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SHELLY CASHMAN SERIES®

Web Design

Introductory Concepts and Techniques

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INTRODUCTORY

Web Design

Introductory Concepts and Techniques

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Preface

In the Shelly Cashman Series® *Web Design: Introductory Concepts and Techniques* book, you will find an educationally sound and easy-to-follow pedagogy that artfully combines screen shots, pictures, drawings, and text with full color to produce a visually appealing and easy-to-understand presentation of Web design. This textbook conveys useful design concepts and techniques typically not addressed in Web authoring textbooks. It explains the connection between a detailed design plan, one that considers audience needs, Web site purpose, and various technical issues, and a successful Web site.

The book's seven chapters emphasize key written concepts and principles with numerous Web Design Tips boxed throughout the text. It also contains a variety of challenging written and hands-on activities at the conclusion of each chapter that test comprehension, build Web research skills and design awareness, and encourage critical thinking about current issues in Web design.

OBJECTIVES OF THIS TEXTBOOK

Web Design: Introductory Concepts and Techniques is intended for a one-unit introductory Web design course or in a course that teaches Web design techniques in a Web authoring course that also covers HTML or Microsoft FrontPage. The objectives of this book are to:

- Present a practical approach to Web design using a blend of traditional development with current technologies
- Define and describe in detail the six steps in developing a solid Web design plan: define the purpose, identify the audience, plan the content, plan the structure, plan the Web pages, and plan the navigation
- Present the material in a full-color, visually appealing and exciting, easy-to-read manner with a format that invites students to learn
- Provide students with a summary of Web Design Tips to which they can refer quickly and easily
- Give students an in-depth understanding of Web design concepts and techniques that are essential to planning, creating, testing, publishing, and maintaining Web sites
- Make use of the World Wide Web as a repository of the latest information in an ever-changing discipline
- Provide an ongoing case study and assignments that promote student participation in learning about Web design

DISTINGUISHING FEATURES

The distinguishing features of *Web Design: Introductory Concepts and Techniques* include the following:

A Blend of Traditional Development with Current Technologies

This book does not present a superfluous, theoretical view of Web design. Every effort has been made to use procedures, tools, and solutions that parallel those used by Web designers in today's business world.

Numerous realistic examples support all definitions, concepts, and techniques. The examples and case study are drawn from actual Web-related projects. Real-world examples such as these enable students to learn in the context of solving realistic problems, much like the ones they will encounter in industry. In this textbook, students learn what works and what they need to know on the job. In addition, numerous Web Design Tips are provided for many topics.

Visually Appealing

The design of this textbook purposely combines screen shots, pictures, drawings, and text into a full-color, visually appealing, and easy-to-read book. The many figures throughout the book clarify the narrative and reinforce important points. The pictures and drawings reflect the latest trends in Web design.

Introductory Presentation of Web Design

No previous Web design experience is assumed, and no prior programming experience is required. This book is written specifically for students with average ability, for whom continuity, simplicity, and practicality are characteristics we consider essential. Numerous insights based on the authors' many years of experience in teaching, consulting, and writing, are implicit throughout the book.

Web Design Tips

More than 100 Web Design Tips are boxed throughout the book. The function of the Web Design Tips is to emphasize important Web design concepts of which students should be aware as they design a Web site.

Web Info Feature

The Web Info boxes in the margins throughout the book encourage students to research further using the World Wide Web. The purpose of the Web Info annotations is to (1) offer students additional information on a topic of importance, (2) provide currency, and (3) underscore the importance of the World Wide Web as a basic information tool that can be used in course work, for a wide range of professional purposes, and for personal use.

ORGANIZATION OF THIS TEXTBOOK

Web Design: Introductory Concepts and Techniques provides basic instruction on how to design Web sites. The material is comprised of four sections: Section 1: Before You Begin; Section 2: Planning Your Web Site; Section 3 Creating Your Web Site; and Section 4: Publishing Your Web Site. The four sections include seven chapters and conclude with an appendix.

Chapter 1 – Web Design Basics In Chapter 1, students are introduced to the Internet, World Wide Web, Web sites, and Web pages. Topics include home pages; splash pages; Internet service providers; Web design browser-related issues; types of Web sites; methods for doing Web design research; tools for creating Web pages and Web sites; and Web design roles.

Chapter 2 – An Overview of Web Publishing In Chapter 2, students are introduced to the advantages of Web publishing, basic design principles, and writing techniques for the Web. Topics include timeliness; interactivity; reduced production costs; economical, rapid distribution; balance and proximity; contrast and focus; unity; and accurate, comprehensive, and concise writing.

