The Internet and World Wide Web

Discovering Computers 2012

Your Interactive Guide to the Digital World

Objectives Overview

Discuss the evolution of the Internet

Identify and briefly describe various broadband Internet connections and state differences between broadband Internet connections and dial-up connections

Describe the types of Internet access providers

Describe the purpose of an IP address and its relationship to a domain name

Explain the purpose of a Web browser and identify the components of a Web address

Describe how to use a search engine to search for information on the Web and differentiate between a search engine and a subject directory

Objectives Overview

Describe the types of Web sites

Explain how Web pages use graphics, animation, audio, video, virtual reality, and plug-ins

Identify and briefly describe the steps required for Web publishing

Describe the types of e-commerce

Explain how e-mail, mailing lists, instant messaging, chat rooms, VoIP, newsgroups and message boards, and FTP work

Identify the rules of netiquette

The Internet

- The **Internet** is a worldwide collection of networks that links millions of businesses, government agencies, educational institutions, and individuals
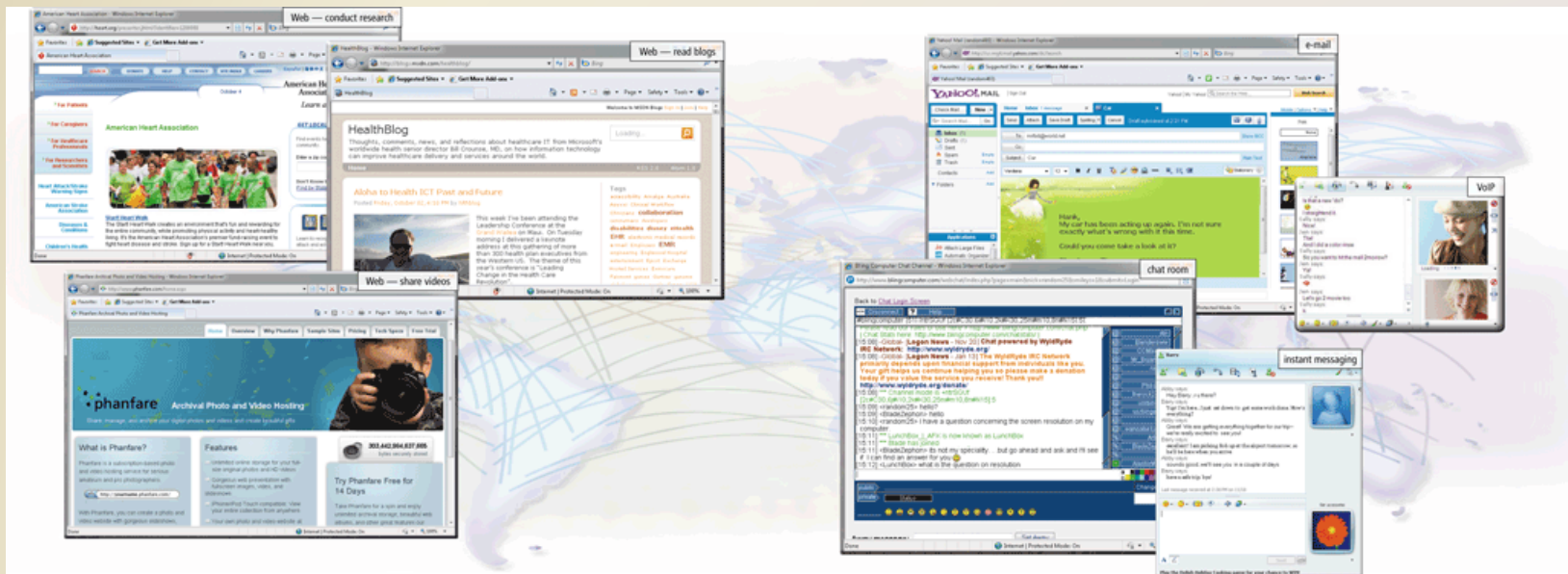
Evolution of the Internet

- The Internet originated as ARPANET in September 1969 and had two main goals:

Allow scientists at different physical locations to share information and work together

Function even if part of the network were disabled or destroyed by a disaster

Evolution of the Internet

1986 NSF connects NSFnet to ARPANET and becomes known as the Internet

1969 ARPANET becomes functional

1996 Internet2 is founded

1984 ARPANET has more than 1,000 individual computers linked as hosts

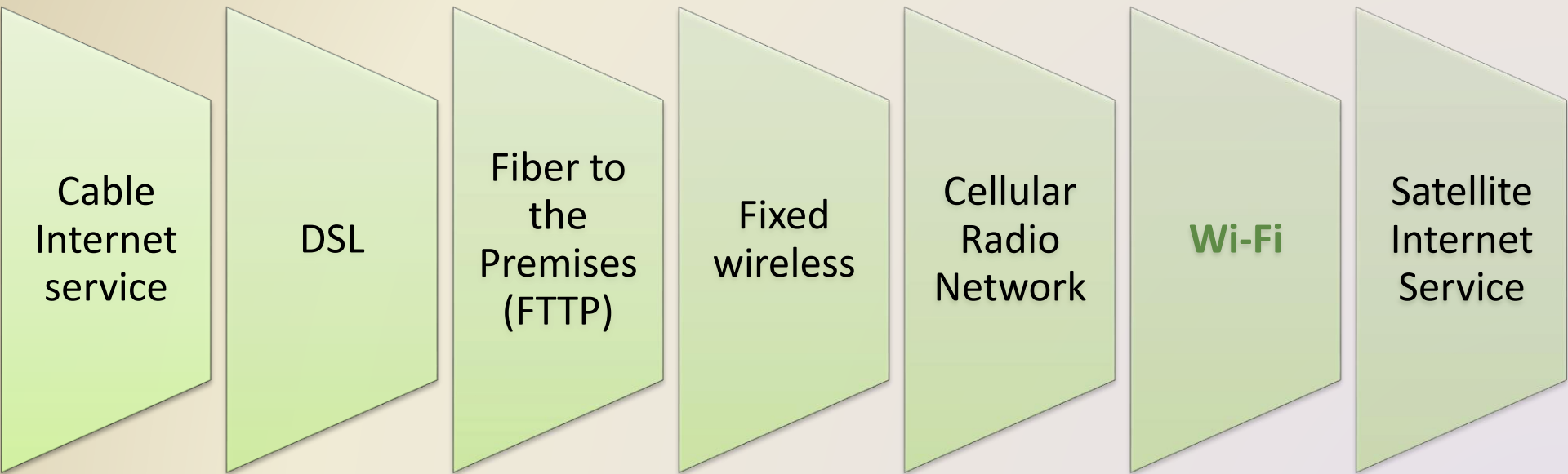**1995** NSFNet terminates its network on the Internet and resumes status as research network

Today More than 550 million hosts connect to the Internet

Evolution of the Internet

- Each organization is responsible only for maintaining its own network
  - The World Wide Web Consortium (W3C) oversees research and sets guidelines and standards
- Internet2 connects more than 200 universities and 115 companies via a high-speed private network

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Evolution of the Internet

- Many home and small business users connect to the Internet via high-speed broadband Internet service

Cable Internet service	DSL	Fiber to the Premises (FTTP)	Fixed wireless	Cellular Radio Network	**Wi-Fi**	Satellite Internet Service

