

Teachers Discovering Computers

**Integrating Technology and
Digital Media in the Classroom
6th Edition**

Chapter 2

Communications, Networks, the
Internet, and the World Wide Web

Chapter Objectives

- Define communications
- Identify the basic components of a communications system
- Describe how and why network computers are used in schools and school districts
- Explain how the Internet works

Chapter Objectives

- Describe the World Wide Web portion of the Internet
- Explain how Web documents are linked to one another
- Explain the use of Web browser software
- Explain how to use a Web search tool to find information

Chapter Objectives

- Identify several types of multimedia products available on the Web
- Explain how Internet services such as e-mail, newsgroups, chat rooms, and instant messaging work
- Describe the educational implications of the Internet and the World Wide Web
- Describe different ways to connect to the Internet and the World Wide Web
- Describe the pros and cons of Web 2.0 tools for teachers and students

What Is Communications?

- A process in which two or more computers or devices transfer data, instructions, and information
- Sometimes called telecommunications

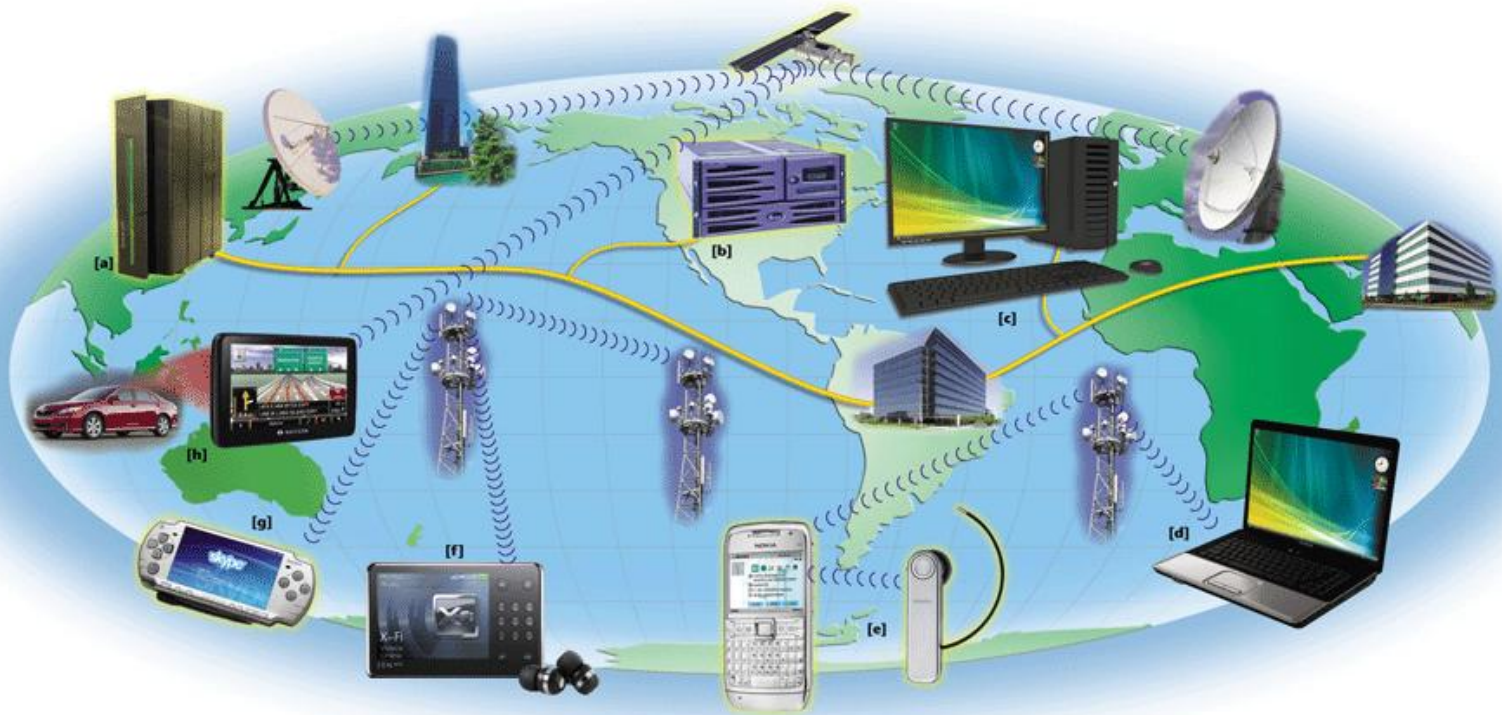
What Is Communications?

- Electronic mail (e-mail)
- Voice mail
- Facsimile (fax)
- Telecommuting
- Online services
- Videoconferencing
- Internet
- World Wide Web

Communications Networks

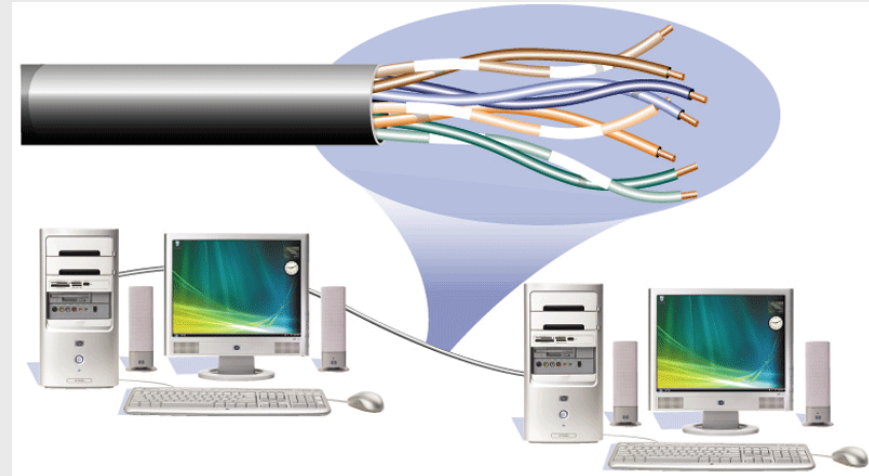
- Basic communications system
 - Two computers, one to send and one to receive data
 - Communications devices that send and receive data
 - A communications channel over which data is sent

Communications Networks



Communications Networks

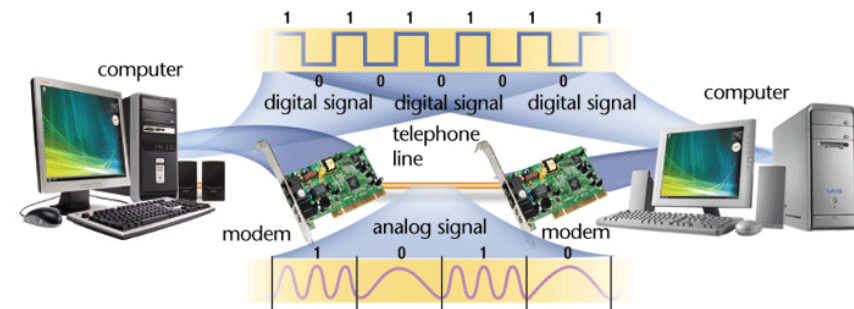
- Communications channel
 - Transmissions media
 - Twisted-pair cable