Chapter 3 – Developing a Design Plan for a Web Site: Part 1 In Chapter 3, students are introduced to the initial four steps of the six steps for developing a solid design plan for a Web site: (1) define the purpose, (2) identify the audience, (3) plan the content, and (4) plan the structure. Topics include identifying a specific topic for a Web site; defining audience goals and needs; choosing content; and outlining a Web site.

Chapter 4 – Developing a Design Plan for a Web Site: Part 2 In Chapter 4, students are introduced to the remaining two steps for developing a design plan for a Web site: (5) plan the Web pages and (6) plan the navigation. Topics include organizing information; establishing a visual connection; layout and navigation elements; and navigation guidelines.

Chapter 5 – Typography and Graphics on the Web In Chapter 5, students are introduced to typography and graphics for the Web environment. Topics include typography principles, guidelines, and tips; Web graphics file formats and sources; and methods to optimize graphics for Web display.

Chapter 6 – Multimedia and Interactivity on the Web In Chapter 6, students are introduced to the basics of Web multimedia and interactivity and methods to add these elements to Web pages. Topics include guidelines and sources for utilizing multimedia; slide shows; animation; downloadable and streaming audio and video; and online forms and other interactive page elements.

Chapter 7 – Testing, Publishing, Marketing, and Maintaining a Web Site In Chapter 7, students are introduced to basic guidelines and methods to test, publish, market, and maintain a Web site successfully. Topics include acquiring server space, obtaining a domain name, and uploading a Web site; the steps to test a Web site; Web-based and traditional marketing and advertising; and the importance of regular maintenance and updating.

Appendix – Web Design Tips The Appendix that follows Chapter 7 lists the Web Design Tips developed throughout the book. It serves as a quick reference and includes the page numbers on which the Web Design Tip is presented in the book.

END-OF-CHAPTER STUDENT ACTIVITIES

A notable strength of the Shelly Cashman Series textbooks is the extensive student activities at the end of each chapter. Well-structured student activities can make the difference between students merely participating in a class and students retaining the information they learn. The activities in this book include the following:

- **Key Terms** This list of key terms found in the chapter together with the page numbers on which the terms are defined will aid students in mastering the chapter material.
- **Checkpoint** Four pencil-and-paper activities are designed to determine students' understanding of the material in the chapter. Included are matching, fill in the blanks, multiple-choice, and short-answer questions.
- **At Issue** Web design is not without its controversial issues. At the end of each chapter, two scenarios are presented that challenge students to examine critically their perspective of Web design and the technology surrounding it.
- **Hands On** To complete their introduction to Web design, these exercises require that students use the World Wide Web to obtain information about the concepts and techniques discussed in the chapter.
- **Section Case Study** The Case Study is an ongoing development process in Web design using the concepts, techniques, and Web Design Tips presented in each section. The Case Study requires students to apply their knowledge starting in Section 1 and continuing through Section 4 as they prepare, plan, create, and then publish their Web site.

SHELLY CASHMAN SERIES TEACHING TOOLS

The two basic ancillaries that accompany this textbook are Teaching Tools (ISBN 0-7895-5966-8) and MyCourse.com. These ancillaries are available to adopters through your Course Technology representative or by calling one of the following telephone numbers: Colleges and Universities, 1-800-648-7450; High Schools, 1-800-824-5179; Private Career Colleges, 1-800-477-3692; Canada, 1-800-268-2222; and Corporations and Government Agencies, 1-800-340-7450.

Teaching Tools

The Teaching Tools for this textbook include both teaching and testing aids. The contents of the Teaching Tools CD-ROM are listed below.

- **Instructor's Manual** The Instructor's Manual is made up of Microsoft Word files. The files include lecture notes, solutions to exercises, and a large test bank. The files allow you to modify the lecture notes or generate quizzes and exams from the test bank using your own word

processing software. The Instructor's Manual includes the following for each chapter: chapter objectives; chapter overview; detailed lesson plans with page number references; teacher notes and activities; answers to the end-of-chapter exercises; a test bank of 110 questions for every chapter (25 multiple-choice, 50 true/false, and 35 fill-in-the-blank) with page number references; and transparency references. The transparencies are available through the Figures in the Book. The test bank questions are the same as in ExamView. Thus, you can print a copy of the chapter test bank and use the printout to select your questions in ExamView or Course Test Manager.

- **Figures in the Book** Illustrations for every screen and table in the textbook are available in electronic form. Use this ancillary to present a slide show in lecture or to print transparencies for use in lecture with an overhead projector. If you have a personal computer and LCD device, this ancillary can be an effective tool for presenting lectures.
- **ExamView** ExamView is a state-of-the-art test builder that is easy to use. ExamView enables you to create quickly printed tests, Internet tests, and computer (LAN-based) tests. You can enter your own test questions or use the test bank that accompanies ExamView. The test bank is the same as the one described in the Instructor's Manual section.
- **Course Syllabus** Any instructor who has been assigned a course at the last minute knows how difficult it is to come up with a course syllabus. For this reason, sample syllabi are included that can be customized easily to a course.
- **Interactive Labs** Eighteen completely updated, hands-on Interactive Labs that take students from ten to fifteen minutes each to step through help solidify and reinforce mouse and keyboard usage and computer concepts. Student assessment is available.