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Evolution of the Internet

- An **access provider** is a business that provides individuals and organizations access to the Internet free or for a fee
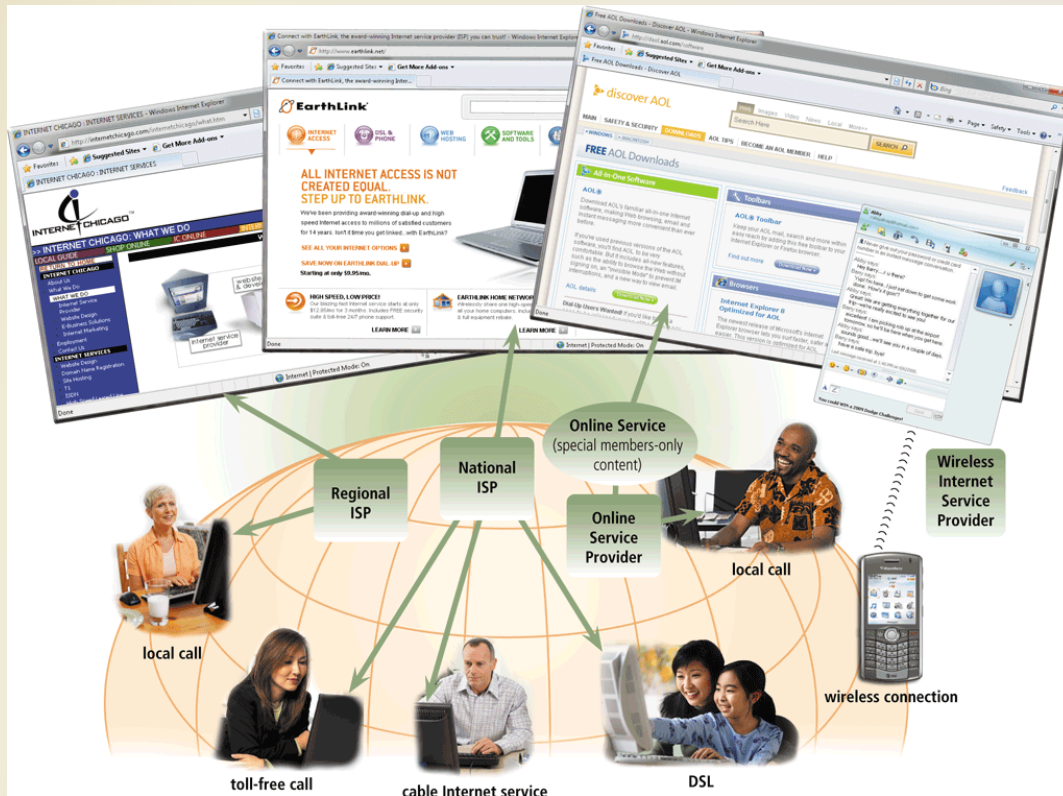
Evolution of the Internet

ISP (Internet service provider)

Regional ISPs provide Internet access to a specific geographical area

National ISPs provide Internet access in cities and towns nationwide

Online service provider (OSP)

Has many members-only features

Popular OSPs include AOL (America Online) and MSN (Microsoft Network)

Wireless Internet service provider

Provides wireless Internet access to computers and mobile devices

May require a wireless modem

Evolution of the Internet

How a Home User's Data and Information Might Travel the Internet Using a Cable Modem Connection

Step 1
You initiate an action to request data or information from the Internet. For example, you request to display a Web page on your computer screen.
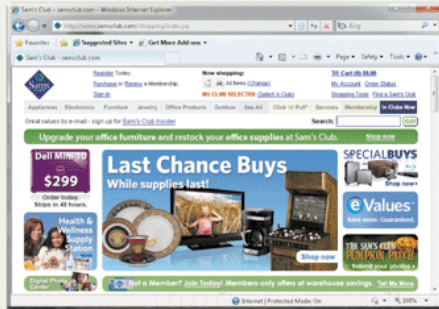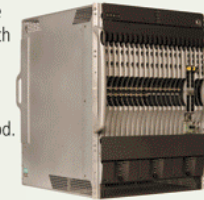
Step 2
A cable modem transfers the computer's digital signals to the cable television line in your house.
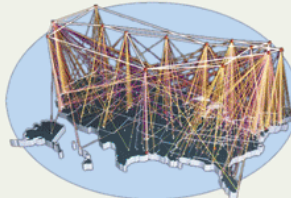
Step 3
Your request (digital signals) travels through cable television lines to a central cable system, which is shared by up to 500 homes in a neighborhood.

Step 4
The central cable system sends your request over high-speed fiber-optic lines to the cable operator, who often also is the ISP.
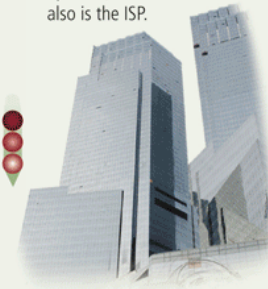
Step 5
The ISP routes your request through the Internet backbone to the destination server (in this example, the server that contains the requested Web site).

Step 6
The server retrieves the requested Web page and sends it back through the Internet backbone to your computer.

Evolution of the Internet

- An **IP address** is a number that uniquely identifies each computer or device connected to the Internet
- A **domain name** is the text version of an IP address
  - Top-level domain (TLD)
- A **DNS server** translates the domain name into its associated IP address

IP address ⟶ 72.14.207.99

Domain name ⟶ www.google.com

top-level domain ⟶

Evolution of the Internet

Examples of Generic Top-Level Domains

Generic TLD	Intended Purpose
aero	Aviation community members
biz	Businesses of all sizes
cat	Catalan cultural community
com	Commercial organizations, businesses, and companies
coop	Business cooperatives such as credit unions and rural electric co-ops
edu	Educational institutions
gov	Government agencies
info	Business organizations or individuals providing general information
jobs	Employment or human resource businesses
mil	Military organizations
mobi	Delivery and management of mobile Internet services
museum	Accredited museums
name	Individuals or families
net	Network providers or commercial companies
org	Nonprofit organizations
pro	Certified professionals such as doctors, lawyers, and accountants
tel	Internet communications
travel	Travel industry

The World Wide Web

- The **World Wide Web**, or **Web**, consists of a worldwide collection of electronic documents (**Web pages**)

- A **Web site** is a collection of related Web pages and associated items

- A **Web server** is a computer that delivers requested Web pages to your computer

- **Web 2.0** refers to Web sites that provide a means for users to interact

The World Wide Web

- A **Web browser**, or **browser**, allows users to access Web pages and Web 2.0 programs
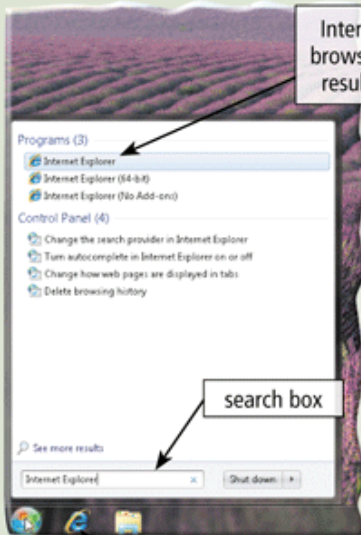
Internet Explorer

Firefox

Opera

Safari

Google Chrome

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The World Wide Web

How a Web Browser Displays a Home Page

Step 1
Start the Web browser software by clicking the Web browser icon on the taskbar or typing the Web browser name in the search box on the Start menu.
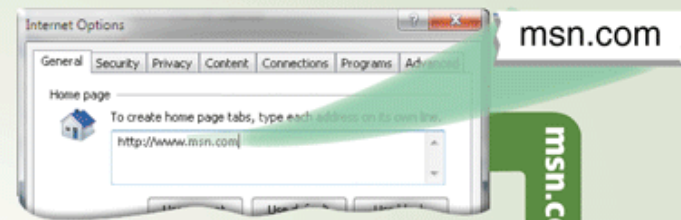
Internet Explorer Web browser name in search results on Start menu

Programs (3)
Internet Explorer
Internet Explorer (64-bit)
Internet Explorer (No Add-ons)

Control Panel (4)
Change the search provider in Internet Explorer
Turn autocomplete in Internet Explorer on or off
Change how web pages are displayed in tabs
Delete browsing history

search box

See more results

Internet Explorer

Shut down

Internet Explorer Web browser icon on taskbar

Step 2
Behind the scenes, the Web browser looks up its home page setting. For illustration purposes only, the screen on the right shows the home page setting is msn.com.
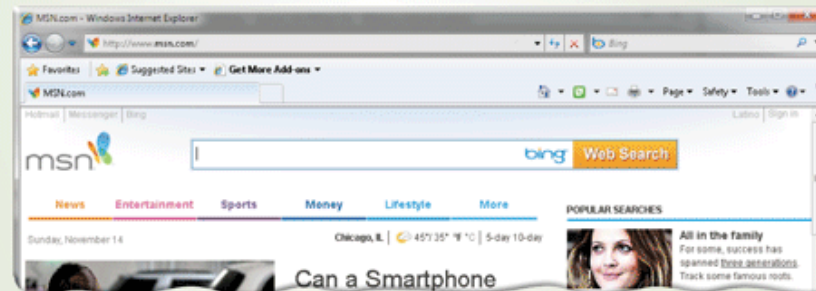
Internet Options
General | Security | Privacy | Content | Connections | Programs | Advanced
Home page
To create home page tabs, type each address on its own line.
http://www.msn.com

msn.com

Step 3
The Web browser communicates with a server maintained by your Internet access provider. The server translates the domain name of the home page to an IP address and then sends the IP address to your computer.

