



unit

Image Management

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- 1** History
- 2** Image File Types
- 3** Image Editing
- 4** Image Effects

Career Profile

Graphic Design

Gina woke up excited and exhilarated this morning. Today is shaping up to be another interesting day in the life of her business, XYZ Graftix Unlimited, which is based in New Port Richey, Florida. Why is this day so special? To find out, let's go back a bit in the life of Gina and her career.

Gina grew up in Florida. She knew right from high school that her skills were special and that her career would involve graphics, art, and sometimes photography. At that point in her life, she was not sure just how all of those talents would come together. In the beginning she created and designed business cards and brochures, as well as pen-and-ink sketches for business people and her community newspaper. Mind you, these images were created long before the computer came into her life; therefore, all the illustrations were done by hand. So, one could say the artistic bug had bitten her big time.

Gina then attended a technical school and earned a bachelor's degree in technical illustration. GTE of Florida discovered her talents and hired her as part of its team

of drafters, where she created drawings of electrical designs associated with the phone company. During her employment, her bosses soon discovered her artistic talent and began using her abilities to create various designs of new buildings, brochures, lecture images, and even logos used within the corporation. Thus, Gina's gradual turn toward the more advanced stages of illustration began. It was at a company-sponsored computer class that the computer was introduced into her life and her talents blossomed.

Twenty-seven years later, Gina retired from GTE and has since started her own home-based business. She specializes in digital graphics, illustrations for book covers, storybook images, fantasy and artwork for the gaming industry, and the like. She uses programs such as CorelDraw®, CorelPaint®, Adobe® Photoshop® (for adapting photographs, blending several images into one, or creating a new style of hair, skin, or clothes), Bryce™ (for real world imaging, such as land, sky, water, etc.), Poser (for creating people and various creatures), Painter™ (for adding that special highlighted touch), and the Mystical™ software programs for extra special lighting. Recently she began studying ways to create her own three-dimensional objects (like a camera, a glass of water, a pen, furniture,

automobiles, or even a new terrain to use within Bryce). Each and every image created is unique unto itself; special effects give a final touch that says WOW!

So why is today a special day for Gina? Actually, every day is special, because each new project gives her the opportunity to create images or illustrations for yet another customer. When a customer comes to her with an idea, she uses her creativity to turn that idea into reality for them. It is an exciting and exhilarating time for her. The computer is on bright and early in the day, whizzing, clicking, and humming away as the graphics come alive. You, too, can be like Gina. After you have completed this course in multimedia, you will have the fundamental concepts needed to begin a career in the multimedia industry.

Gina's career falls into the Career Cluster for Arts, A/V Technology, and Communications.

PHOTO: © MARK BARRETT/STOCK CONNECTION/JUPITER IMAGES (RM)



Graphic Design



Note: Gina Zornow is a real person and XYZ Grafix Unlimited, based in New Port Richey, Florida, is a real company.

Objectives

- You will understand how image management has evolved.
- You will identify the changes in production techniques for image management.
- You will learn the terms related to the history of image management.

Key Terms

Broadband

Desktop Publishing

DLP

Dot Matrix

Graphics

Image Management

Modem

Multimedia

OCR

PostScript

Web Browser

Introduction

Congratulations! As a student of multimedia you are at the forefront of an exciting field of study. The future offers you opportunities that are unimaginable today. Multimedia and image management are fields that emerged as a direct result of the growth of computer use in the business world. These powerful technological tools provide businesses with a means to communicate in ways they could never have done in an earlier age.

Before beginning the study of this new area, it is important for you to understand three basic concepts. The terms multimedia, image management, and graphics will be used frequently throughout this book. Understanding them will be important for you as you explore the concepts about which you will be reading.

Multimedia is a broad term that applies to the integration of text, graphics, sound, video, and animation into a document such as a letter, brochure, newsletter, Web (World Wide Web [WWW]) page, or presentation. It is not necessary for a document to contain all forms of media in order to be considered multimedia. For example, the use of text and graphics in a flyer is considered multimedia, as is a Web page that contains all five forms. As soon as you add an image to a text page, you have begun to create multimedia.

Image management is a more narrow term that applies to the use of graphics in documents. It encompasses every aspect of graphics from the creation to the final product whether in print or in some other medium. Image management requires you to make decisions such as the size of files, the number and type of colors used, and what format is most appropriate.

Graphics can be defined as everything on a page that is not actual textual content, from simple line drawings to fully active images found on Web pages. Graphics can also include elements such as text's size, shape, and appearance.