MyCourse.com

MyCourse.com offers instructors and students an opportunity to supplement classroom learning with additional course content. You can use MyCourse.com to expand on traditional learning by accessing and completing readings, tests, and other assignments through the customized, comprehensive Web site. For additional information, visit MyCourse.com and click the Help button.

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Web Design

Introductory Concepts and Techniques

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Web Design Tips A.1

Index I.1

CHAPTER 1

Web Design Basics

OBJECTIVES

After completing this chapter you will be able to:

- Define the Internet and the World Wide Web
- Describe how data moves from one computer to another over the Internet
- Differentiate between a Web page and a Web site
- Describe a home page and a splash page
- Locate and access information on the World Wide Web
- Discuss the public switched telephone network and its effect on Web design
- Describe an Internet service provider
- Identify Web design browser-related issues
- Describe the different Web page viewing devices available
- Identify the different types of Web sites
- Discuss the impact of the Internet and Web
- Differentiate among the different types of Web sites
- Discuss methods for doing Web design research
- Describe the various tools for creating Web pages and Web sites
- Identify Web design roles

INTRODUCTION

Creating Web pages and Web sites that successfully communicate, educate, entertain, or conduct business requires the somewhat mysterious element of design. This book explains design and shows you how to use it as a tool to develop effective Web pages and Web sites for specific purposes and audiences. Chapter 1 begins the process by discussing various features of the Internet and the Web and techniques to navigate this environment productively. In addition to revealing methods for doing Web design research, the chapter discusses the various roles, responsibilities, and necessary skills essential to successful Web design.

WEB INFO

For more information about the Internet, visit the Web Design Chapter 1 Web Info page (scsite.com/web/ch1/webinfo.htm) and then click Internet.

THE INTERNET

The Internet is the most popular and fastest growing area in computing today. Using the Internet, you can do research, get a loan, shop for services and merchandise, job hunt, buy and sell stocks, display weather maps, obtain medical advice, watch movies, listen to high-quality music, and converse with people worldwide.

The **Internet** is a worldwide collection of networks (Figure 1-1), each of which is composed of a collection of smaller networks. A **network** is composed of several computers connected together to share resources and data. For example, on a college campus, the network in the student lab can be connected to the faculty computer network, which is connected to the administration network, and they all can connect to the Internet.