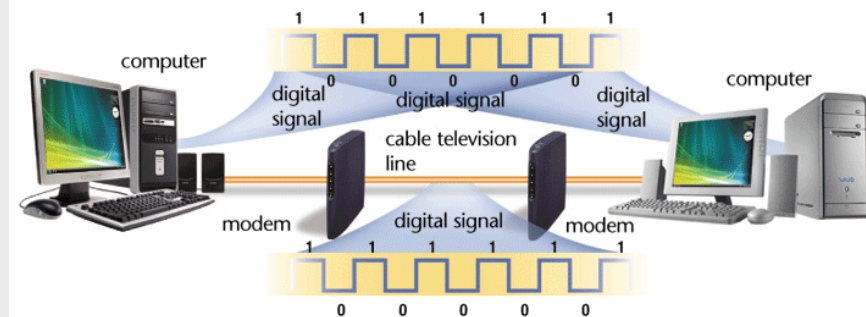
Communications Networks

- Digital vs. analog signals
 - Dial-up Modem
 - External modem
 - Internal modem
 - Network interface cards

[a] digital to analog to digital communications channel



[b] all digital communications channel



Communications Networks

- Local Area Networks (LAN)
 - Covers limited geographical area
 - Server manages resources
- Wide Area Networks (WAN)
 - Covers large geographical area
 - Can consist of several LANs

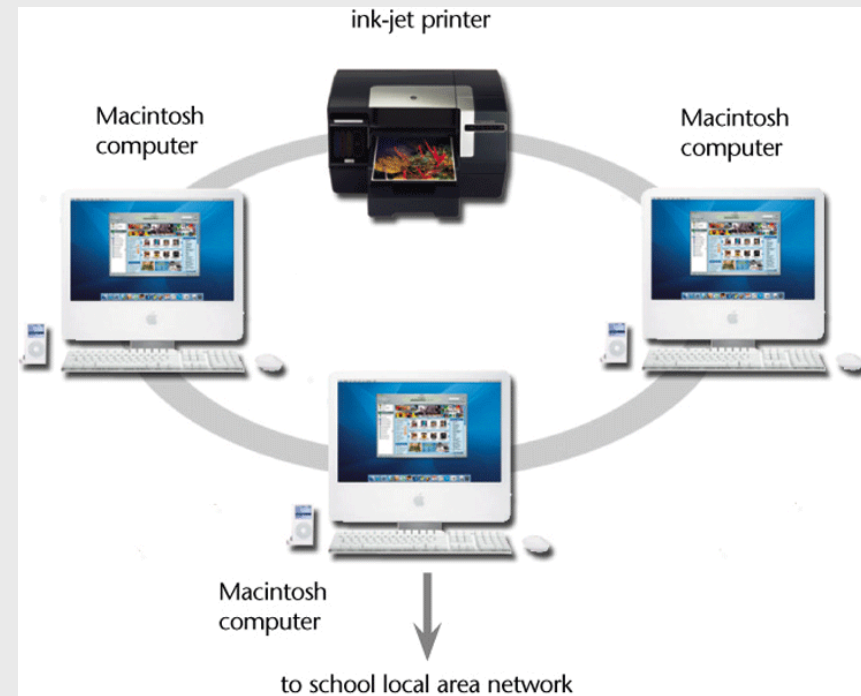
Communications Networks

- Home Networks
 - Connects multiple computers in your home or home office
 - Share Internet access
 - Share peripherals
 - Can be wired or wireless

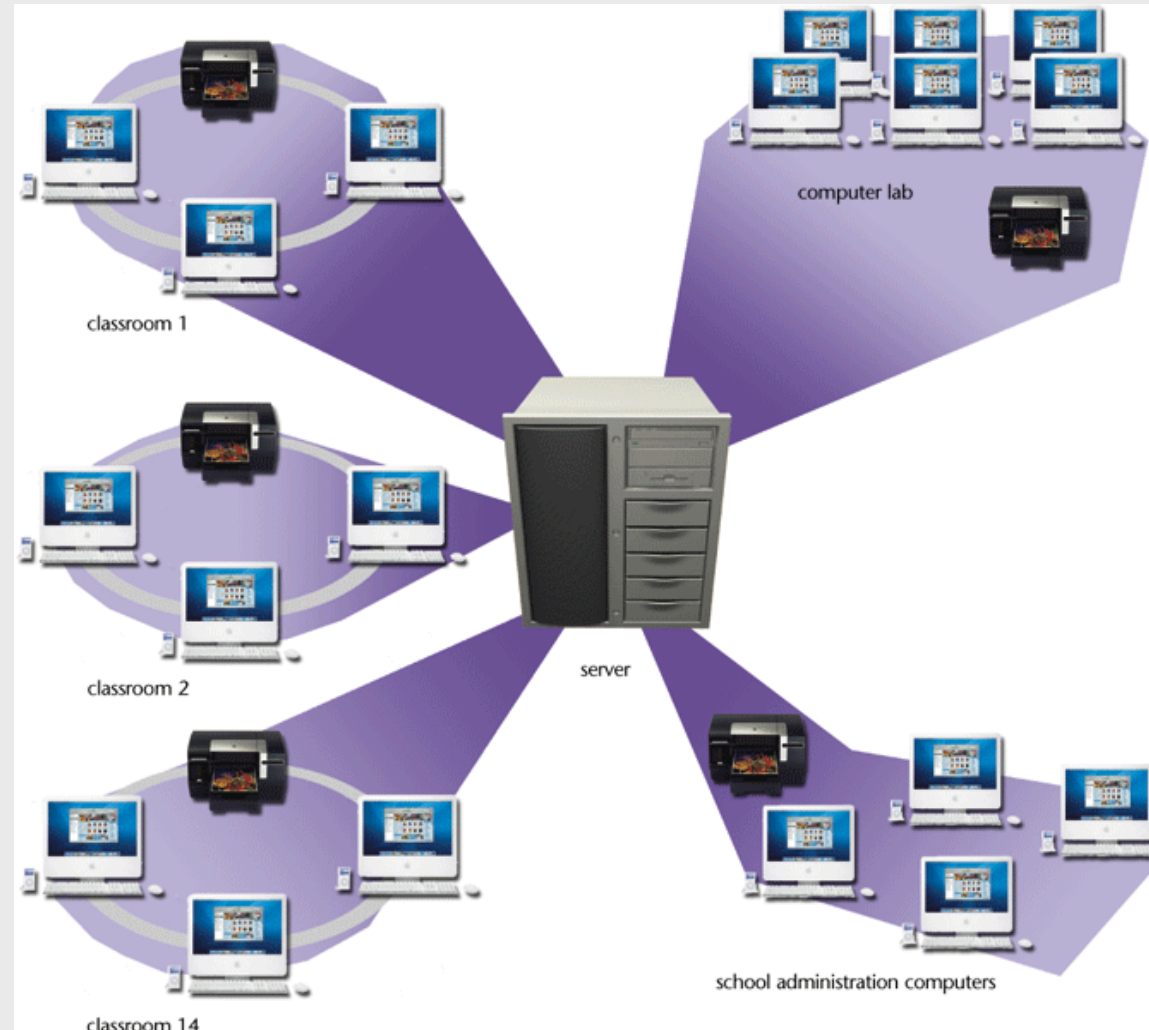


Networking the Classroom, School, and District

- School network server
- Example classroom
 - Three Macintosh computers
 - Printer
- Example school network
 - Classrooms
 - Administration
 - Computer lab