MSN.com - Windows Internet Explorer
http://www.msn.com/
Favorites | Suggested Sites | Get More Add-ons
MSN.com
Hotmail | Messenger | Bing
msn | bing | Web Search
News | Entertainment | Sports | Money | Lifestyle | More | POPULAR SEARCHES
Sunday, November 14 | Chicago, IL | 45°/35° °C | 5-day 10-day
All in the family
Can a Smartphone

Step 4
The Web browser uses the IP address to contact the Web server associated with the home page and then requests the home page from the server. The Web server sends the home page to the Web browser, which formats the page for display on your screen.

207.68.172.234

The World Wide Web

- A **home page** is the first page that a Web site displays

- Web pages provide **links** to other related Web pages
  - **Surfing the Web**

- **Downloading** is the process of receiving information

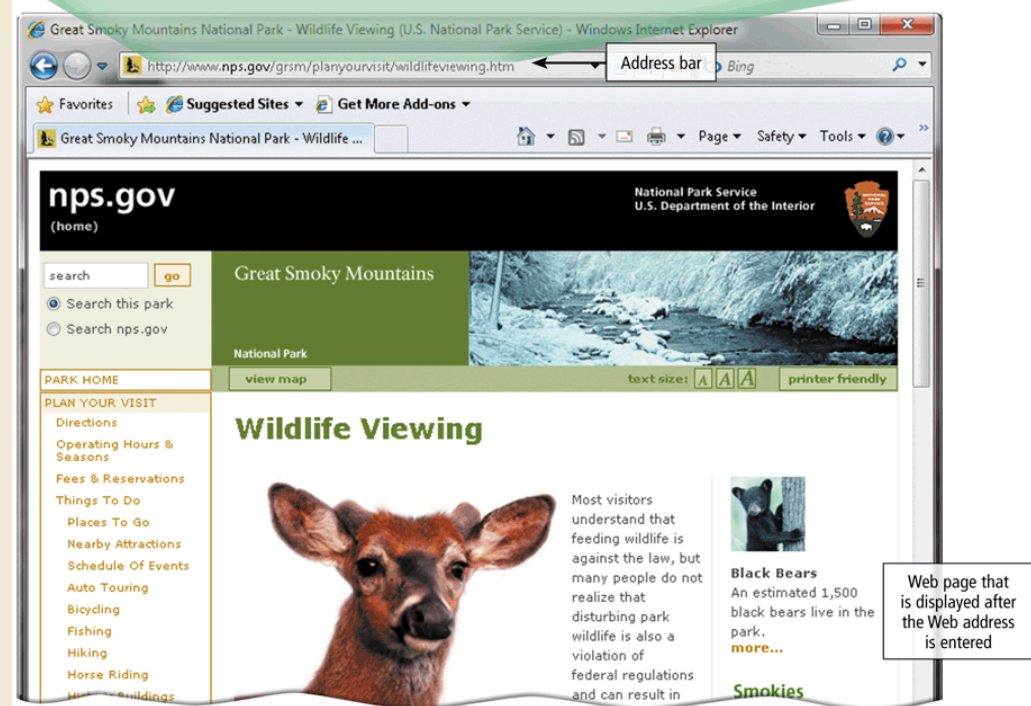- Some Web pages are designed specifically for microbrowsers

The World Wide Web

- A Web page has a unique address called a **URL** or **Web address**

The World Wide Web

- **Tabbed browsing** allows you to open and view multiple Web pages in a single Web browser window

The World Wide Web

- Two types of search tools are search engines and subject directories

Search engine

Finds information related to a specific topic

Subject directory

Classifies Web pages in an organized set of categories
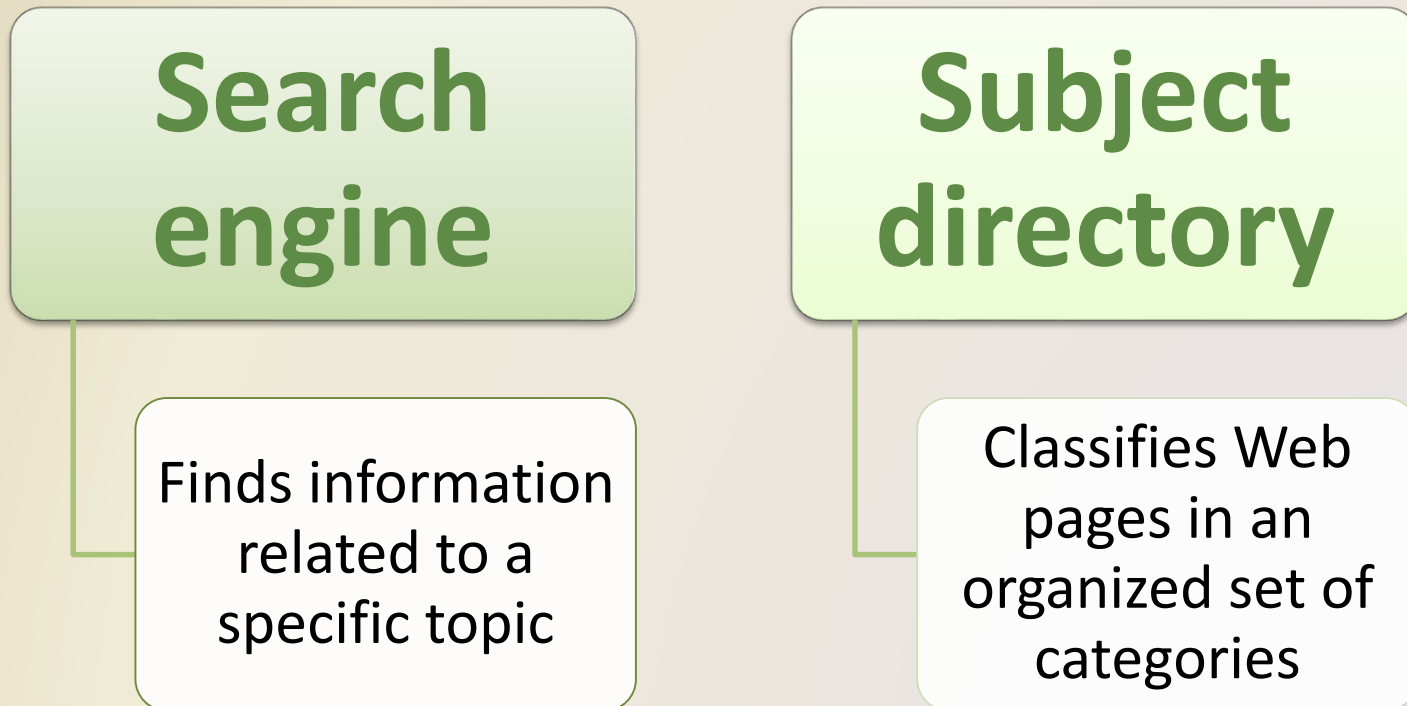
The World Wide Web