Multimedia and image management choices communicate a message, and the success of a business often depends on the effectiveness of this message. Your task in this course is to learn how to select, create, and use these choices in a way that sends the message you want. The place to start learning is at the beginning. During the last 25 years, multimedia has changed dramatically, moving from static print to interactive media. Let's look at two scenes, yesterday and today, to illustrate these changes.

Multimedia is the combination of text with graphics, sound, video, or animation.

Image management is a broad term that covers all aspects of the use of graphics in a document.

Graphics is a term that covers everything on a page that is not text.

THOMSON *Image Management Changes*

Yesterday

In 1980, this was the scene: You are the owner of a small business selling hand-made wreaths at Christmas. You want to expand from a seasonal to a year-round business, so you design a flyer to mail to your current customers. To create your flyer, you must draw your ideas crudely on paper and take it to a printer who will create your ad. The first draft requires two weeks to complete. You must return several times to check for accuracy and approve the artwork. Each change requires another week to complete. When the product is ready, the cost is several thousand dollars. If you decide to do a second version, the time and cost are nearly as much as the original. You want to expand your Christmas trade to other parts of the country, but it is cost prohibitive. Your only choices are direct mailings and newspaper, radio, or television ads in each market area. None of these are possible for your small business.

Today

Imagine today: You create a flyer on a personal computer in an hour by using actual photographs of your new wreaths as artwork. You print your proof copy in color and make any necessary changes in seconds. You create two versions. One is for current customers and one is for future customers you hope to attract. You take your digital version to a local copy shop or printer to print your flyer. This information appears the same day on your Web page for instant access around the world. In addition, you use the information to create a PowerPoint™ presentation for use by the Chamber of Commerce. The cost for all three types of documents is minimal and your sales begin to increase immediately.

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Desktop Publishing

Desktop publishing is the process of adding both text and graphics to a page to enhance the message.

This story of change began even before the introduction of the personal computer. It began with the IBM Selectric™ (1961) and its “golf ball” print head (see Figures 1.1 and 1.2) that allowed users for the first time to change with ease the type style of their text, thus launching the era of **desktop publishing**. Before the Selectric, typewriters were of two types: elite (12 characters per inch) and pica (10 characters per inch). Whatever style your typewriter came with was the style in which you created text. Adding graphics to a document required gluing the image onto an already typed page.

Macintosh

With the arrival of the Apple® Macintosh® computer and the ImageWriter® printer in 1984 (see Figures 1.3 and 1.4), suddenly it was possible to choose not only font styles but also sizes and attributes. Graphics could be added digitally to a document. Printing in landscape or portrait became an easy option. With MacPaint and MacDraw (also introduced in 1984), artwork could be created and modified with ease. An early scanner that replaced the ribbon in the ImageWriter even made it possible to transfer an image directly to the computer (see Figure 1.5).

PageMaker

The next step in image management came with the introduction of Aldus PageMaker® (1985), (see Figure 1.6) which made possible desktop publishing as we know it today. This software made it simple to move text and graphics around on a page and to create columns with justified text.



PHOTO: © SSPL/THE IMAGE WORKS

Figure 1.1
The IBM Selectric typewriter introduced the era of desktop publishing.



PHOTO: © 2008 SUSAN LAKE

Figure 1.2
The design of the Selectric golf ball element provided options in font sizes and styles.



PHOTO: © 2008 SUSAN LAKE

Figure 1.3
The introduction of the Macintosh computer and its graphical user interface and graphical software opened the way to a whole new world of image management.



PHOTO: © 2008 SUSAN LAKE

Figure 1.4
The Apple ImageWriter made it possible to print more than just text.



PHOTO: © 2008 SUSAN LAKE

Figure 1.5
Thunderscan™ developed an early scanner that replaced the printer ribbon in an ImageWriter.



PHOTO: © 2008 SUSAN LAKE

Figure 1.6
Aldus PageMaker was the first desktop publishing program available for use on a computer.

Graphics

Early graphics software applications such as MacPaint and MacDraw were quickly replaced with products such as CorelDRAW® (1989) and Adobe® Photoshop® (1990). These newer software programs increased the user's ability to fine-tune artwork and to create renderings that had never been possible in the world of paint and pen.

Printing

Dot Matrix

The first printers attached to personal computers were **dot matrix** printers, also called impact printers. The impact of the print head on the ink ribbon created a series of dots that formed letters, as shown in Figure 1.7. These printers were slow and noisy, and the quality of the printout was often not professional enough for use by businesses.