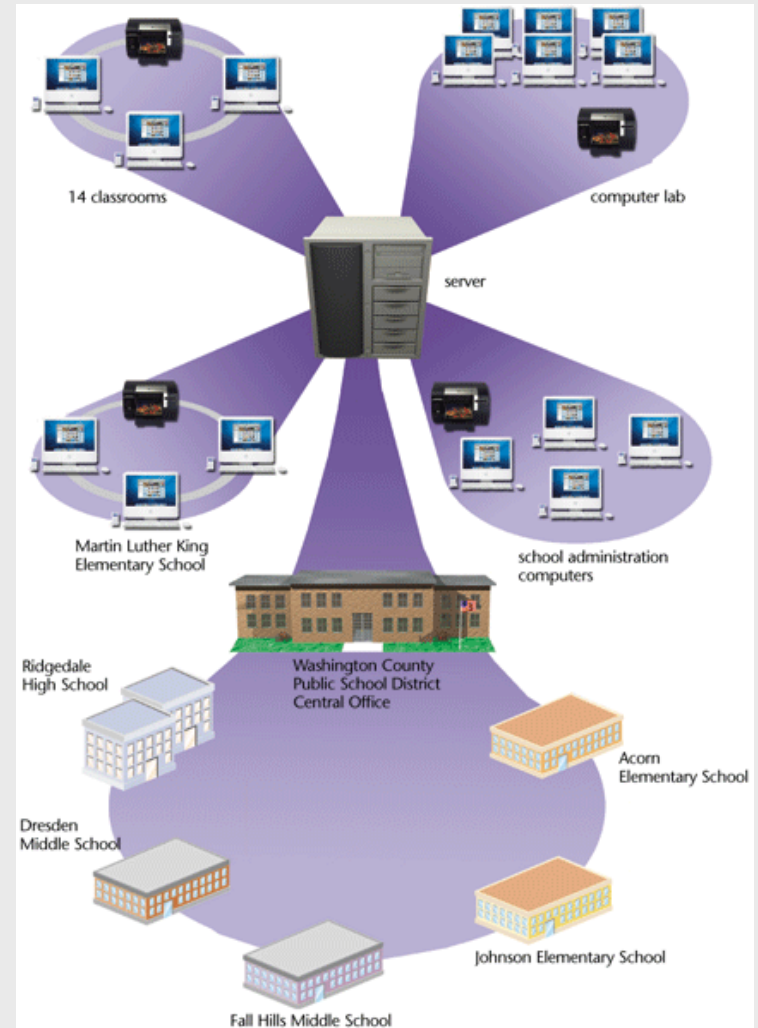


Networking the Classroom, School, and District



Networking the Classroom, School, and District

- Example school district
 - Central office
 - Various schools



Networking the Classroom, School, and District

- Wireless schools and classrooms
 - Keep in touch with family and friends from anywhere
 - Smart phones
 - Handheld or netbook computers
 - Notebook computers
 - Wireless technology brings the computer lab to students



Networking the Classroom, School, and District

- High-Speed or Broadband Access
 - Government works to provide high speed Internet access to classrooms
 - Broadband technology transmits signals at much faster speeds

The Benefits of Computer Networks in Education

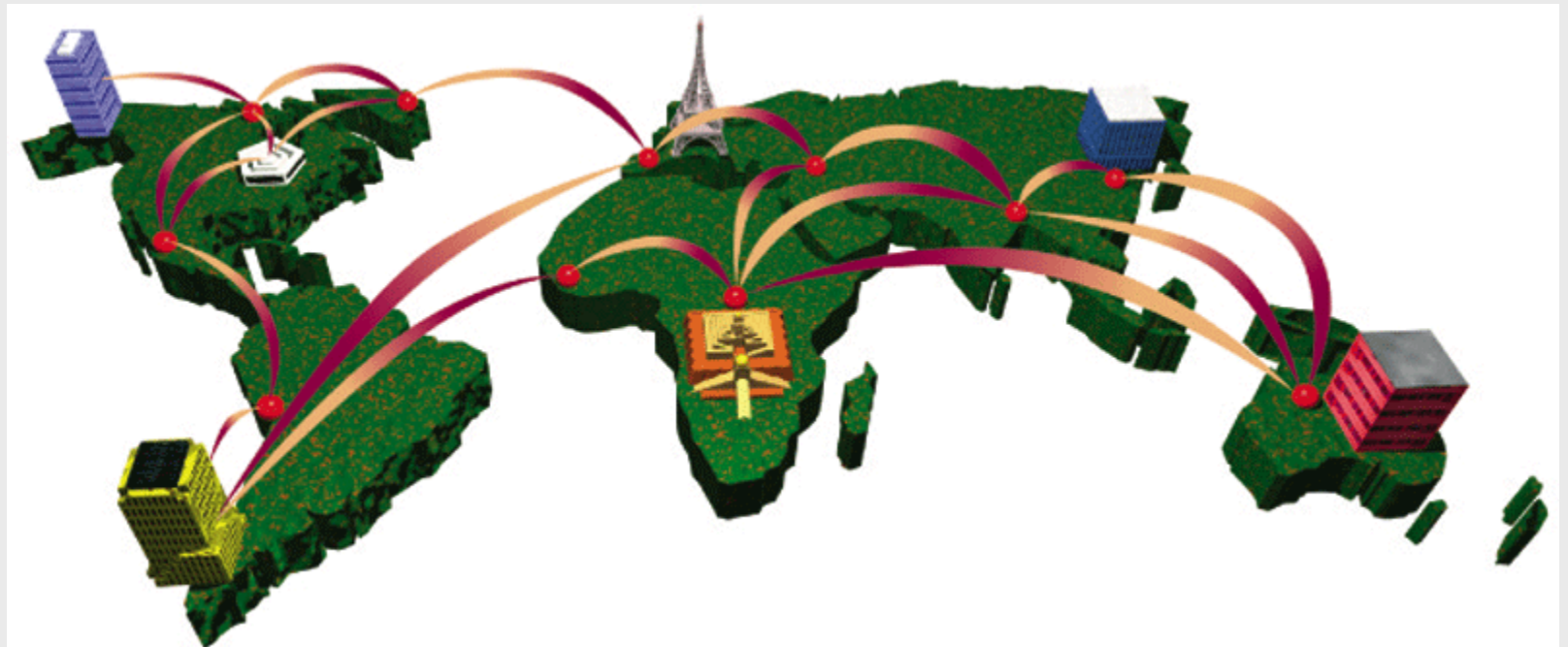
- Sharing of computer hardware, software, and data resources
- Unlimited educational resources
- Communicate with other educators and students



What Is the Internet?

- Worldwide group of connected networks that allow public access to information and services
- No single organization owns or controls
- Estimated over one billion users
- Variety of users

What Is the Internet?



History of the Internet

- Started as a network of four computers at the University of California at Los Angeles in 1969
- Advanced Research Projects Agency (ARPA) – ARPANET
- More than 350 million host computers today
- Backbone first provided by National Science Foundation (NSF) – NSFnet

