

Fundamentals of the World Wide Web and Internet

Introduction

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

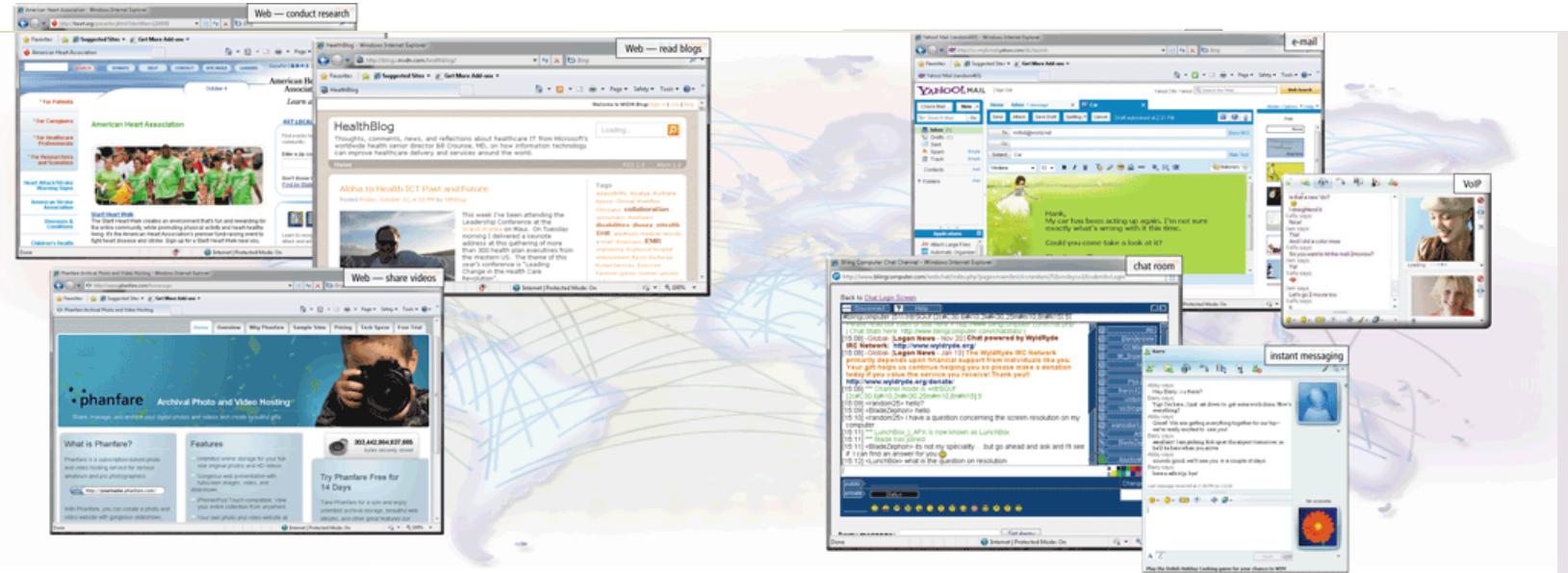
Describe the types of e-commerce

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

1969
ARPANE
T
becomes
functiona
l

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

1996
Internet2
is
founded

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

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

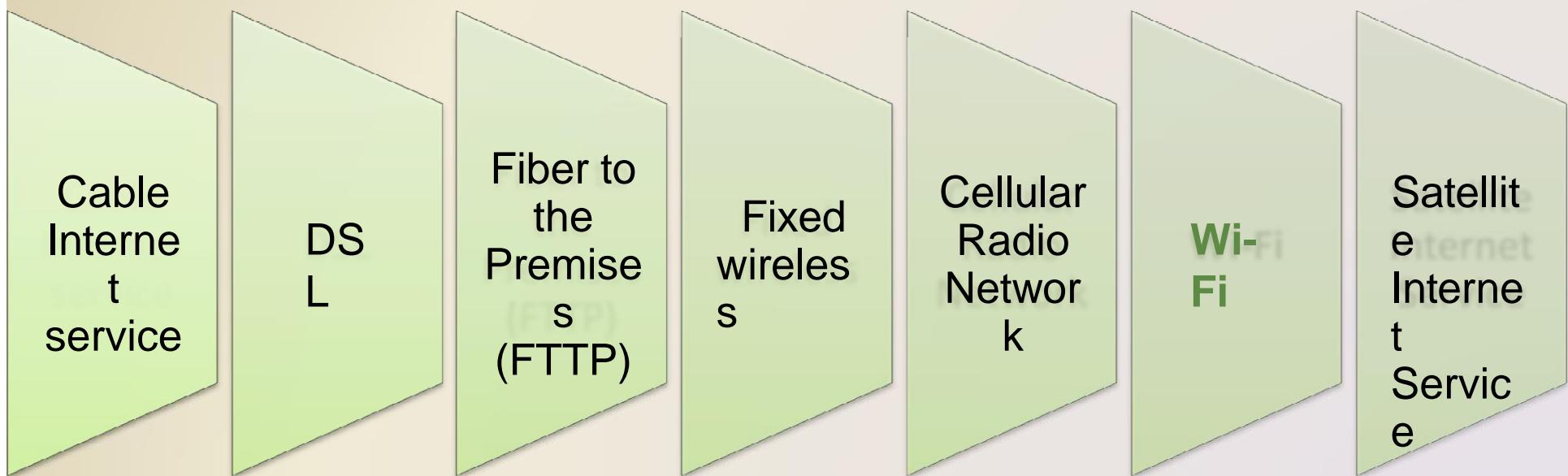
Today
More than
550 million
hosts
connect to
the Internet