Widely Used Search Tools			
Search Tool	**Web Address**	**Search Engine**	**Subject Directory**
A9	a9.com	X	
AlltheWeb	alltheweb.com	X	
AltaVista	altavista.com	X	
AOL Search	search.aol.com	X	
Ask	ask.com	X	
Bing	bing.com	X	
Cuil (pronounced cool)	cuil.com	X	
Dogpile	dogpile.com	X	
Excite	excite.com	X	X
Gigablast	gigablast.com	X	X
Google	google.com	X	X
Lycos	lycos.com	X	
MSN	msn.com	X	X
Open Directory Project	dmoz.org	X	X
WebCrawler	webcrawler.com	X	
Yahoo!	yahoo.com	X	X

The World Wide Web

- A search engine is helpful in locating items such as:

Images

Videos

Audio

Publications

Maps

People or Businesses

Blogs

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The World Wide Web

How to Use a Search Engine

Step 1
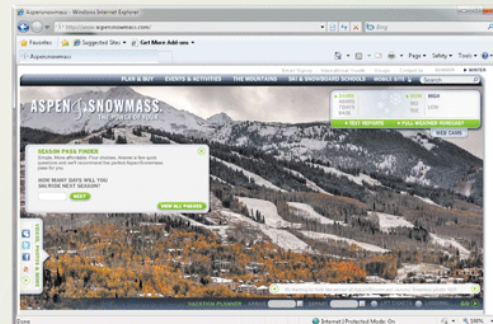Type the search engine's Web address (in this case, google.com) in the Address bar in the Web browser.
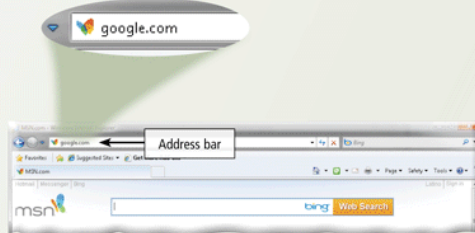
Step 2
Press the ENTER key. When the Google home page is displayed, type **Aspen Colorado ski resorts** as the search text and then point to the Google Search button.

Step 4
Click the Aspen Snowmass link to display a Web page with a description and links to skiing in Aspen.

Step 3
Click the Google Search button. When the results of the search are displayed, scroll through the links and read the descriptions. Point to the Aspen Snowmass link.
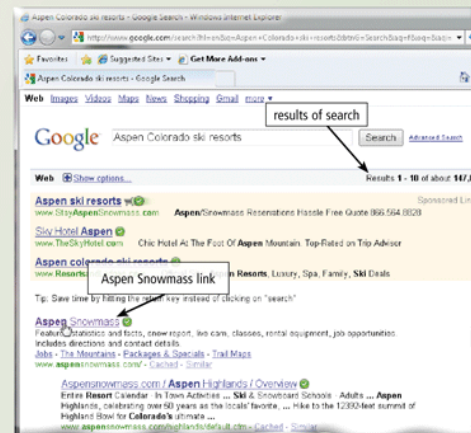
The World Wide Web

- Some Web browsers contain an Instant Search box to eliminate the steps of displaying the search engine's Web page prior to entering the search text
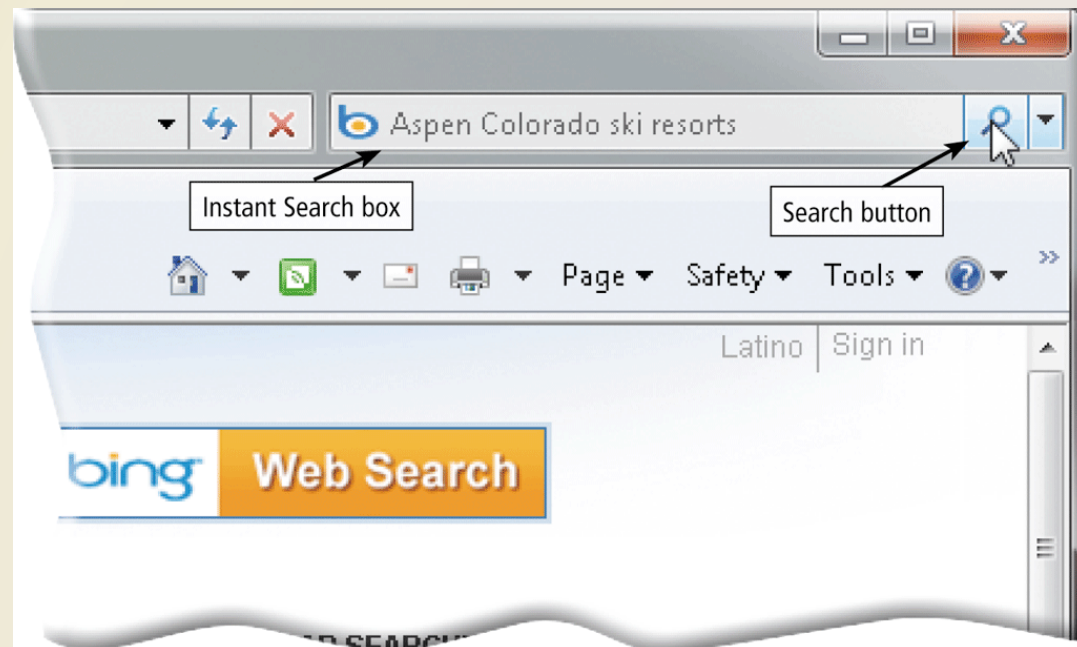
The World Wide Web

- Search operators can help to refine your search

| Search Engine Operators			
Operator	**Description**	**Examples**	**Explanation**
Space or +	Display hits that include specific words.	art + music art music	Results have both words art and music — in any order.
OR	Display hits that include only one word from a list.	dog OR puppy dog OR puppy OR canine	Results have either the word dog or puppy. Results have the word dog or puppy or canine.
( )	Combine hits that include specific words with those that include only one word from a list.	Kalamazoo Michigan (pizza OR subs)	Results have both words Kalamazoo Michigan and either the word, pizza, or the word, subs.
-	Exclude a word from the search results.	automobile -convertible	Results include automobile but do not include convertible.
" "	Search for an exact phrase in a certain order.	"19th century literature"	Results have the exact phrase, 19th century literature.
*	Substitute characters in place of the asterisk.	writer*	Results include any word that begins with writer (e.g., writer, writers, writer's).

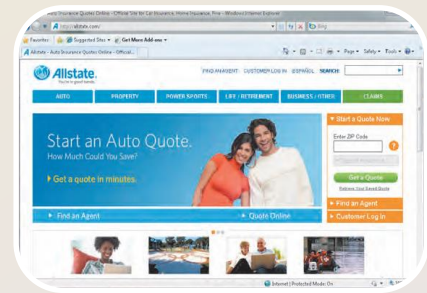# The World Wide Web
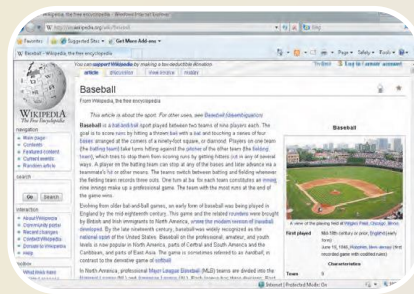
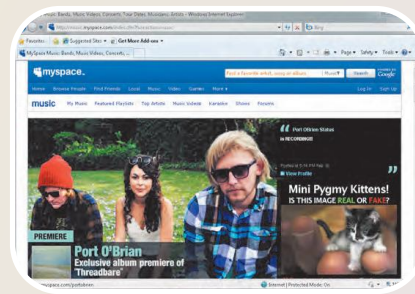- There are thirteen types of Web sites

Portal
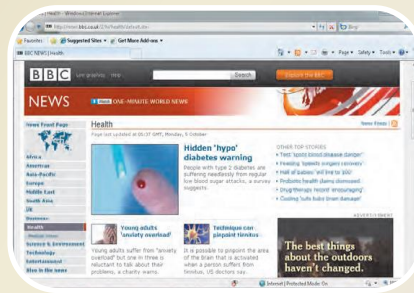
News
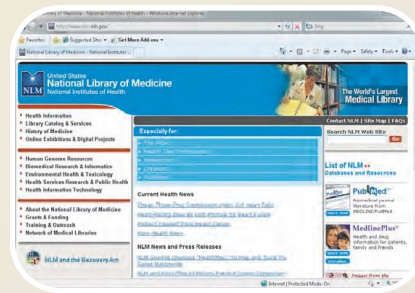
Informational