History of the Internet



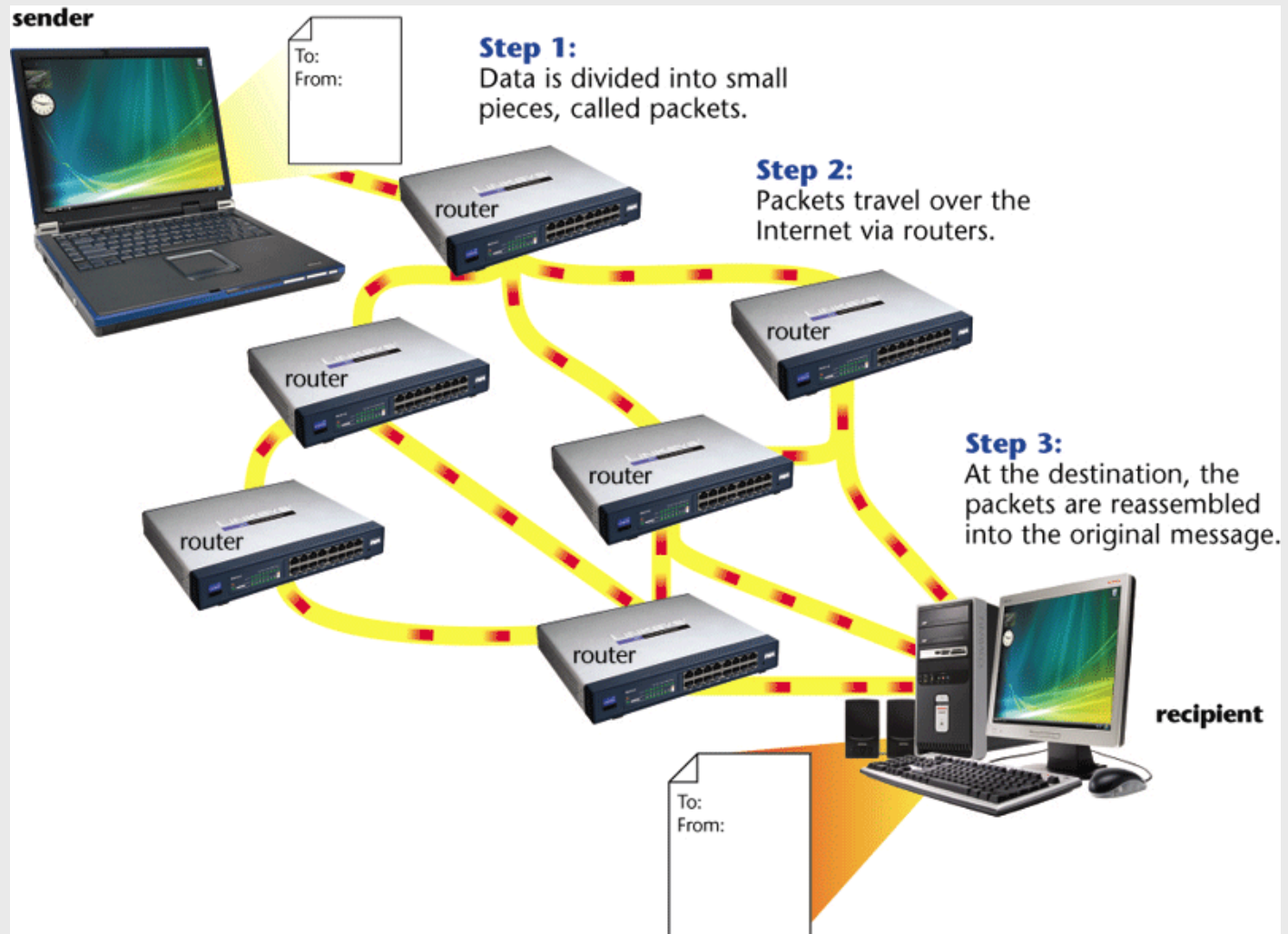
History of the Internet

- Backbone now provided by variety of corporations
- Various organizations help define standards
- Internet2 (I2)
 - Extremely high-speed network
 - Develop and test latest Internet technologies
 - Members include more than 200 universities in the United States, along with 115 companies

How the Internet Works

- Data is divided into packets
- Routers send packets across the Internet
- At the destination, the packets are reassembled into the original message
- Transmission control protocol/Internet protocol (TCP/IP) is the communications protocol used by the Internet

How the Internet Works



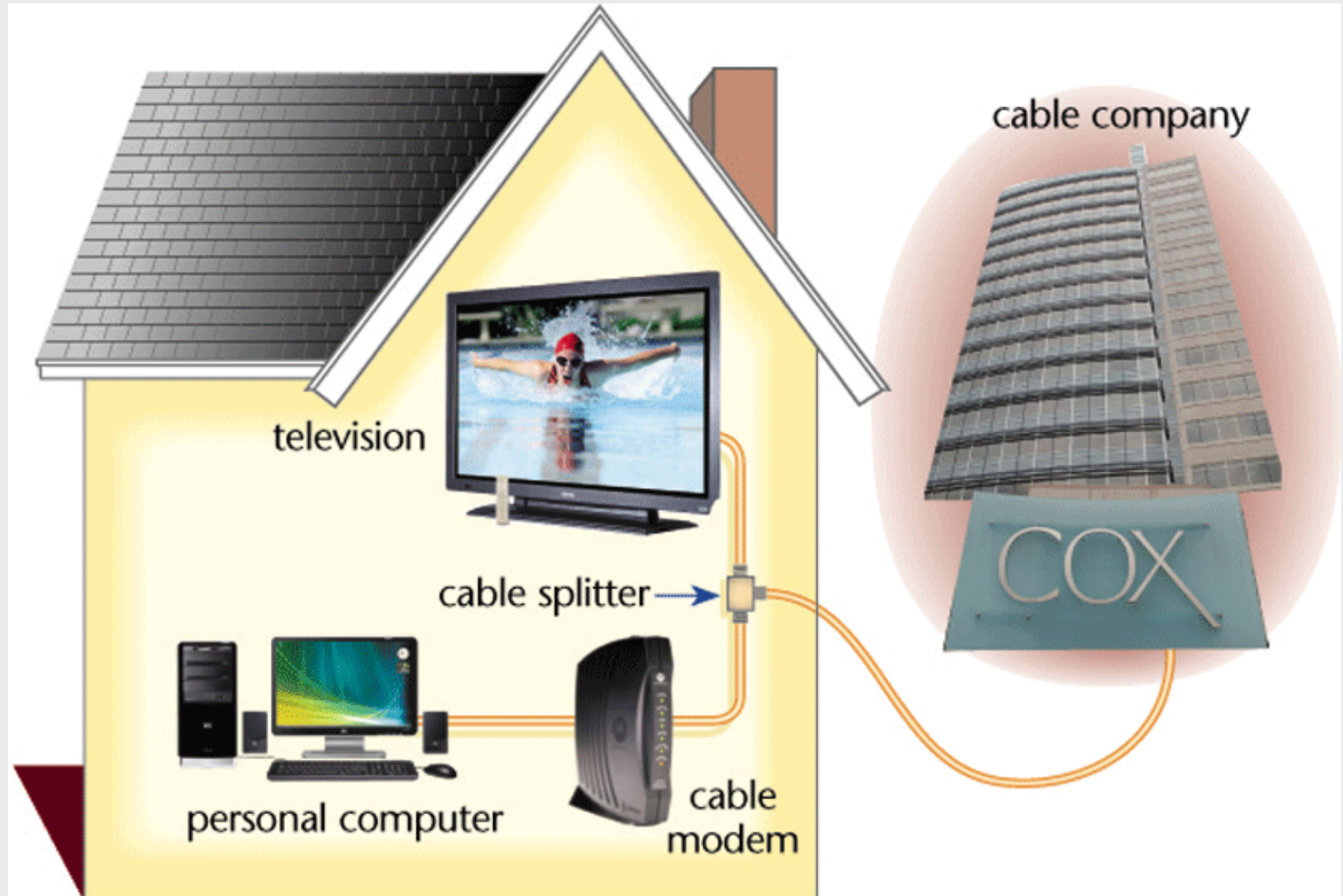
How the Internet Works

- Internet Access Providers
 - Have permanent connections to the Internet
 - Provide temporary connections to individuals and companies for a fee
 - Regional and national ISPs
 - Online service providers offer members only areas

How the Internet Works

- Connecting to the Internet
 - Business or school network connected to the Internet
 - Dial-up access
 - Cable TV (CATV)
 - Digital subscriber line (DSL)
 - Public Internet access point