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

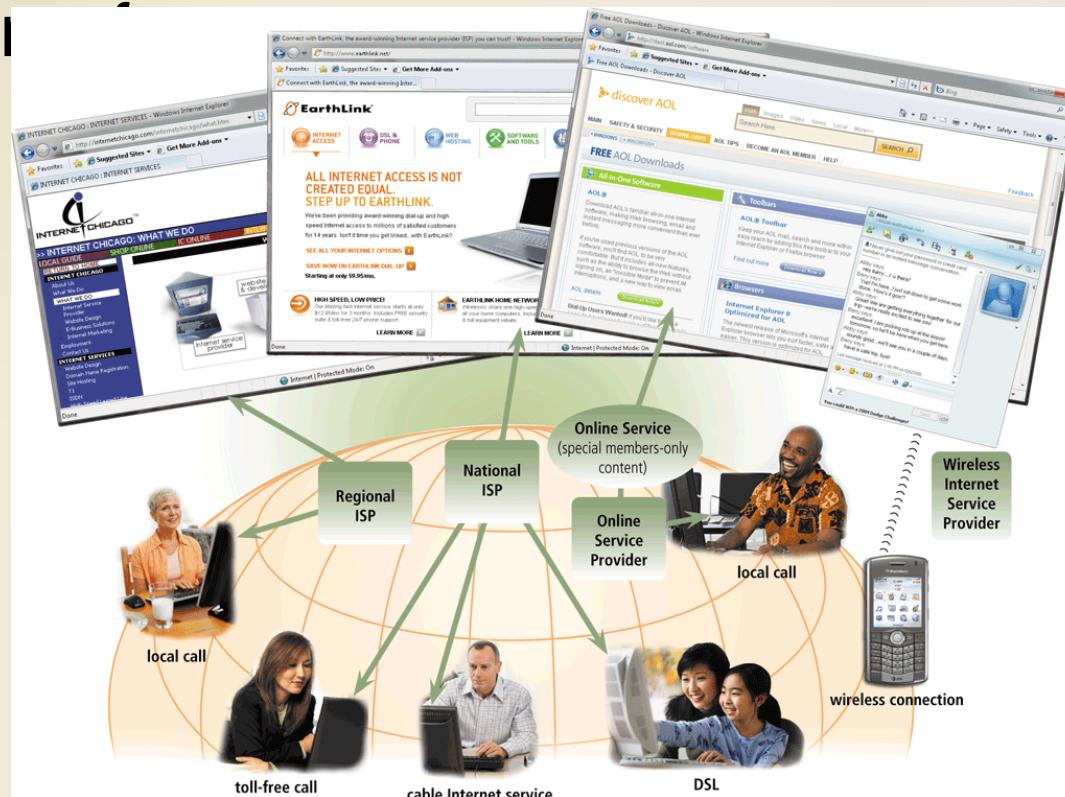
Evolution of the Internet

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



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

National ISPs provide Internet access in cities and towns nationwide

Online service provider

Has many members-only features

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

Wireless Internet service

Provides wireless Internet access to computers and mobile

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.



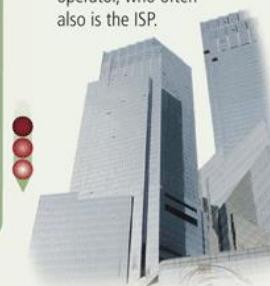
Step 3

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).