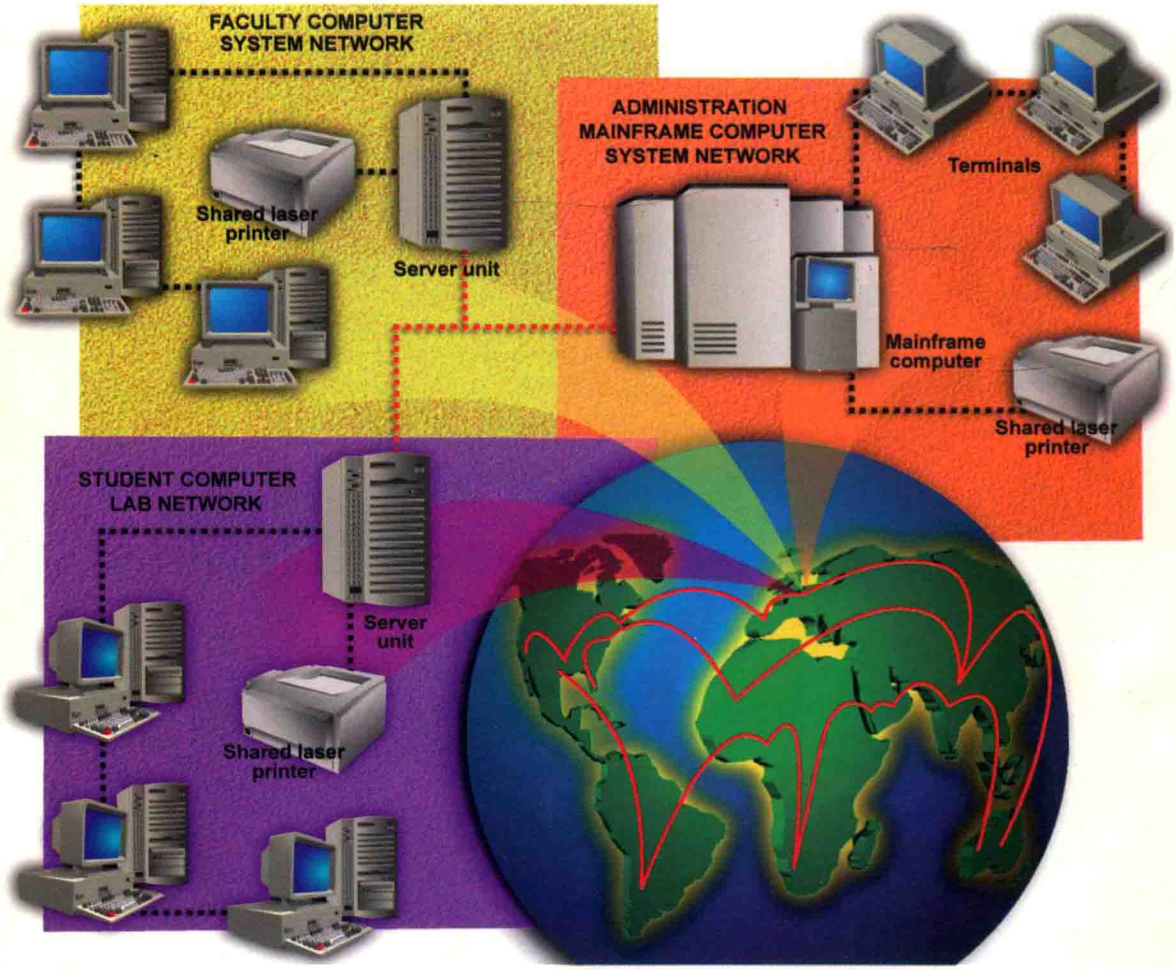

FIGURE 1-1 The Internet is a worldwide collection of networks.

Networks are connected with high-, medium-, and low-speed data lines that allow data to move from one computer to another (Figure 1-2). The Internet has high-speed data lines that connect major computer systems located around the world, which form the **Internet backbone**. Other, less powerful computers, such as those used by local Internet service providers often attach to the Internet backbone using medium-speed data lines. An Internet service provider (ISP) is a business that has permanent Internet connections and provides temporary connections to individuals and companies free or for a fee. Finally, the connection between your computer at home and your local Internet service provider, often called **the last mile**, employs low-speed data lines such as telephone lines. Today, cable increasingly is replacing telephone lines over the last mile, which significantly improves access to information on the Internet.