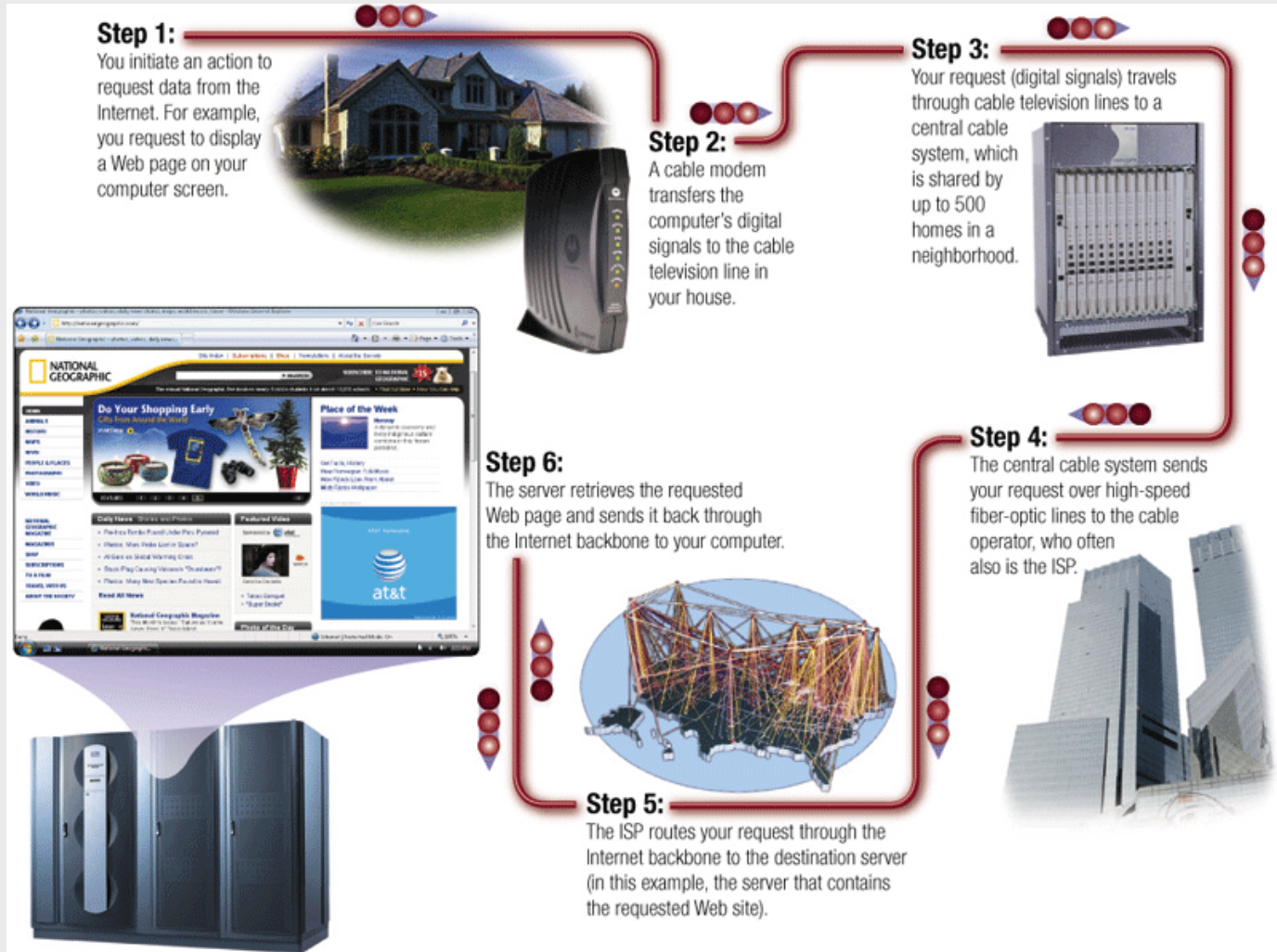
How the Internet Works



How the Internet Works

- The Internet Backbone
 - Acts as a highway
 - National ISPs use dedicated lines to connect directly to the Internet
 - Regional ISPs connect through leased lines to national ISPs

How the Internet Works



How the Internet Works

- Internet Addresses
 - Numeric addresses
 - Domain name
 - Domain type abbreviations
 - Country code abbreviations

numeric address


198.80.146.30

domain name

www.scsite.com


How the Internet Works

[a] This table lists domain labels commonly used today.



Domain Label	Type of Organization
com	Commercial organizations, businesses, and companies
edu	Educational institutions
gov	Government institutions
mil	Military organizations
net	Network providers
org	Nonprofit organizations
k12	K-12 schools

[b] A partial listing of country code abbreviations.



Abbreviation	Country	Abbreviation	Country
au	Australia	jp	Japan
ax	Antarctica	nl	Netherlands
ca	Canada	se	Sweden
de	Germany	th	Thailand
dk	Denmark	uk	United Kingdom
fr	France	us	United States

The World Wide Web

- Started in the early 1990s
- Hyperlinks
- Uniform Resource Locator (URL)
- Hypertext transfer protocol

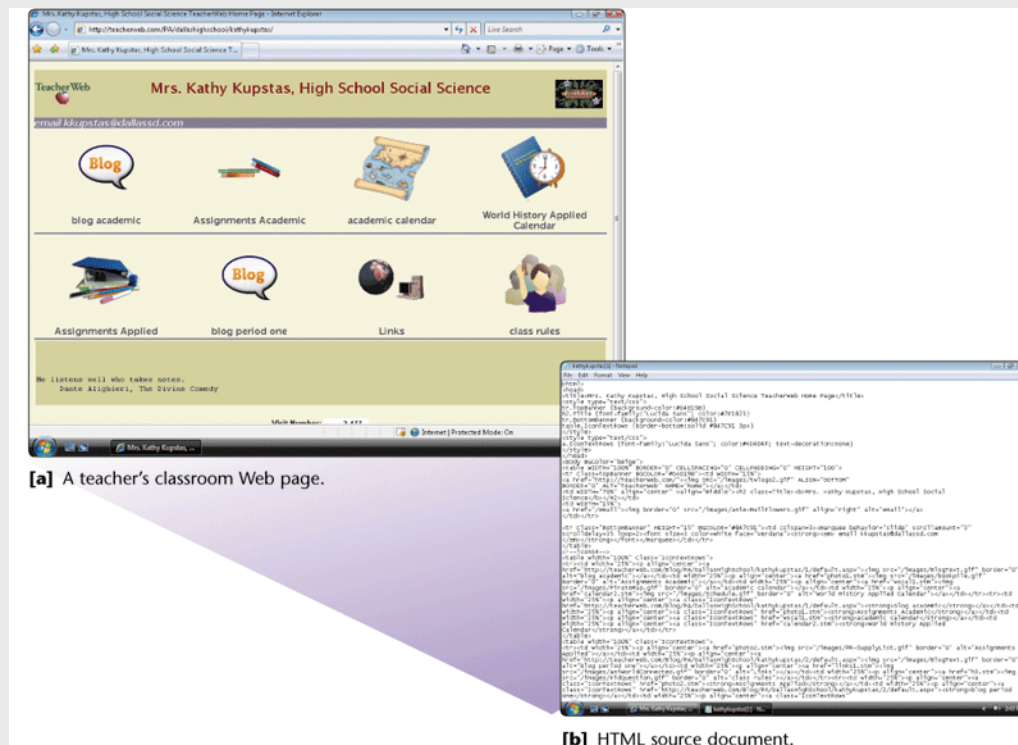


The World Wide Web

- How a Web Page Works
 - Hypertext
 - Hyperlinks
 - Target
 - Relative
 - Absolute