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~~ in IP address → 72.14.207.99

Domain name → www.google.com
top-level domain → .com

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

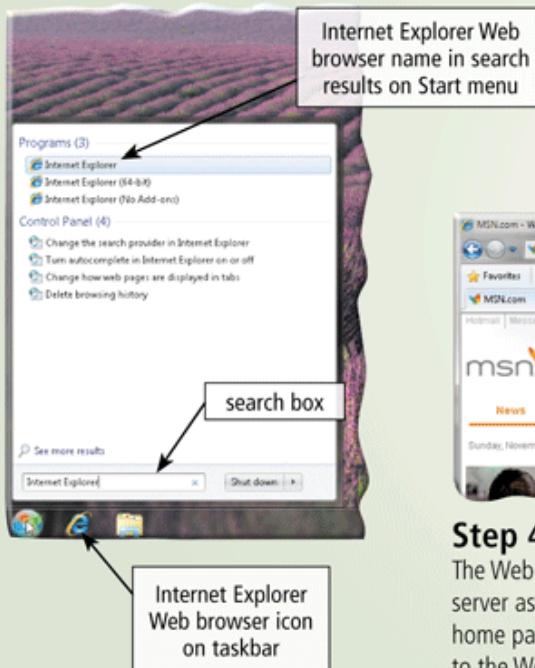
Google
Chrome

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.



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.



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.

207.68.172.234

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.

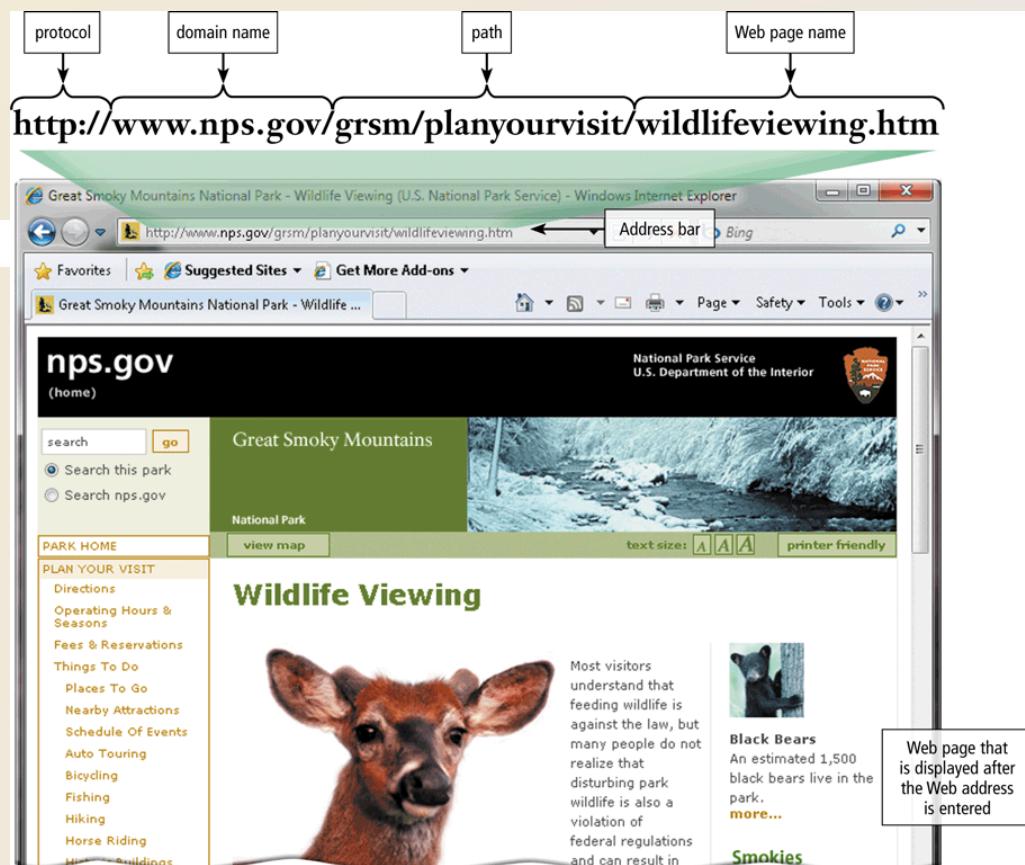
The World Wide Web

- 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**

**Subject
directory**

Finds information related to a specific topic

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
Publications

Audio

Maps

People or
Businesses

Blogs

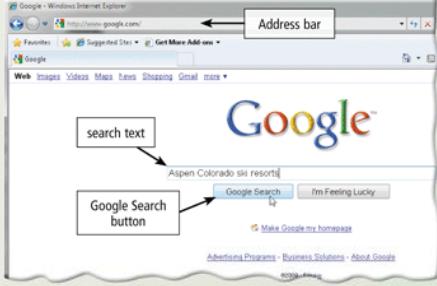
The World Wide Web

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 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.