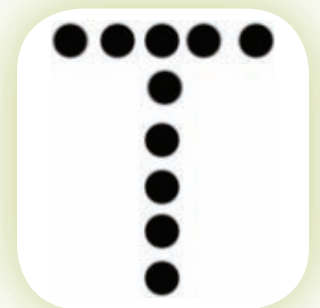


Figure 1.7
Dot matrix printers use a series of dots to reproduce letters and images on a page.

Dot matrix is a means of printing by placing a series of dots closely together that they give the appearance of printed letters.

PostScript is a programming language that describes the appearance of images on the printed page.

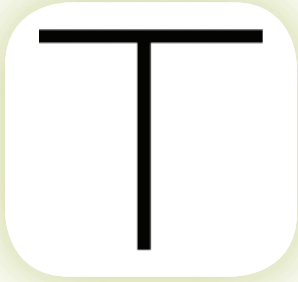


Figure 1.8
Laser printing uses toner, much as a photocopier does, to produce copies.

OCR (optical character recognition) is the process of converting a scanned representation of text into editable, live text on the computer.

LaserWriter

With the introduction of the Apple LaserWriter® printer (1985) and Adobe PostScript®, desktop publishing became a reality. **PostScript** removed the “jaggies” seen in dot matrix printouts. Now a professional-looking document could be printed on the LaserWriter quickly, quietly, and in business quality. Figure 1.8 shows the quality of a laser printout.

Although laser printers provided excellent black-and-white printouts, they lacked the ability to print in color. The movement to color ink-jet printers such as the Hewlett-Packard DeskJet (1991) made color printouts affordable and attractive. With color laser printers becoming less expensive, more businesses are producing their documents in color.

Input Devices

Scanners

Another step in image management was the introduction of affordable flatbed scanners, such as the Hewlett-Packard ScanJet (1991). Scanners, like the modern one shown in Figure 1.9, helped bring these advancements within reach of businesses. As **OCR** (optical character recognition) improved, it became possible with the use of a scanner to transfer previously typed text to a computer with enough accuracy to eliminate the need to rekey text.

Voice Recognition

With the development of voice recognition software, even initially keying text into a document became unnecessary. The introduction of programs such as Dragon NaturallySpeaking® (1997) made it possible to speak into a microphone (such as those shown in Figures 1.10 and 1.11) and have those

Impact of Technology

Graphic development has not been limited to the personal computer user. The development of digital imaging software and technology was begun primarily by the U.S. Department of Defense in the use of spy satellites. In the world of moviemaking, companies such as Industrial Light and Magic have taken graphic technology to even higher standards, using it to create astonishingly vivid images and special effects. Photoshop itself came about partly because of the movie *Star Wars*.



PHOTO: © 2008 SUSAN LAKE

Figure 1.9
Scanners transfer printed images into digital images by using light technology.



PHOTO: © 2008 SUSAN LAKE

Figure 1.10
Small microphones such as these can be used to transfer voice to a computer.



PHOTO: © 2008 SUSAN LAKE

Figure 1.11
Headphones such as these are used more frequently than microphones for voice recognition purposes.



PHOTO: © 2008 SUSAN LAKE

Figure 1.12
Drawing tablets such as this Wacom can be used instead of a mouse to draw images.

words transferred directly to the computer. While early voice recognition software could only promise limited accuracy, each new version increased the level of accuracy and vocabulary recognition. Today documents are created with great accuracy.

Drawing Tablets

Creating a sketch in a program such as Photoshop is difficult when using a mouse. The development of tools such as a drawing tablet made it possible to use a computer as you would a pen or pencil, creating the image you wanted without the barriers of a mouse or other scrolling device. Drawing tablets such as the Wacom® tablet (introduced in Japan in 1983) provide a flat surface and a stylus to actually draw an image (see Figure 1.12). Tablet

Career Advancement

Students are often so focused on getting that first real job that they forget to think clearly about their future employment. What kind of job do you want in five years? Ten years? Successful workers rarely stay in the same job their entire careers. It is therefore important to have a career goal in mind and constantly move toward it. Take classes and seek employment that will help you gain the skills you will need in the future. Jobs can be like stepping stones. Each one leads to the final prize. The skills you learn in entry-level jobs can serve as a foundation as you advance your career. The more you know about (and appreciate) the less glamorous jobs, the better able you will be to function in higher level positions. For example, an effective art director must schedule tasks so that all the work can be done in a timely manner. If that director has first-hand experience scanning photos or preparing a design layout, he or she will be better able to prepare more accurate schedules.