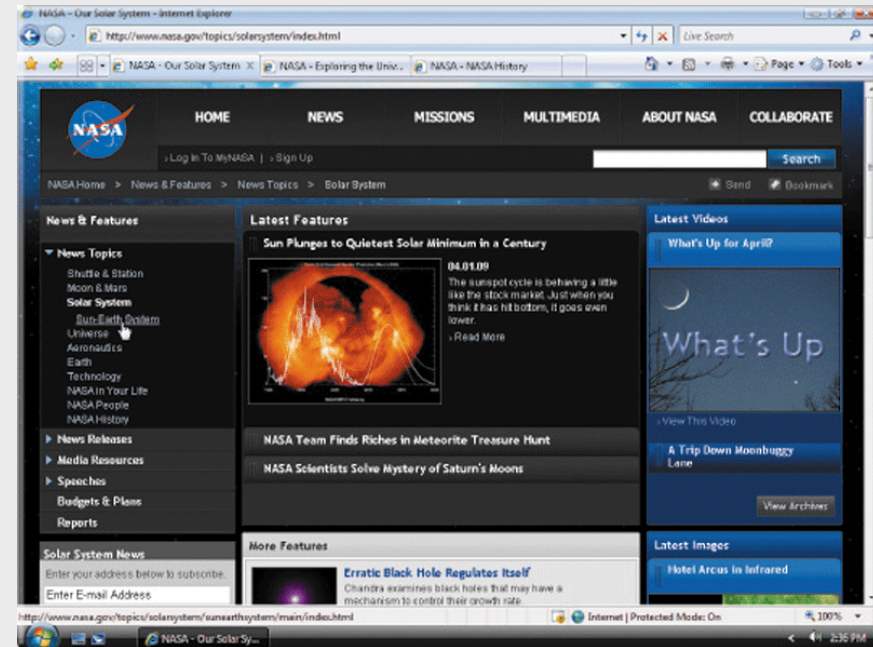
The World Wide Web

- Web Browser Software
 - Interprets HTML and displays Web pages and enables you to link to other Web pages and Web sites



The World Wide Web

- Web Browser Software
 - Interprets HTML and displays Web pages and enables you to link to other Web pages and Web sites
 - Also interprets:
 - XHTML
 - XML
 - CSS

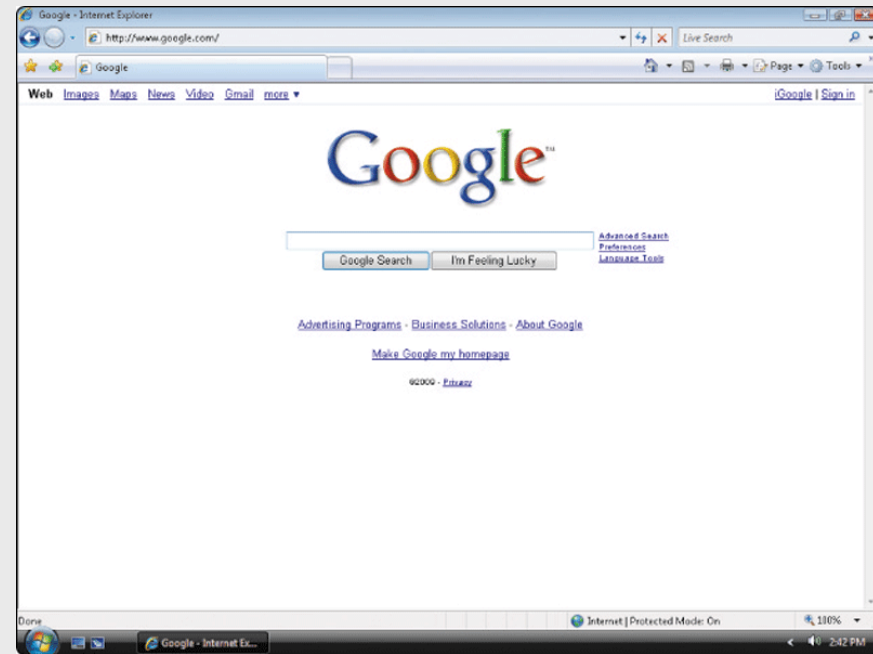


The World Wide Web

Category	Web Site Description
Portal	A portal is a Web site that offers a variety of Internet services from a single, convenient location. Most portals offer free services including search engine and/or subject directory, news, sports and weather, and many other services. Many portals have online communities , which are Web sites that join specific groups of people with similar interests or relationships.
News	A news Web site contains newsworthy material including stories and articles relating to current events, life, money, sports, and the weather.
Informational	An informational Web site contains factual information. Many United States government agencies have informational Web sites providing information such as census data, tax codes, and the congressional budget.
Business	A business Web site contains content that promotes or sells products or services and most businesses have a business/marketing Web site. Many of these companies also allow you to purchase their products or services online.
Education	An educational Web site offers exciting and challenging avenues for formal and informal teaching and learning. Many of the Web sites included as links at this textbook's companion Web site are educational Web sites.
Entertainment	An entertainment Web site offers an interactive and engaging environment. Popular entertainment Web sites offer music, videos, sports, games, ongoing Web episodes, sweepstakes, chats, and more. Sophisticated entertainment Web sites often partner with other technologies. For example, you can cast your vote about a topic on a television show.
Advocacy	An advocacy Web site contains content that describes a cause, opinion, or idea. These Web sites usually present views of a particular group or association.
Blog	A blog , short for Weblog , is an informal Web site consisting of time-stamped articles, or posts, in a diary or journal format, usually listed in reverse chronological order. A blog that contains video clips is called a video blog , or vlog .
Wiki	A wiki is a collaborative Web site that allows users to create, add to, modify, or delete the Web site content via their Web browser. Most wikis are open to modification by the general public.
Online Social Network	An online social network , also called a social networking Web site, is a Web site that encourages members in its online community to share their interests, ideas, stories, photos, music, and videos with other registered users. Most include chat rooms, newsgroups, and other communications services. Popular social networking Web sites include Facebook, Friendster, MySpace, Twitter, and Google's YouTube.
Content Aggregator	A content aggregator is a business that gathers and organizes Web content and then distributes, or feeds, the content to subscribers for free or a fee. Examples of distributed content include news, music, video, and pictures.
Personal	A personal Web site that might be a single Web page or a collection of Web pages maintained by a private individual or a family not usually associated with any organization.









The World Wide Web

- Searching for Information on the Web
 - Directory maintained by a search engine company
 - Helps find information on the Web
 - Search engine
 - Subject directory



The World Wide Web

- Multimedia on the Web
 - Web pages incorporate graphics, animation, audio, video, and virtual reality
 - Plug-ins

Plug-In Application	Description	Web Address
Acrobat Reader 	View, navigate, and print Portable Document Format (PDF) files — documents formatted to look just as they look in print	adobe.com
Flash Player 	View dazzling graphics and animation, hear outstanding sound and music, display Web pages across an entire screen	adobe.com
Java 	Enable Web browser to run programs written in Java, which add interactivity to Web pages	java.com
QuickTime 	View animation, music, audio, video, and VR panoramas and objects directly on a Web page	apple.com
RealPlayer 	Listen to live and on-demand near-CD-quality audio and newscast-quality video, stream audio and video content for faster viewing; play MP3 files, create music CDs	real.com
Shockwave Player 	Experience dynamic interactive multimedia, 3-D graphics, and streaming audio	adobe.com
Silverlight 	Experience high-definition video, high-resolution interactive multimedia, and streaming audio and video	microsoft.com
Windows Media Player 	Listen to live and on-demand audio, play or edit WMA and MP3 files, burn CDs, and watch DVD movies	microsoft.com