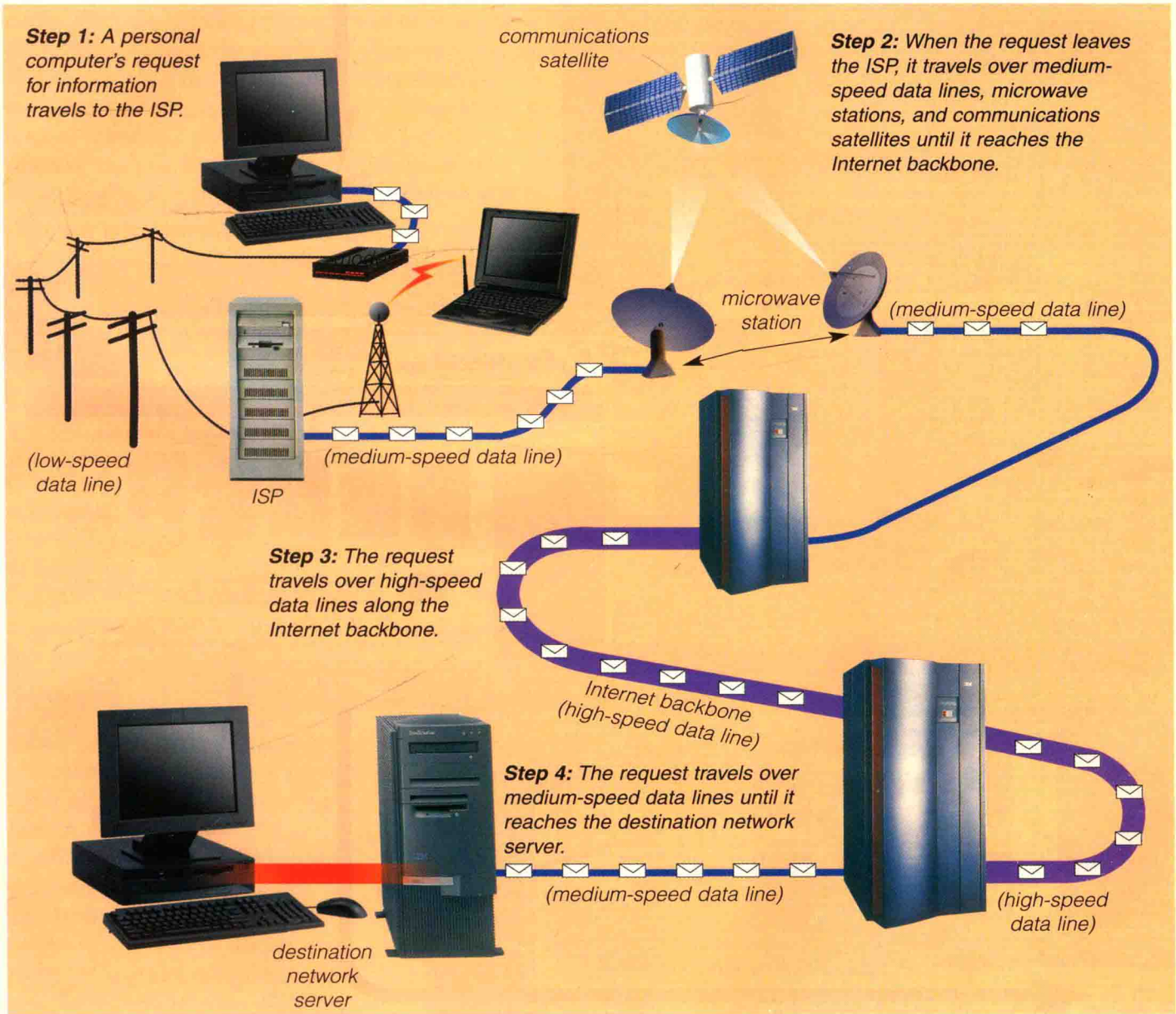

FIGURE 1-2 An example of a possible connection between a personal computer making a request for information from another computer connected via the Internet.

WEB INFO

For more information about the World Wide Web, visit the Web Design Chapter 1 Web Info page (scsite.com/web/ch1/webinfo.htm) and then click World Wide Web.

THE WORLD WIDE WEB

Computer systems have the capability of delivering information in a variety of ways, such as graphics, sound, video clips, animation, and, of course, regular text.

On the Web, you access such information using a hyperlink, or simply link (Figure 1-3), which is a special software pointer that points to the location of the computer on which the specific information is stored and to the information itself. A link can point to information on any computer connected to the Internet that is running the proper software. Thus, clicking a link on a computer in Los Angeles could display text and graphics located on a computer in New York.

FIGURE 1-3 A home page and secondary pages make up a Web site. As visitors click links, related Web pages and Web sites display.

The collection of links throughout the Internet creates an interconnected network called the **World Wide Web**, which also is referred to as the **Web**, or **WWW**. Each computer within the Web containing information that can be referenced with a link is called a **Web site**. Millions of Web sites around the world are accessible through the Internet.

Graphics, text, and other information available at a Web site are stored in a specifically formatted electronic document called a **Web page**. When you click a link to display a picture, read text, view a video, or listen to a song, you are viewing a Web page.

On the Web, a link can be a word, phrase, or image. You often can identify a link by its appearance. Text links usually are underlined or in a color different from the rest of the document. When you point to a graphical link, its appearance may remain the same or it may change its look in some way. As shown in Figure 1-3, the shape of the pointer on the screen changes to a small hand with a pointing index finger when you position it on a link, or point to the link.

To activate a link, you point to it and then press the mouse button, or click the link. This causes the item associated with the link to display on the screen. The link can point to an item on the same Web page, a different Web page at the same Web site, or a separate Web page at a different Web site in another city or country. In most cases, when you navigate using links, you are jumping from Web page to Web page. Some people refer to this activity of jumping from one Web page to another as **surfing the Web**. To remind you visually that you have visited a location or document, some browsers change the color of a text link after you click it.

A Web site, which is a collection of linked Web pages, typically starts with a home page. A **home page** provides information about the Web site's purpose and content (upper-left screen in Figure 1-3). Figure 1-3 shows how to navigate using links.

A splash page sometimes precedes a home page. A **splash page** is a lead-in page often containing multimedia. **Multimedia** is some combination of text, graphics, animation, audio, or video. Like a billboard, a splash page's primary intent is to grab visitors' attention and draw them into the Web site (Figure 1-4).