Business/Marketing

Blog

Wiki

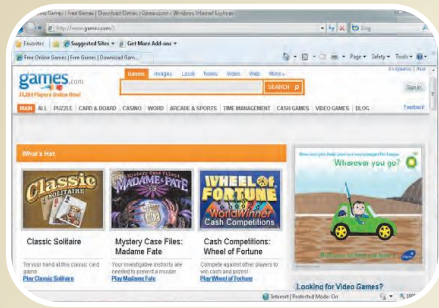**Online Social Network**
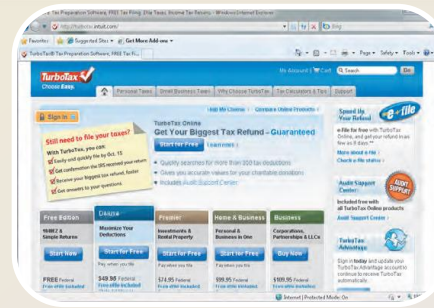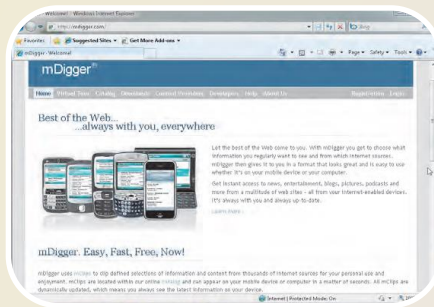

Educational

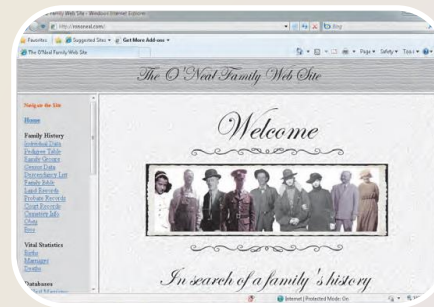# The World Wide Web

Entertainment

Advocacy

Web Application

Content Aggregator

Personal

The World Wide Web

- Information presented on the Web must be evaluated for accuracy

- No one oversees the content of Web pages

Criteria for Evaluating a Web Site's Content	
Evaluation Criteria	**Reliable Web Sites**
Affiliation	A reputable institution should support the Web site without bias in the information.
Audience	The Web site should be written at an appropriate level.
Authority	The Web site should list the author and the appropriate credentials.
Content	The Web site should be well organized and the links should work.
Currency	The information on the Web page should be current.
Design	The pages at the Web site should download quickly, be visually pleasing, and easy to navigate.
Objectivity	The Web site should contain little advertising and be free of preconceptions.

The World Wide Web

- **Multimedia** refers to any application that combines text with:

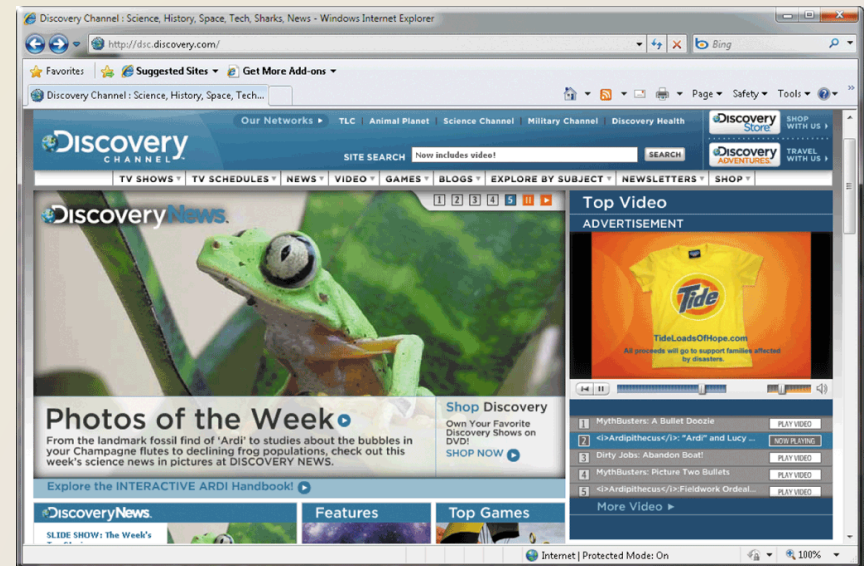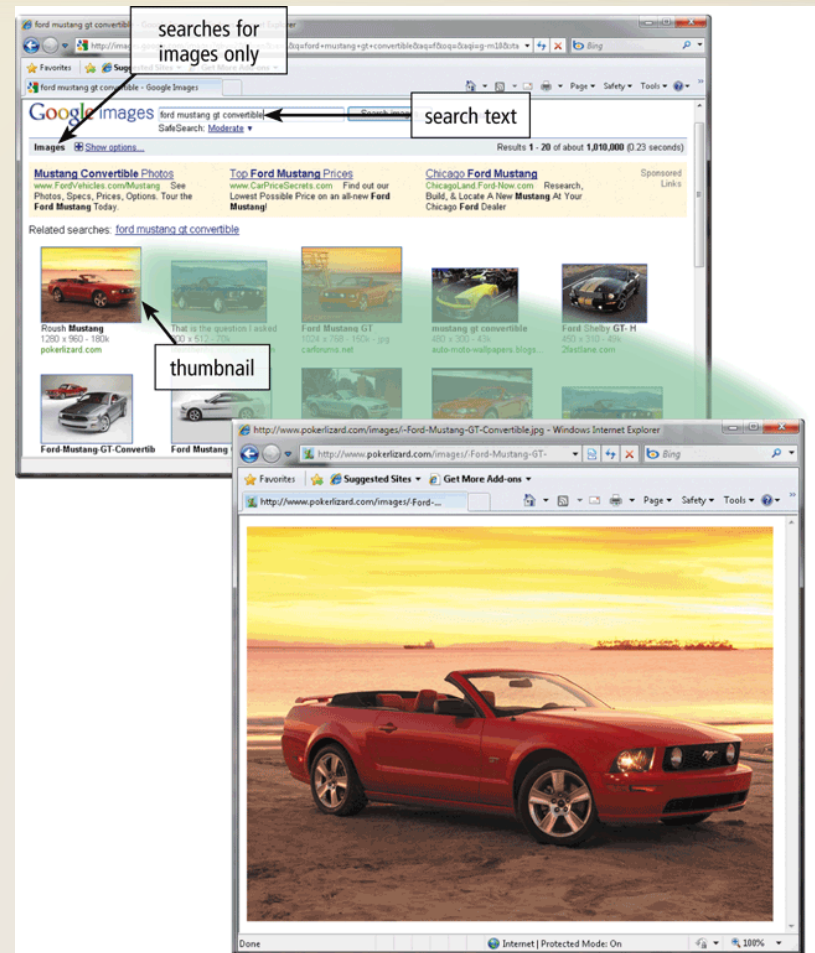Graphics

Animation

Audio

Video

Virtual Reality

The World Wide Web

- A **graphic** is a digital representation of nontext information

- Graphic formats include BMP, GIF, JPEG, PNG, and TIFF

The World Wide Web

- A thumbnail is a small version of a larger graphic

The World Wide Web

- **Animation** is the appearance of motion created by displaying a series of still images in sequence

The World Wide Web

- **Audio** includes music, speech, or any other sound
  - Compressed to reduce file size
- You listen to audio on your computer using a **player**
- **Streaming** is the process of transferring data in a continuous and even flow

Audio Web File Formats

Format	Description	Format	Description
AAC	Advanced Audio Coding	WAV	Windows waveform
AIFF	Audio Interchange File Format	WMA	Windows Media Audio (part of Windows Media framework)
ASF	Advanced Streaming (or Systems) Format (part of Windows Media framework)	RA	RealAudio sound file (supported by RealPlayer)
MP3	Moving Pictures Experts Group Audio Layer 3 (MPEG-3)	QT	QuickTime audio, video, or 3-D animation
Ogg	Free, unpatented audio and video format		

The World Wide Web

How to Purchase and Download Music Using iTunes

Step 1
Display the iTunes program on the screen. Search for, select, and pay for the music you want to purchase from the iTunes Music Store, which is integrated in the iTunes program.