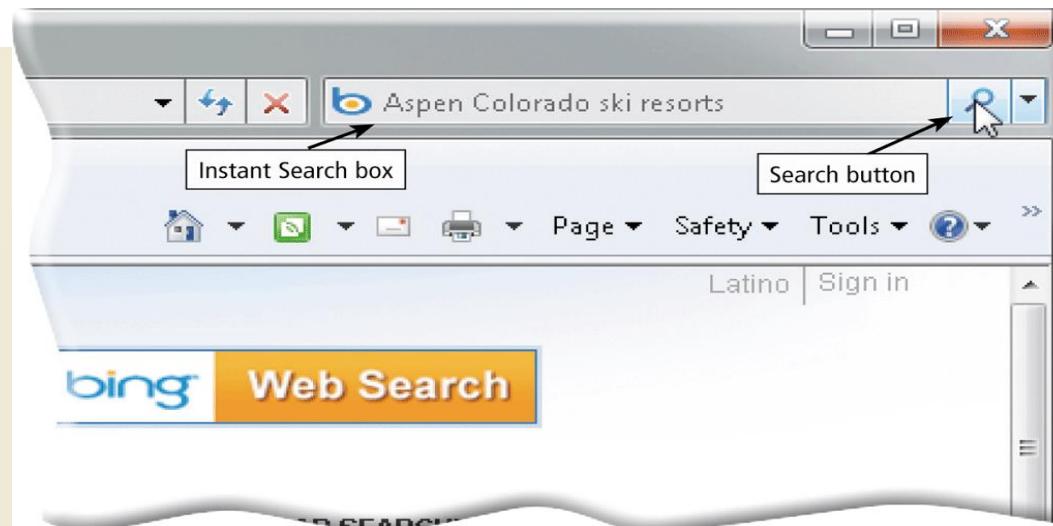


Step 4 Click the Aspen Snowmass link to display a Web page with a description and links to skiing in Aspen.