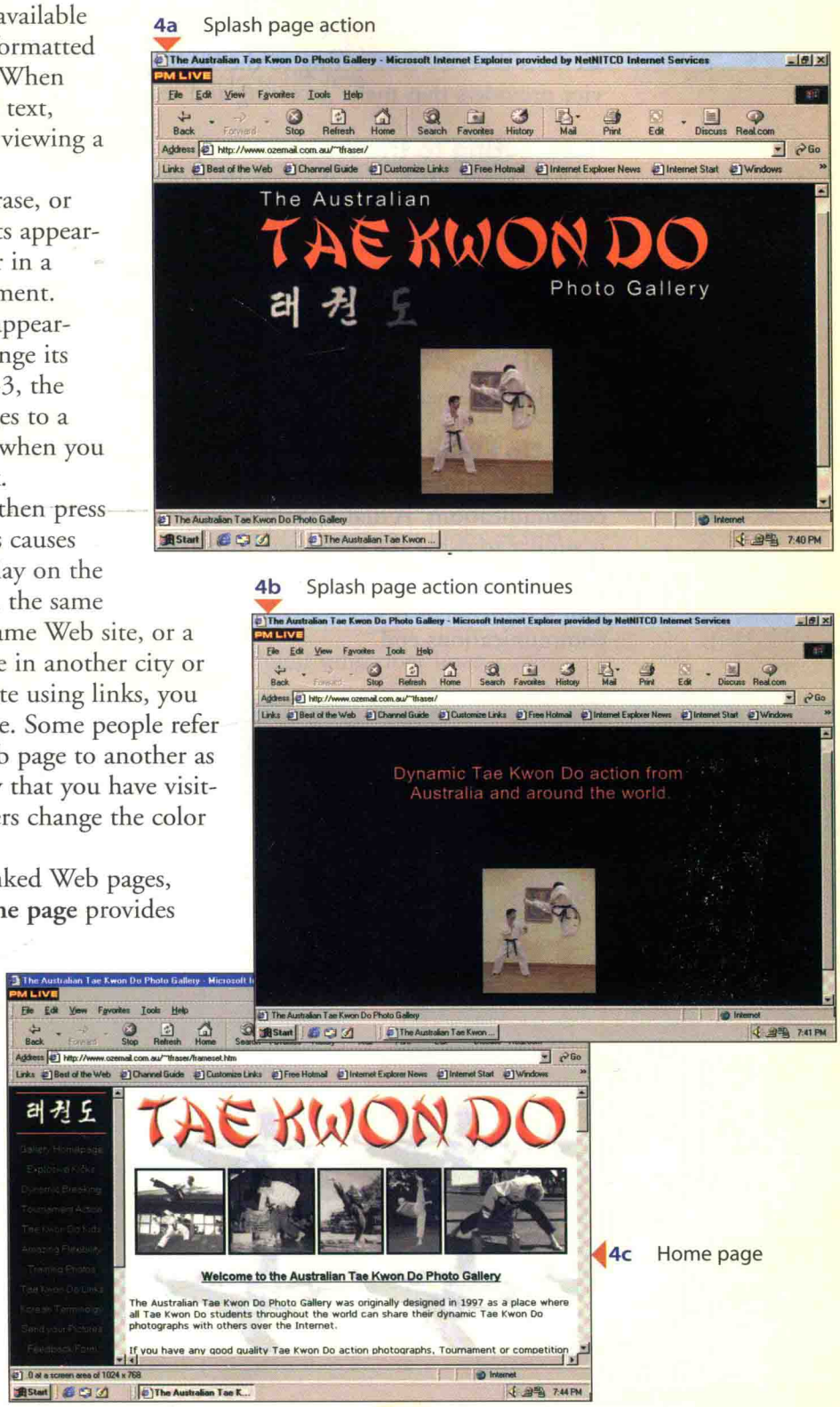

FIGURE 1-4 The Australian Tae Kwon Do splash page utilizes action-packed graphics and twirling letters to entice visitors into the home page.

ACCESSING INFORMATION ON THE WEB

The Web can seem both mysterious and intimidating. It is awesome that something virtual and so vast can be accessed and productively searched. Users access the Web using a variety of means. The more common connections to the Internet involve some use of telephone lines, but newer methods that include cable and wireless transmissions also are being used. The following sections describe connecting to the Web using the various connection methods and Internet service providers that make accessing and searching the World Wide Web possible.

Connecting to the Web

Users access Web sites through the public switched telephone network. The **public switched telephone network** (PSTN) is the worldwide telephone system that handles voice-oriented telephone calls (Figure 1-5). Nearly the entire telephone network today uses digital technology, with the exception of the final link from the local telephone company to a home, which usually is analog.

While initially it was built to handle voice communications, the telephone network also is an integral part of computer communications. Data, instructions, and information can be sent over the telephone network using dial-up lines or dedicated lines.

Dial-Up Lines

A **dial-up line** is a temporary connection that uses one or more analog telephone lines for communications. A dial-up connection is not permanent. Using a dial-up line to transmit data is similar to using the telephone to make a call. A modem at the sending end dials the telephone number of a modem at the receiving end. When the modem at the receiving end answers the call, a connection is established and data can be transmitted. When either modem hangs up, the communications end.