The World Wide Web

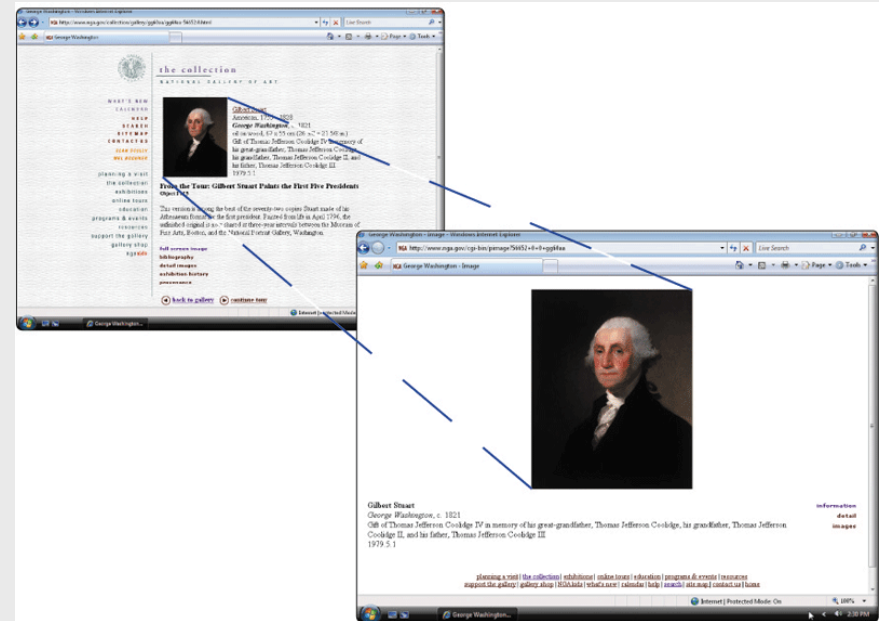
- Multimedia on the Web
 - Graphics
 - Used to enhance text-based Internet
 - Graphics formats



Abbreviation/ File Extension	Name	Uses
BMP/.bmp	Bitmap	Desktop background, scanned images
GIF/.gif	Graphics Interchange Format	Simple diagrams, shapes, images with a few colors
JPEG/.jpg	Joint Photographic Experts Group	Digital camera photos
PNG/.png	Portable Network Graphics	Web graphics
TIFF/.tif	Tagged Image File Format	Photos used by printing industry

The World Wide Web

- Multimedia on the Web
 - Graphics
 - Used to enhance text-based Internet
 - Graphics formats
 - Thumbnails



The World Wide Web

- Multimedia on the Web
 - Animation
 - Marquees
 - Animated GIFs

The World Wide Web

- Multimedia on the Web
 - Audio
 - MP3, WAV, WMA, RealAudio, and QuickTime
 - Players
 - Streaming audio
 - Podcasting
 - RSS



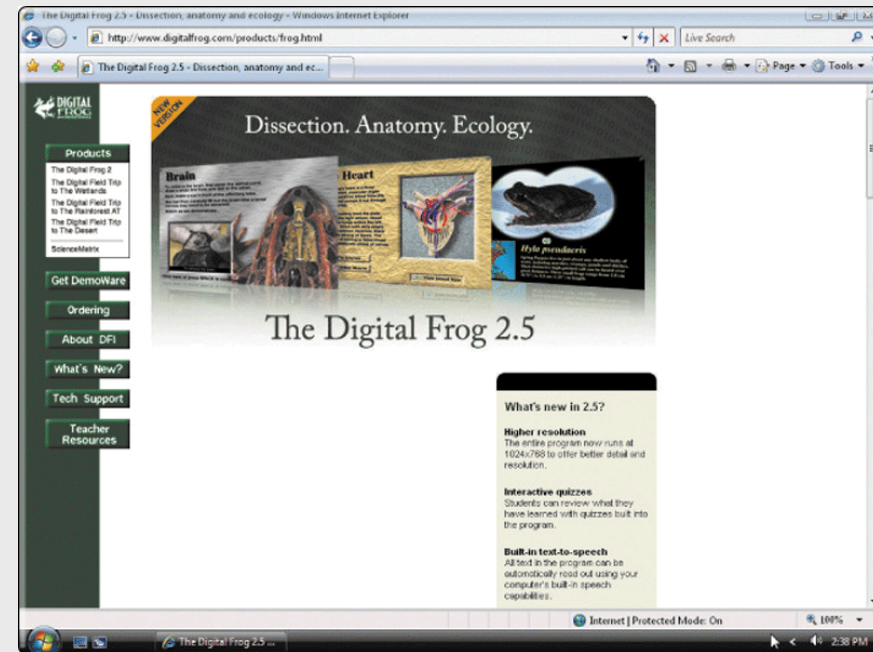
The World Wide Web

- Multimedia on the Web
 - Video
 - Streaming video



The World Wide Web

- Multimedia on the Web
 - Virtual Reality
 - Simulation of real or imagined environment that appears as a three-dimensional (3-D) space
 - VR worlds



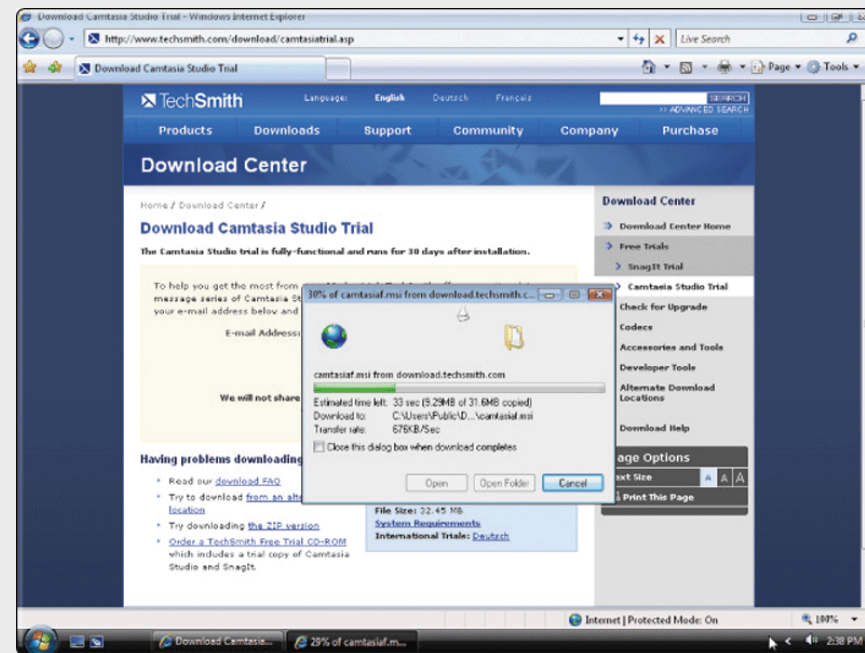
Other Internet Services

- E-mail
 - Primary communication method for both personal and business use
 - E-mail programs
 - Mailbox
 - Mail server
 - E-mail address
 - User name