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

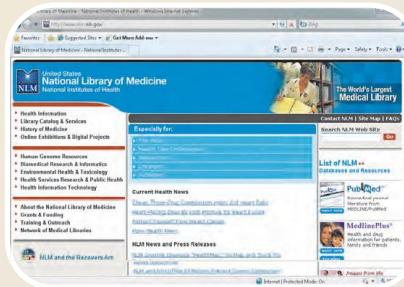
- There are thirteen types of Web



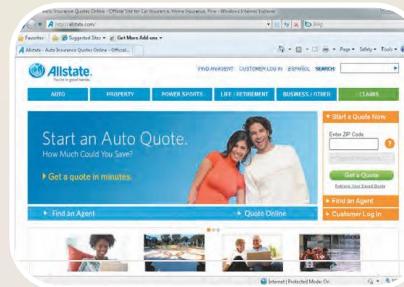
Portal



News



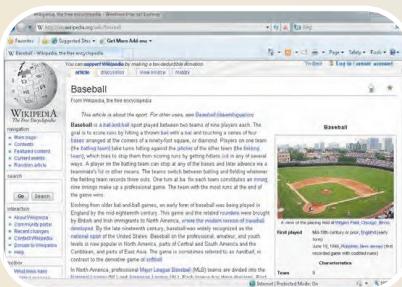
Informational



Business/Marketing



Blog



Wiki

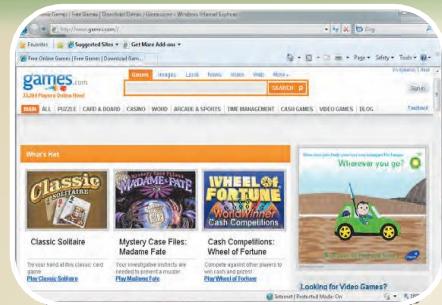


Online Social Network



Educational

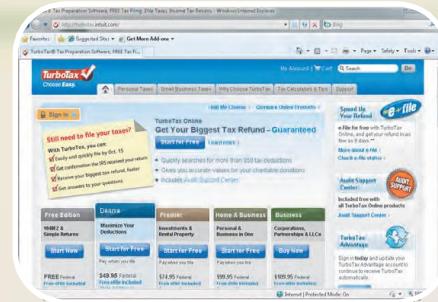
The World Wide Web



Entertainment



Advocacy



Web Application



Content Aggregator



Personal

Video: Tell Your Stories via Vlog



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

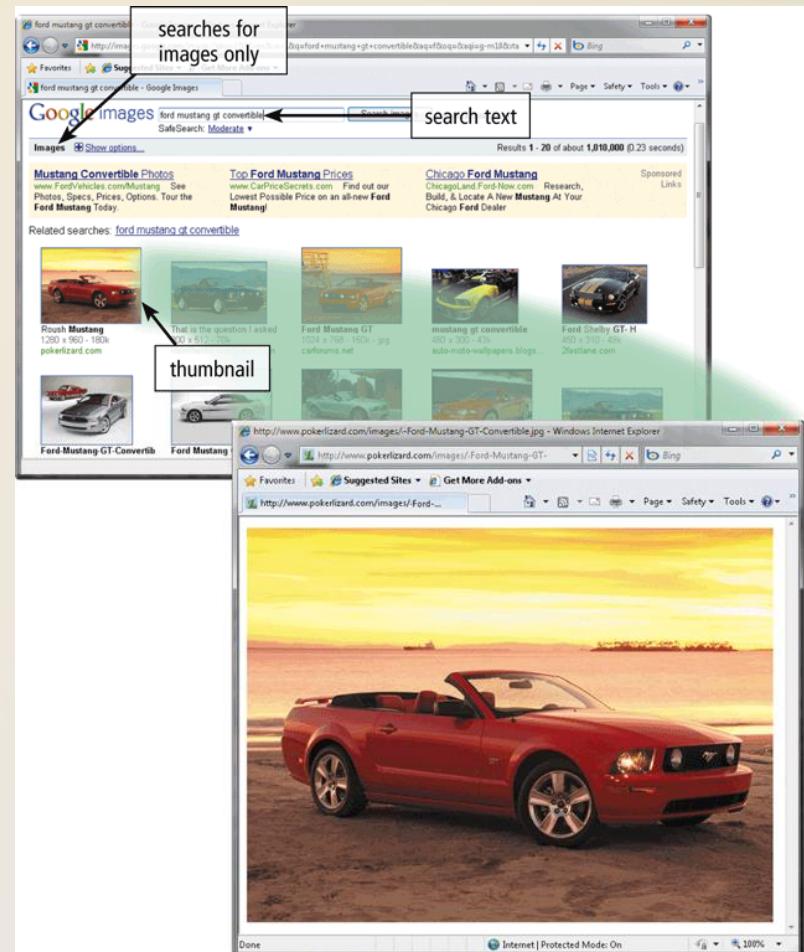
The World Wide Web

- 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 data**

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.



