multimedia presentations of specific products. What formats did they use?		Describe any multimedia presentations of specific products. What formats did they use?	
Site 2		Site 4	
URL (address):		URL (address):	
Describe the GUI. What navigational elements does it have? What colors does it use? Is it cluttered?		Describe the GUI. What navigational elements does it have? What colors does it use? Is it cluttered?	
Describe any multimedia presentations of specific products. What formats did they use?		Describe any multimedia presentations of specific products. What formats did they use?	

Project 1.2

Review an educational multimedia CD-ROM title, and then fill out the table below.

Title of CD	
Describe the GUI. What navigational elements does it have? What color scheme(s) does it use? Is it cluttered?	
Describe the educational content. Is it well organized? Would you be able to easily learn the subject matter using this package?	
Describe the product in terms of its multimedia incorporation.	
Discuss whether its multimedia content is appropriate and where and how additional media content might improve the site.	

■ Project 1.3

Contact a local multimedia development company. Ask them what kinds of products they develop and whether they would describe two projects they have recently completed. Be sure that they provide you with enough information to answer each of the following questions.

Multimedia Project 1

1. Name of project.
2. Kind of product created.
3. What authoring tool(s) were used to create the project?
4. Who made up the development team for the project?
5. How did the production of the project develop?
6. How long did the project take to complete?
7. What problems were encountered?

Multimedia Project 2

1. Name of project.
2. Kind of product created.
3. What authoring tool(s) were used to create the project?
4. Who made up the development team for the project?
5. How did the production of the project develop?
6. How long did the project take to complete?
7. What problems were encountered?

■ Project 1.4

Visit a large public area such as a shopping mall, the downtown area of a city, or a museum. Locate a kiosk or other public multimedia installation. Spend 15 minutes observing who uses it and for how long.

1. Describe the installation. Where was it located? Is there a lot of foot traffic going past it? Is it conveniently located? Is it accessible to a wide range of users (tall, short, disabled, wheelchair, or vision impaired)?
2. Describe the usage pattern. Characterize the users. Were children attracted to it? Did users “play” with it?