Step 2
Download the music from the iTunes Music Store server to your computer's hard disk.

Step 3a
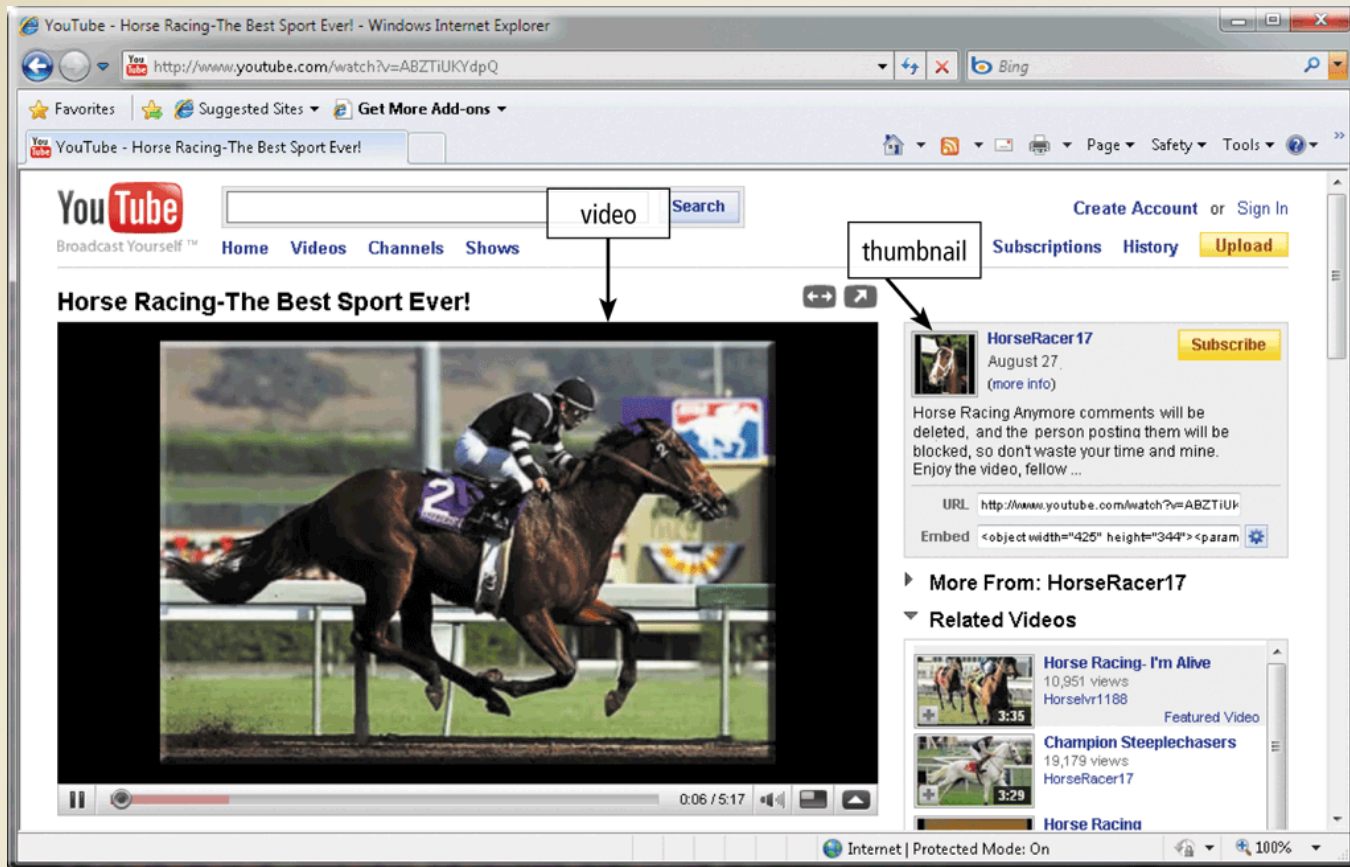Listen to the music from your computer's hard disk.

Step 3b
Download music from your computer's hard disk to a portable media player. Listen to the music through earbuds attached to the portable media player.
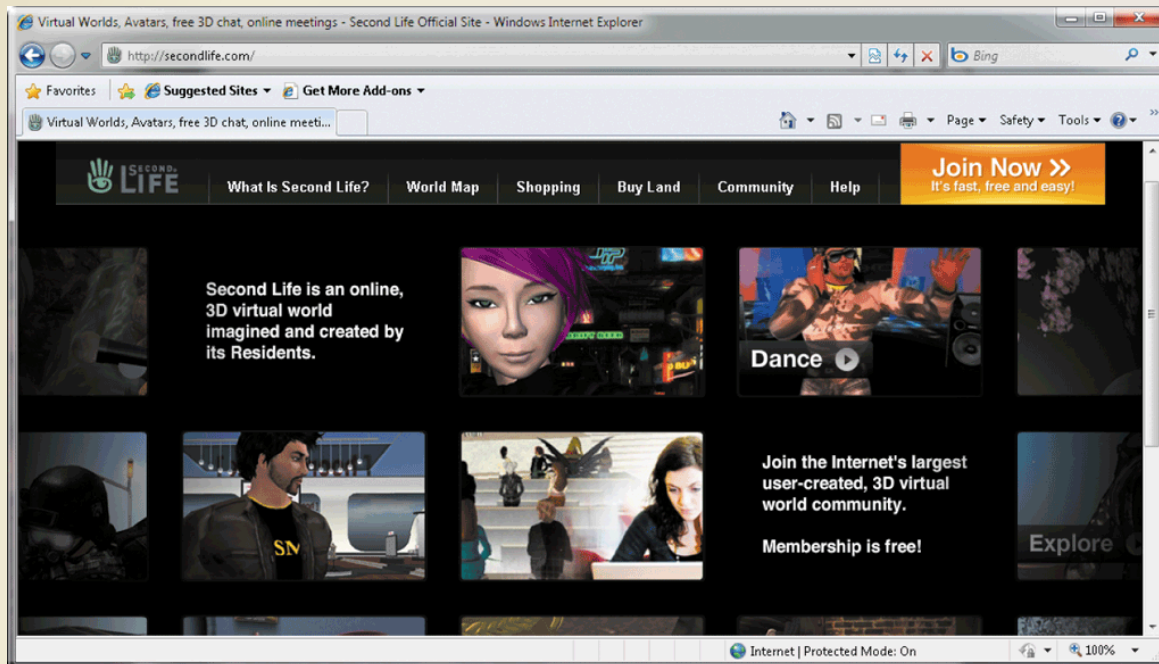
The World Wide Web

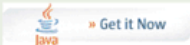- **Video** consists of images displayed in motion

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The World Wide Web

- **Virtual reality** (**VR**) is the use of computers to simulate a real or imagined environment that appears as a three-dimensional space

The World Wide Web

- A **plug-in** is a program that extends the capability of a Web browser

Popular Plug-Ins

Plug-In Application		Description	Web Address
Acrobat Reader	Get ADOBE® READER®	View, navigate, and print Portable Document Format (PDF) files — documents formatted to look just as they look in print	adobe.com
Flash Player	Get ADOBE® FLASH® PLAYER	View dazzling graphics and animation, hear outstanding sound and music, display Web pages across an entire screen	adobe.com
Java	» Get it Now	Enable Web browser to run programs written in Java, which add interactivity to Web pages	java.com
QuickTime	Get QuickTime Free Download	View animation, music, audio, video, and VR panoramas and objects directly on a Web page	apple.com
RealPlayer	real RealPlayer DOWNLOAD	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	Get ADOBE® SHOCKWAVE® PLAYER	Experience dynamic interactive multimedia, 3-D graphics, and streaming audio	adobe.com
Silverlight	Install Microsoft® Silverlight™	Experience high-definition video, high-resolution interactive multimedia, and streaming audio and video	microsoft.com
Windows Media Player	Windows MediaPlayer	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