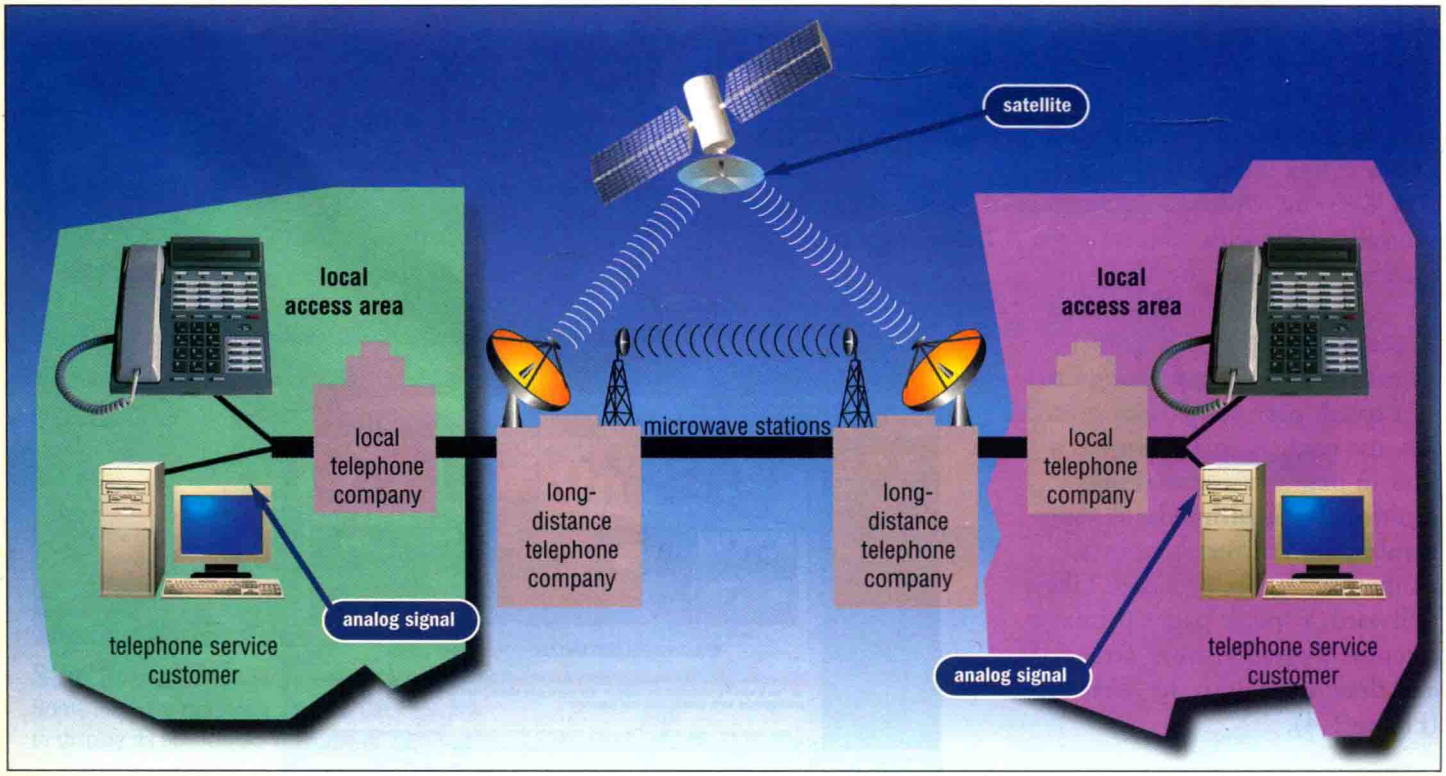

FIGURE 1-5 Nearly all of the telephone network uses digital technology, with the exception of the final link from the local telephone company to a home or office, which usually is analog.

One advantage of a dial-up line to connect computers is that it costs no more than making a regular telephone call. Another advantage is that computers at any two locations can establish a connection using modems and the telephone network. Mobile users, for example, often use dial-up lines to connect to their main office network so they can read e-mail messages, access the Internet, and upload files.

A disadvantage of dial-up lines is that you cannot control the quality of the connection because the telephone company's switching office randomly selects the line.

Dedicated Lines

A **dedicated line** is a connection that always is established between two communications devices (unlike a dial-up line in which the connection is reestablished each time it is used). The quality and consistency of the connection on a dedicated line is better than a dial-up line because dedicated lines provide a constant connection.

Businesses often use dedicated lines to connect geographically distant offices. Dedicated lines either can be analog or digital. Digital lines increasingly are connecting home and business users to networks around the globe because they transmit data and information at faster rates than analog lines.

A **transfer rate** is the speed at which a line carries data and information. The faster the transfer rate, the faster you can send and receive data and information. Transfer rates usually are expressed as **bits per second** (**bps**) — that is, the number of bits the line can transmit in one second. Transfer rates range from thousands of bits per second, called **kilobits per second** (**Kbps**), to millions of bits per second, called **megabits per second** (**Mbps**), to billions of bits per second, called **gigabits per second** (**Gbps**). The table in Figure 1-6 lists the transfer rates (speeds) and approximate monthly costs of various types of lines, as compared with dial-up lines.