Digging Deeper: Use the library or the Internet to trace a career path to your ultimate job goal. Which jobs and tasks will you need to master as you advance in your career? (For example, graphic designers often begin their careers as production artists.) Create a chart or graph that illustrates this career path.

PCs with drawing capabilities have also been introduced, but they are designed more for handwriting recognition than image development.™

Cameras

Digital cameras such as the Sony Mavica® (1997), shown in Figure 1.13, moved graphic choices from clip art to actual photographs. Early digital cameras were expensive and limited in resolution, but newer digital cameras are quickly reaching the point of providing the equivalent of 35-mm quality. Video camera improvements have been just as dramatic, and with the increase in Internet speeds, videos are now appearing more frequently on Web pages.

Storage

A major barrier to desktop publishing was limited computer storage space and the need to transfer large files to other computers. Digital documents containing images produced files that were much larger in size than those containing only text. Hard drives were expensive and small. However, hard drives have rapidly increased in storage capacity and decreased in price, thus solving the first problem.

Zip Drive

Text files fit easily on a floppy disk (see Figure 1.14), but files with graphics and extensive formatting soon became too large to transfer via floppies. The Iomega® Zip® drive (1995) provided one answer (see Figure 1.15). In addition, writable CD-ROM drives (as well as writable DVD drives) have offered another option.



PHOTO: © 2008 SUSAN LAKE

Figure 1.13

Digital cameras opened the world of photography, making it possible to import images directly into an electronic document without having to begin with a printed copy.



PHOTO: © 2008 SUSAN LAKE

Figure 1.14

While a floppy disk (in orange) and a Zip disk are similar in size, the Zip disk can store nearly 100 times more information.



PHOTO: © 2008 SUSAN LAKE

Figure 1.15

The Iomega Zip drive provided a medium to transfer large files from one computer to another.



PHOTO: © 2008 SUSAN LAKE

Figure 1.16

Flash drives are small enough to hang around your neck but can store large amounts of information.

Thumb Drives

More recently flash drives, sometimes called thumb drives (see Figure 1.16), have made the physical transfer problem even less of an issue. These drives are becoming quite inexpensive and provide significant storage in a small, portable device.

The need to physically transfer files, however, has nearly disappeared with the use of the Internet and the ability to send documents via email or other means.

Web Pages

Browsers

The Internet was originally created as a means of communicating in times of national crisis. Its designers did not intend for it to become a business tool. Early users had to key in complicated lines of text in order to send and

A **Web browser** is a software program that allows you to visit Web pages created for the Internet.

receive simple text messages. **Web browsers** such as the NCSA (National Center for Supercomputing Applications) Mosaic™ (1992) and Netscape® Navigator® (1994) made it easy for anyone to view the Internet. This development created a global market.

Creating the Web equivalent of desktop publishing initially required a designer to write code in HTML (Hypertext Markup Language). The introduction of software programs such as Netscape Communicator® made it possible to manage text, graphics, and sound with ease. Other programs such as Microsoft FrontPage® (1996) and Macromedia Dreamweaver (1997) added even more possibilities. In addition, programs such as Macromedia Flash (1996) provided the ability to animate static pages.

Modem

A **modem** is a means of using a telephone to connect one computer to another.

Originally a computer required a **modem** (similar to the one pictured in Figure 1.17) to allow one computer to communicate with another. Using a modem, a computer would dial a telephone number to connect to a server that provided Internet access. This access was slow and did not allow the Web user to view multimedia with ease. One of the earliest modems was a Hayes™ Modem introduced in 1981, which communicated at 300 bps (bits per second). As users moved to **broadband**, the advertising and information potential moved with it. It was then possible to design multimedia pages that were not limited by dial-up speeds.

Broadband is a high-speed means of transmitting information using a cable modem or DSL.

Wireless

Even with fast broadband connections, it was still necessary for a computer to be tethered to a network using an Ethernet cable such as the one shown in Figure 1.18. With the development of wireless networks that connect computers through network cards, such as the one in Figure 1.19, laptop computers can now bring the Internet to users wherever they are. The emergence of other types of wireless communication, such as cell phones and other portable devices that can connect to email and the Internet, now means that businesses have the ability to be in constant contact with their customers, offering services and products whenever they want.



PHOTO: © 2008 SUSAN LAKE

Figure 1.17
A modem allows one computer to talk with another, creating a network.



PHOTO: © 2008 SUSAN LAKE

Figure 1.18
Cables similar to this one connect or tether a computer to the network.