- **Web publishing** is the development and maintenance of Web pages

Plan a Web site	Analyze and design a Web site	Create a Web site	Deploy a Web site	Maintain a Web site

Discovering Computers 2012: Chapter 2
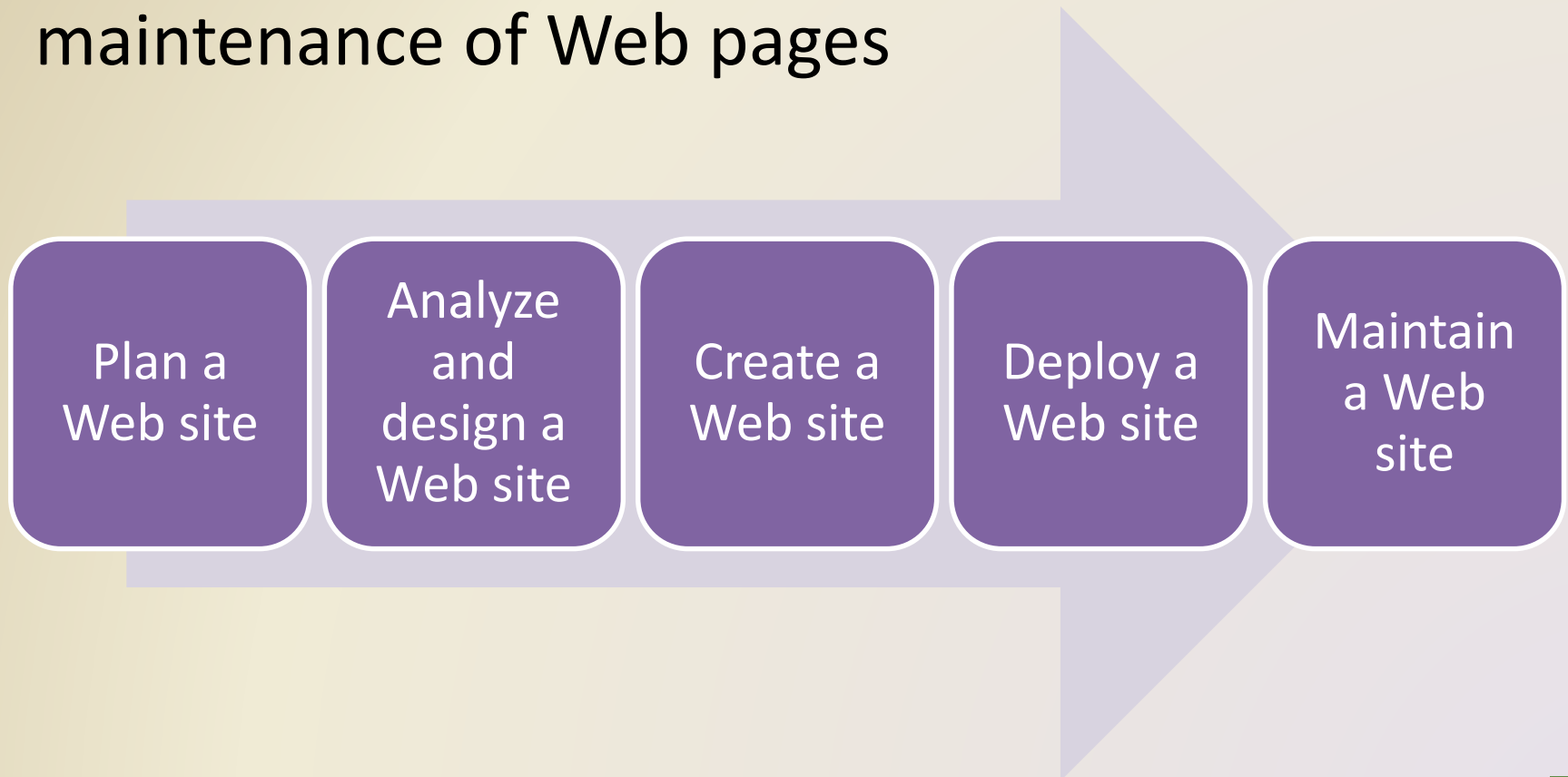
E-Commerce

- **E-commerce** is a business transaction that occurs over an electronic network
  - M-commerce identifies e-commerce that takes place using mobile devices

E-Commerce

E-Commerce

An Example of E-Retail

Step 1
The customer displays the e-retailer's electronic storefront.

Step 2
The customer collects purchases in an electronic shopping cart.

Step 3
The customer enters payment information on a secure Web site. The e-retailer sends financial information to a bank.

Step 4
The bank performs security checks and sends authorization back to the e-retailer.

Step 5
The e-retailer's Web server sends confirmation to the customer, processes the order, and then sends it to the fulfillment center.

Step 6
The fulfillment center packages the order, prepares it for shipment, and then sends a report to the server where records are updated.

Step 7
While the order travels to the customer, shipping information is posted on the Web.

Step 8
The order is delivered to the customer, who may be required to sign a handheld computer or document to acknowledge receipt.

Other Internet Services

- **E-mail** is the transmission of messages and files via a computer network

- An **e-mail program** allows you to create, send, receive, forward, store, print, and delete e-mail messages

How to Send an E-Mail Message Using Outlook

Step 1
Start an e-mail program and point to the New Mail Message button.
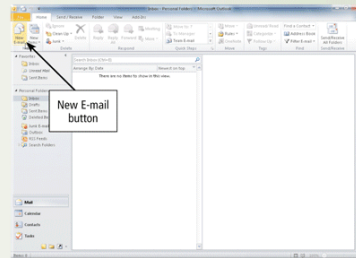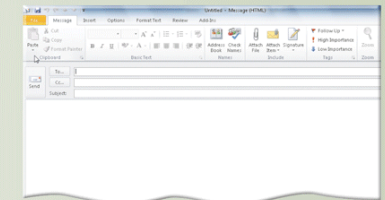
New E-mail button

Step 2
Click the New Mail Message button to display the Message window.

Step 3
Enter the recipient's e-mail address, the subject, and the message in the Message window.
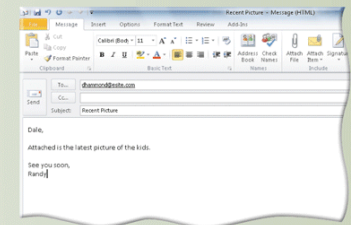
Step 4
Click the Attach File button on the Message tab to attach a JPEG file containing a photo to the message. Click the Send button to send the message.

Attach File button

icon for JPEG file attached to message
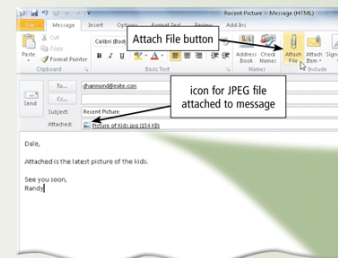
Step 5
When Dale receives the e-mail message, she opens the JPEG file to view the photo.
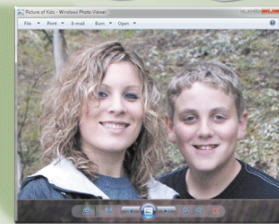
Other Internet Services

How an E-Mail Message May Travel from a Sender to a Receiver

Step 1
Using an e-mail program, you create and send a message.

Step 2
Your e-mail program contacts software on your service provider's outgoing mail server.

Step 3
Software on the outgoing mail server determines the best route for the data and sends the message, which travels along Internet routers to the recipient's incoming mail server.

Step 4
When the recipient uses an e-mail program to check for e-mail messages, the message transfers from the incoming mail server to the recipient's computer.