Four popular types of digital dedicated lines are ISDN lines, digital subscriber lines, cable lines, and T-carrier lines.

ISDN Lines

For the small business and home user, an ISDN line provides faster transfer rates than dial-up telephone lines. **Integrated Services Digital Network** (**ISDN**) is a set of standards for digital transmission of data over standard copper telephone lines. With ISDN, the same telephone line that could carry only one computer signal, now can carry three or more signals at once, through the same line, using a technique called **multiplexing**.

WEB INFO

For more information about the Integrated Services Digital Network (ISDN), visit the Web Design Chapter 1 Web Info page (scsite.com/web/ch1/webinfo.htm) and then click ISDN.

SPEEDS OF VARIOUS CONNECTIONS TO THE INTERNET

Type of Line	Transfer Rates	Approximate Monthly Cost
Dial-up	Up to 56 Kbps	Local or long-distance rates
ISDN	Up to 128 Kbps	$10 to $40
ADSL	128 Kbps – 8.45 Mbps	$39 to $110
Cable TV (CATV)	128 Kbps – 2.5 Mbps	$30 to $70
T1	1.544 Mbps	$1,000 or more
T3	44 Mbps	$10,000 or more

FIGURE 1-6 The speeds of various lines that can be used to connect to the Internet.

DSL

DSL is another digital line alternative for the small business or home user. **DSL** (**digital subscriber line**) transmits at fast speeds on existing standard copper telephone wiring. Some of the DSL installations can provide a dial tone, so you can use the line for both voice and data.

ADSL (**asymmetric digital subscriber line**) is a type of DSL that supports faster transfer rates when receiving data (the downstream rate) than when sending data (the upstream rate). ADSL is ideal for Internet access because most users download more information from the Internet than they upload.

Cable Television Lines

Although **cable television** (**CATV**) **lines** are not a type of telephone line, they are a very popular type of dedicated line that allows the home user to connect to the Internet. Data can be transmitted very rapidly via a cable modem connected to a CATV line.

T-carrier Lines

A **T-carrier line** is any of several types of digital lines that carry multiple signals over a single communications line. Whereas a standard dial-up telephone line carries only one signal, digital T-carrier lines use multiplexing so that multiple signals can share the telephone line. T-carrier lines provide extremely fast data transfer rates. Only medium to large companies usually can afford the investment in T-carrier lines because these lines also are so expensive.

The most popular T-carrier line is the **T1 line**. Businesses often use T1 lines to connect to the Internet. Many service providers also use T1 lines to connect to the Internet backbone. A **T3 line** is equal in speed to twenty-eight T1 lines. T3 lines are quite expensive. Main users of T3 lines include large companies, telephone companies, and service providers connecting to the Internet backbone. The Internet backbone itself also uses T3 lines (Figure 1-2 on page 1.3).

WEB INFO

For more information about Internet service providers (ISPs), visit the Web Design Chapter 1 Web Info page (scsite.com/web/ch1/webinfo.htm) and then click ISP.

Service Providers

An **Internet service provider** (**ISP**) is a business that has a permanent Internet connection and provides temporary connections to individuals and companies free or for a fee. The most common ISP fee arrangement is a fixed amount, usually about $10 to $20 per month for an individual account. For this amount, many ISPs offer unlimited Internet access. Others specify a set number of access hours per month. With these arrangements, you pay an additional amount for each hour you connect in excess of an allotted number of access hours.

If you use a telephone line to access the Internet, the telephone number you dial connects you to an access point on the Internet, called a **point of presence** (**POP**). When selecting a service provider, be sure it provides at least one local POP telephone number. Otherwise, you will pay long-distance telephone charges for the time you connect to the Internet.

Two types of ISPs are regional and national (Figure 1-7). A **regional ISP** usually provides access to the Internet through one or more telephone numbers local to a specific geographic area. A **national ISP** is a larger business that provides local telephone numbers in most major cities and towns nationwide. Some national ISPs also provide a toll-free telephone number. Due to their larger size, national ISPs usually offer more services and generally have a larger technical support staff than regional ISPs. Examples of national ISPs are AT&T, EarthLink, and WorldCom.

Like an ISP, an **online service provider** (**OSP**) supplies Internet access, but an OSP also has many members-only features that offer a variety of special content and services such as news, weather, legal information, financial data, hardware and software guides, games, and travel guides. For this reason, the fees for using an OSP sometimes are slightly higher than fees for an ISP. The two more popular OSPs are America Online (AOL) and The Microsoft Network (MSN).