Ethics of Copyright

With the movement to desktop publishing and Web pages, the issue of copyright violations has become a greater problem for businesses. Images created by others are easily obtainable for use on documents of every type. In the past, the use of these graphics was limited to “cut-outs” from other sources, but that is no longer the case. Fine-quality work can be integrated easily, making copyright violations more frequent. It is important for businesses today to be aware of these issues and to guard against such infringements on the rights of others.

Presentations

Running parallel to the growth of Web pages and the Internet has been the development of presentation software. Programs such as Microsoft PowerPoint (1987) make it possible to create business documents that provide information in a colorful, interactive, and dramatic format. With the drop in price for projectors, such as the one shown in Figure 1.20, and the improvements in light technology, such as **DLP** (digital light processing), presentation software continues to grow as an affordable means of conveying information using images and multimedia.

The timeline on the next page gives you an overview of image management events and changes as they occurred in the last century. Other events will continue to affect the world of image management. The chapters that follow provide you with the skills you will need to be an important part of the process.

DLP is a means of projection developed by Texas Instruments that uses a series of tiny mirrors to reflect an image on a screen.



PHOTO: © 2008 SUSAN LAKE

Figure 1.19

Wireless cards make it possible to connect to a network without a tether.



PHOTO: © 2008 SUSAN LAKE

Figure 1.20

A good-quality projector is an essential part of the presentation process.

Timeline

- 1961** IBM Selectric typewriter and interchangeable typeface
- 1981** Hayes 300 bps modem
- 1982** Wacom Tablet
- 1984** Apple Macintosh computer and ImageWriter printer
- 1984** Apple MacPaint and MacDraw
- 1985** Aldus PageMaker
- 1985** Apple LaserWriter printer and Adobe PostScript
- 1987** Microsoft PowerPoint
- 1989** CorelDRAW
- 1990** Adobe Photoshop
- 1991** Hewlett-Packard color DeskJet printer
- 1991** Hewlett-Packard ScanJet scanner
- 1991** World Wide Web
- 1992** NCSA Mosaic
- 1994** Netscape Communicator
- 1995** Iomega Zip drive
- 1996** Microsoft FrontPage
- 1996** Macromedia Flash
- 1997** Macromedia Dreamweaver
- 1997** Sony Mavica digital camera
- 1997** Dragon NaturallySpeaking

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SUMMARY

In this chapter, you learned about the evolution of image management, including the areas of desktop publishing, printing, graphics, hardware advancements, Web pages, and presentations. You also learned a variety of terms that were explained such as graphics, dot matrix, PostScript, OCR, modem, and DLP. With this knowledge, you are ready to learn about images themselves.

REVIEW

Answer the following questions on your own computer.

1. What are graphics?
2. What is image management?
3. In 1980, what problems did small businesses face in the creation of ads?
4. What invention allowed the user for the first time to change the typestyle of text?
5. How were graphics added to a document before the introduction of the personal computer?
6. In what year did it become possible to add graphics digitally to a document, and what computer made it happen?
7. What were the two earliest graphics programs?
8. What program first made it simple to move text and graphics around on a page?
9. What printer and software removed jagged edges and created professional-looking documents?
10. What company introduced an early color printer?
11. What two programs offered advanced graphics options that allowed the fine-tuning of artwork?
12. What does OCR let the user do, and why is it useful?
13. What problems did desktop publishing documents create for computer users?
14. Give an example of an early digital camera.
15. Name two early Web browsers and explain how they affected businesses.

DISCUSS

1. Discuss the process that made advertising costs prohibitive at one time.
2. What was the impact of scanners on document editing and storage?
3. How have modems affected business today?

APPLY



1. Select one event from the timeline (make sure each event is selected by someone in the class). Research the event and then list details not included in the text. Include appropriate images to support the details. Present each event to the class in the order in which it occurred. Create a visual timeline in your class by using the materials your class has prepared.
2. Visit www.copyright.gov to find information on the Digital Millennium Copyright Act. List the details that are important for image management and multimedia. As a class, compile the details and add this event to the class timeline project.

EXPLORE



Writing history is a complicated process that requires one to make a series of decisions based upon a criteria established by the author. The criteria may not be apparent to the reader of the history and that same reader may not be aware that many events will be deleted from the history because they failed to meet the requirements established by the author.

1. Imagine that you are author of this chapter on the evolution of multimedia and image management. What criteria would you establish in your choice of events to include?
2. Using one or more of the sites provided by your instructor or ones you locate yourself, decide which events you would include if you were writing this chapter. Use your criteria to make the selections.
3. Use your choices to create your own timeline.



For additional resources, see www.thomsonedu.com/school/multimedia.