Internet service provider's incoming mail server

Internet router

Internet router

Other Internet Services

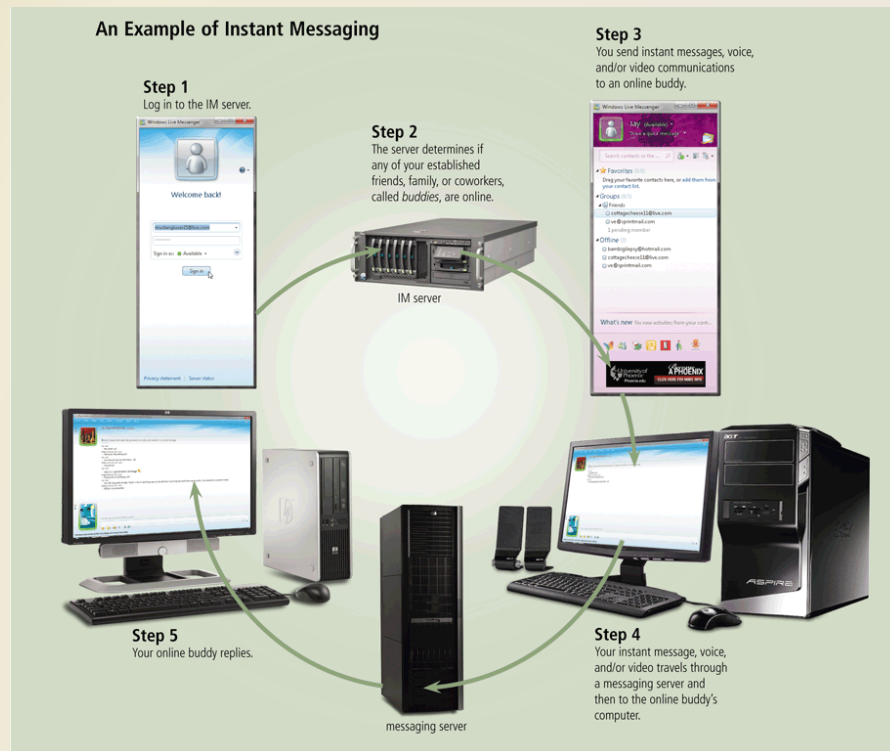- A **mailing list** is a group of e-mail names and addresses given a single name

  - **Subscribing** adds your e-mail name and address
  - **Unsubscribing** removes your name
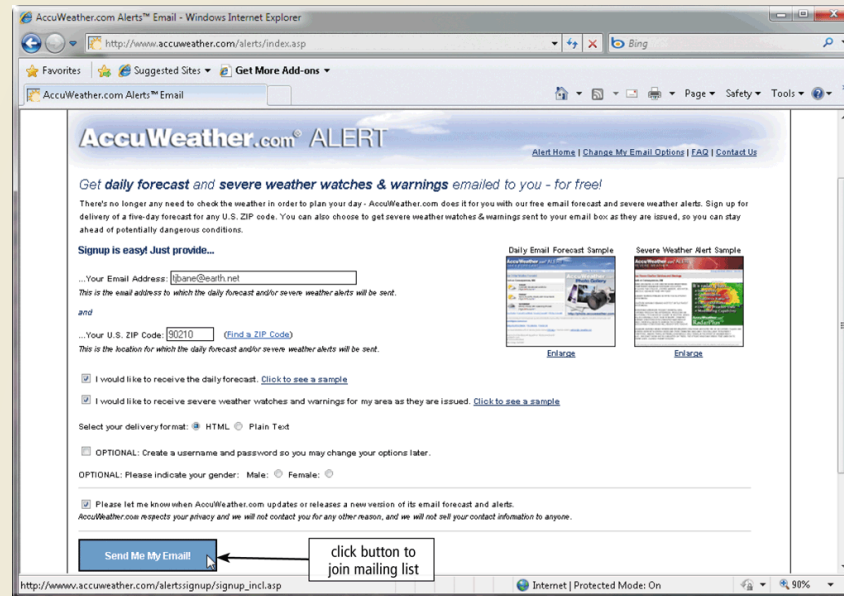
Other Internet Services

- **Instant messaging** (**IM**) is a **real-time** Internet communications service

An Example of Instant Messaging

Step 1
Log in to the IM server.

Step 2
The server determines if any of your established friends, family, or coworkers, called *buddies*, are online.

IM server

Step 3
You send instant messages, voice, and/or video communications to an online buddy.

Step 4
Your instant message, voice, and/or video travels through a messaging server and then to the online buddy's computer.

messaging server

Step 5
Your online buddy replies.

Other Internet Services

- A **chat** is a real-time typed conversation that takes place on a computer

- A **chat room** is a location on an Internet server that permits users to chat with each other
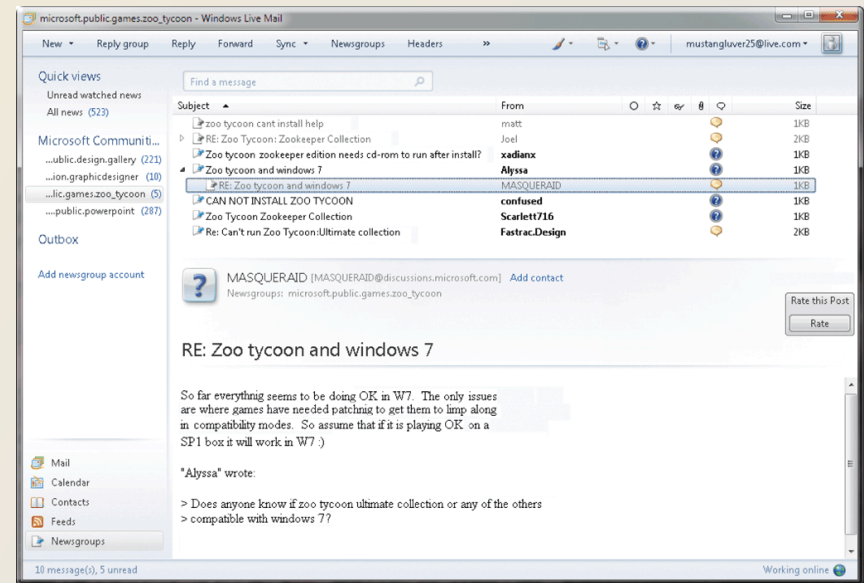
Other Internet Services

- **VoIP** (Voice over IP) enables users to speak to other users over the Internet

  – Also called Internet telephony

Other Internet Services

- A **newsgroup** is an online area in which users have written discussions about a particular subject

  – Typically requires a newsreader

- A **message board** is a Web-based type of discussion group

Other Internet Services

- **FTP** (File Transfer Protocol) is an Internet standard that permits file **uploading** and downloading with other computers on the Internet

- Many operating systems include FTP capabilities

- An FTP server is a computer that allows users to upload and/or download files using FTP

Netiquette

- **Netiquette** is the code of acceptable Internet behavior

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

1. In e-mail, chat rooms, and newsgroups:
   - Keep messages brief. Use proper grammar, spelling, and punctuation.
   - Be careful when using sarcasm and humor, as it might be misinterpreted.
   - Be polite. Avoid offensive language.
   - Read the message before you send it.
   - Use meaningful subject lines.
   - 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   :| Indifference   :o Surprised
     - :(Frown   :\ Undecided

   - Use abbreviations and acronyms for phrases:
     - btw   by the way
     - imho   in my humble opinion
     - fyi   for your information
     - ttfn   ta ta for now
     - fwiw   for what it's worth
     - 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), if one exists. Many newsgroups and Web pages have an FAQ.
3. Do not assume material is accurate or up-to-date. Be forgiving of other's mistakes.
4. Never read someone's private e-mail.

Summary

History and structure of the Internet

World Wide Web

Browsing, navigating, searching, Web publishing, and e-commerce

Other Internet services: e-mail, instant messaging, chat rooms, VoIP, newsgroups and message boards, and FTP

Rules of netiquette

The Internet and World Wide Web

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