Other Internet Services

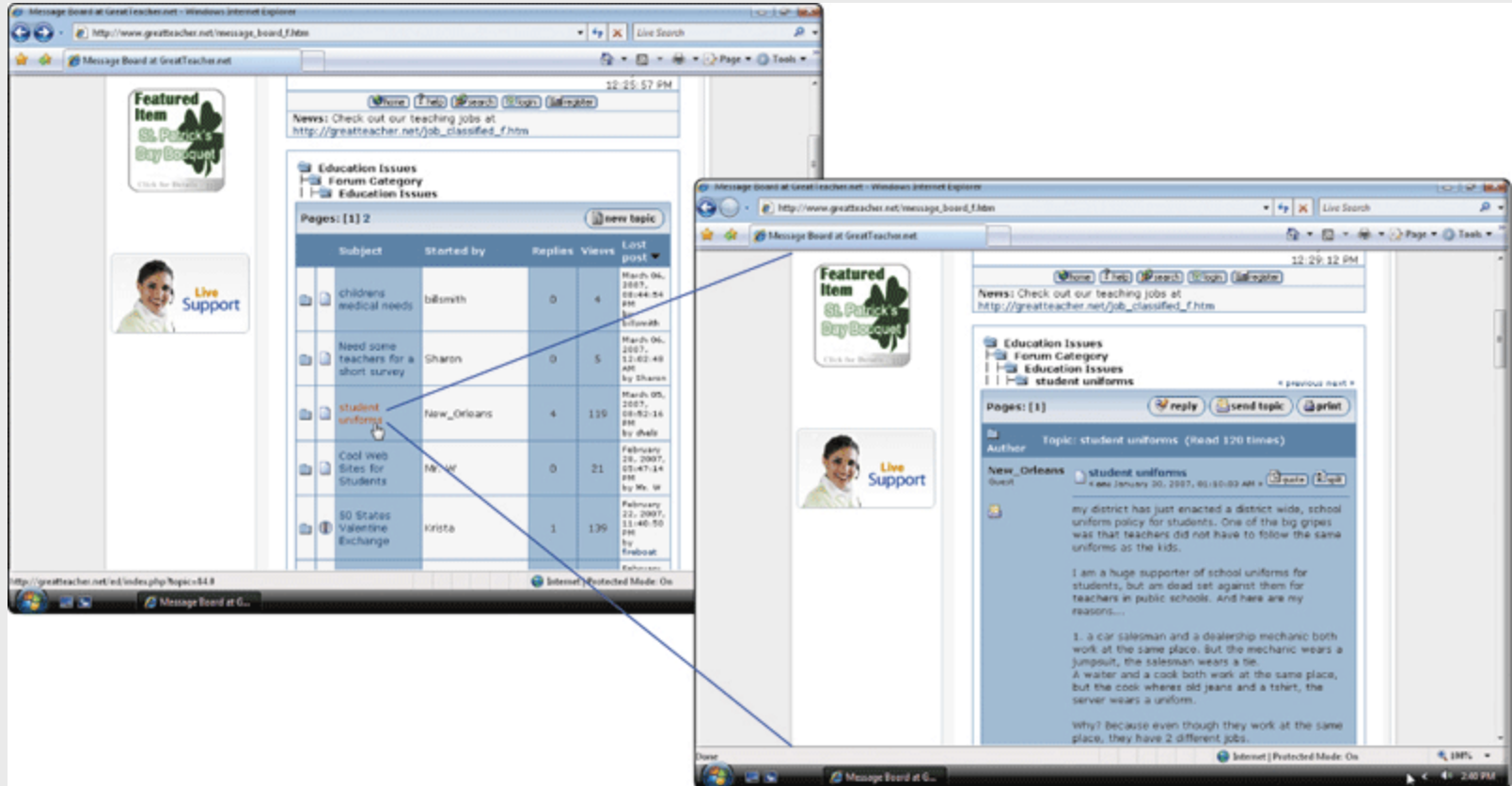
- FTP (file transfer protocol)
 - FTP sites and servers
 - Allows file downloads and uploads
 - Anonymous FTP
 - FTP programs



Other Internet Services

- Newsgroups and Message Boards
 - Online area in which users conduct written discussions about a particular subject
 - Usenet
 - News server
 - Article
 - Posting
 - Threaded discussion
 - Message board

Other Internet Services

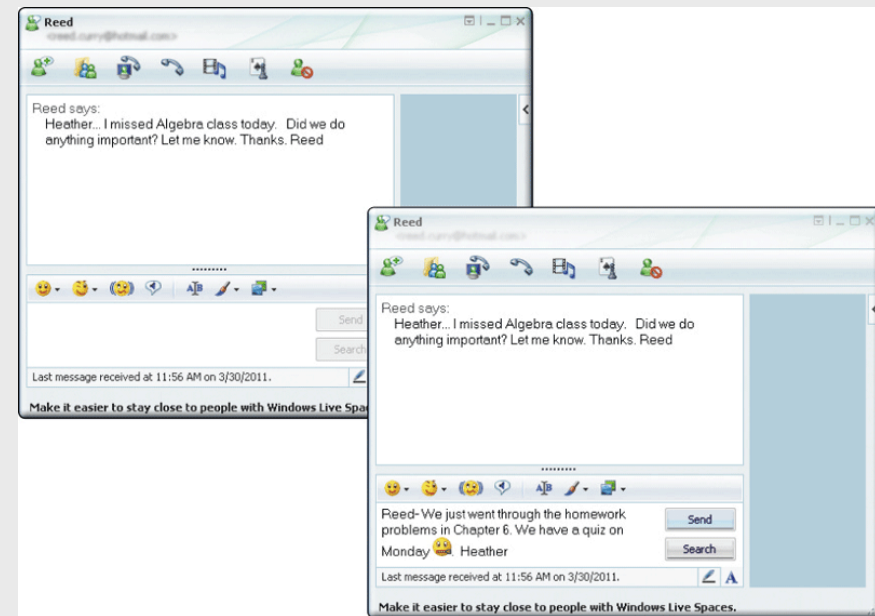


Other Internet Services

- Mailing Lists
 - Group of e-mail names and addresses given a single name
 - Subscribing and unsubscribing
 - LISTSERVs

Other Internet Services

- Instant Messaging
 - See when one or more people are online
 - Exchange messages and files
 - Join a private chat room
 - Text messaging
 - Short Message Service (SMS)



Other Internet Services

- Chat Rooms
 - Real-time conversation
 - Chat rooms
 - Chat clients


Other Internet Services

- Voice Over IP (VoIP)
 - Also called Internet telephony
 - Uses the Internet to connect calling parties
 - Low cost
 - magicJack



Netiquette

- Internet etiquette
 - The code of acceptable behaviors users should follow while on the Internet



Golden Rule: *Treat others as you would like them to treat you.*

1. In e-mail, newsgroups, and chat rooms:
 - Keep messages brief using proper grammar and spelling.
 - Be careful when using sarcasm and humor, as it might be misinterpreted.
 - Be polite. Avoid offensive language.
 - Avoid sending or posting **flames**, which are abusive or insulting messages. Do not participate in **flame wars**, which are exchanges of flames.
 - Avoid sending spam, which is the Internet's version of junk mail. **Spam** is an unsolicited e-mail message or newsgroup posting sent to many recipients or newsgroups at once.
 - Do not use all capital letters, which is the equivalent of SHOUTING!
 - Use **emoticons** to express emotion. Popular emoticons include
 - :) Smile :\ Undecided
 - :(Frown :o Surprised
 - :| Indifference :-D Laughing
 - Use abbreviations and acronyms for phrases such as
 - BTW by the way
 - FYI for your information
 - FWW for what it's worth
 - IMHO in my humble opinion
 - TTFN ta ta for now
 - TYVM thank you very much
 - Clearly identify a **spoiler**, which is a message that reveals a solution to a game or ending to a movie or program.
2. Read the **FAQ** (frequently asked questions) document if one exists. Many newsgroups and Web pages have an FAQ.
3. Use your username for your personal use only.
4. Do not assume material is accurate or up to date. Be forgiving of others' mistakes.
5. Never read someone's private e-mail.

Internet Security

- Firewall
- Filtering software
- Acceptable Use Policy (AUP)

The Impact of the Internet and the World Wide Web on Education

- The Web is the Gutenberg printing press of modern times
- Collaboration with other teachers and students
 - ePALS
- New instructional strategies



The Future of the Internet and the World Wide Web

- The Web will continue to evolve as the primary communications channel for people around the world
- By 2012, more than two billion wireless communication devices will be in use worldwide, and many of these products will have the ability to access the Web wirelessly

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Chapter 2 Complete

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