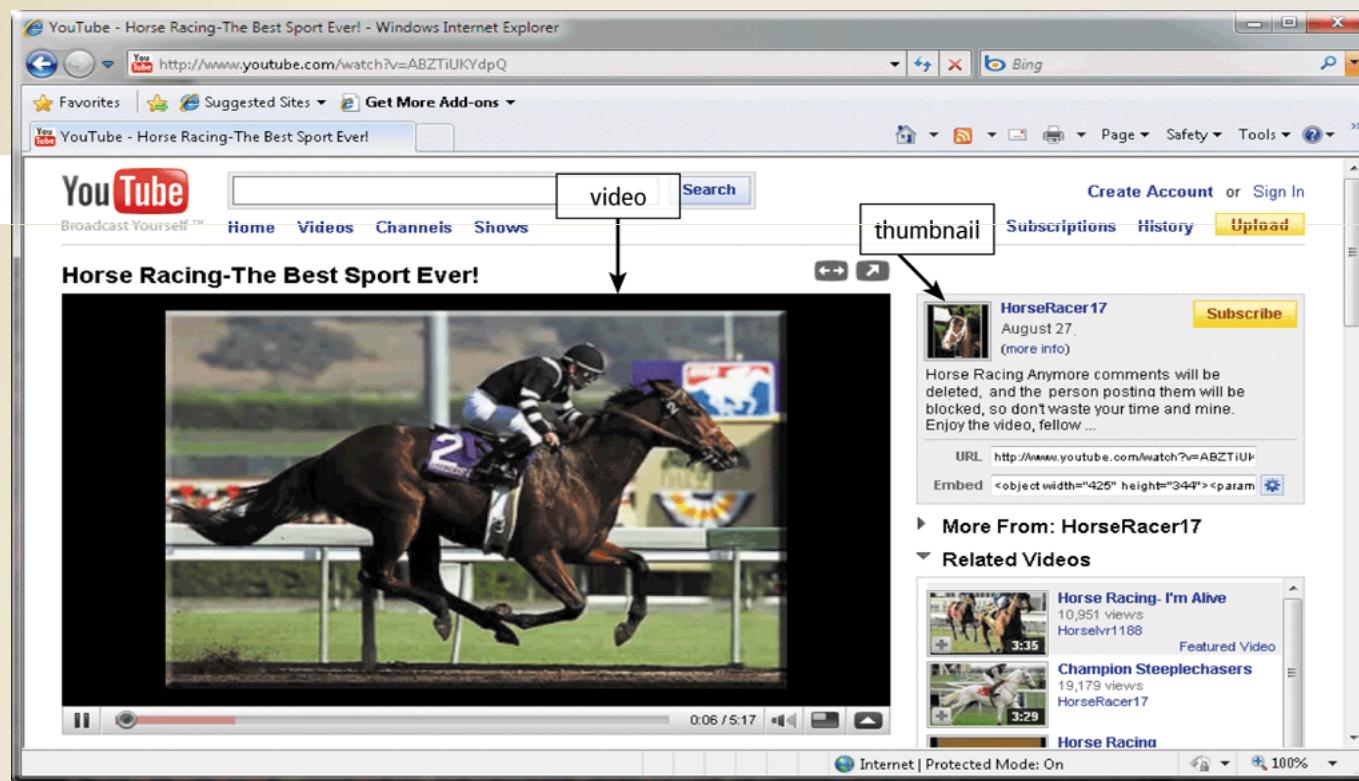
Step 3b

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.



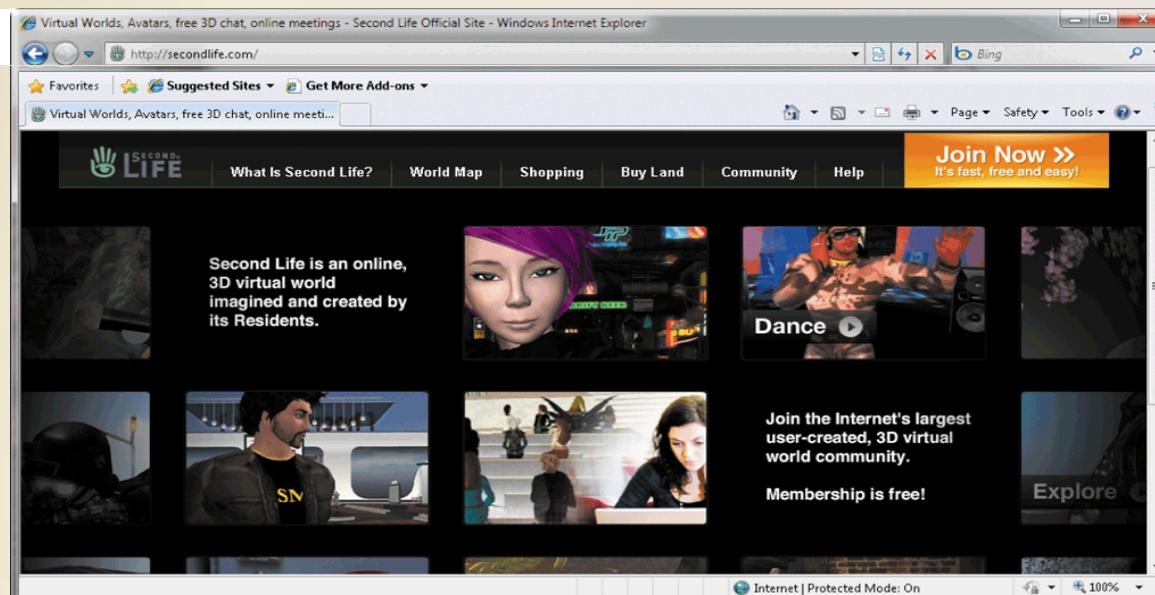
The World Wide Web

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



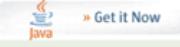
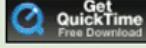
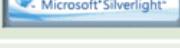
The World Wide Web

- 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 	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

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

Plan a
Web site

Analyze
and
design a
Web site

Create a
Web site

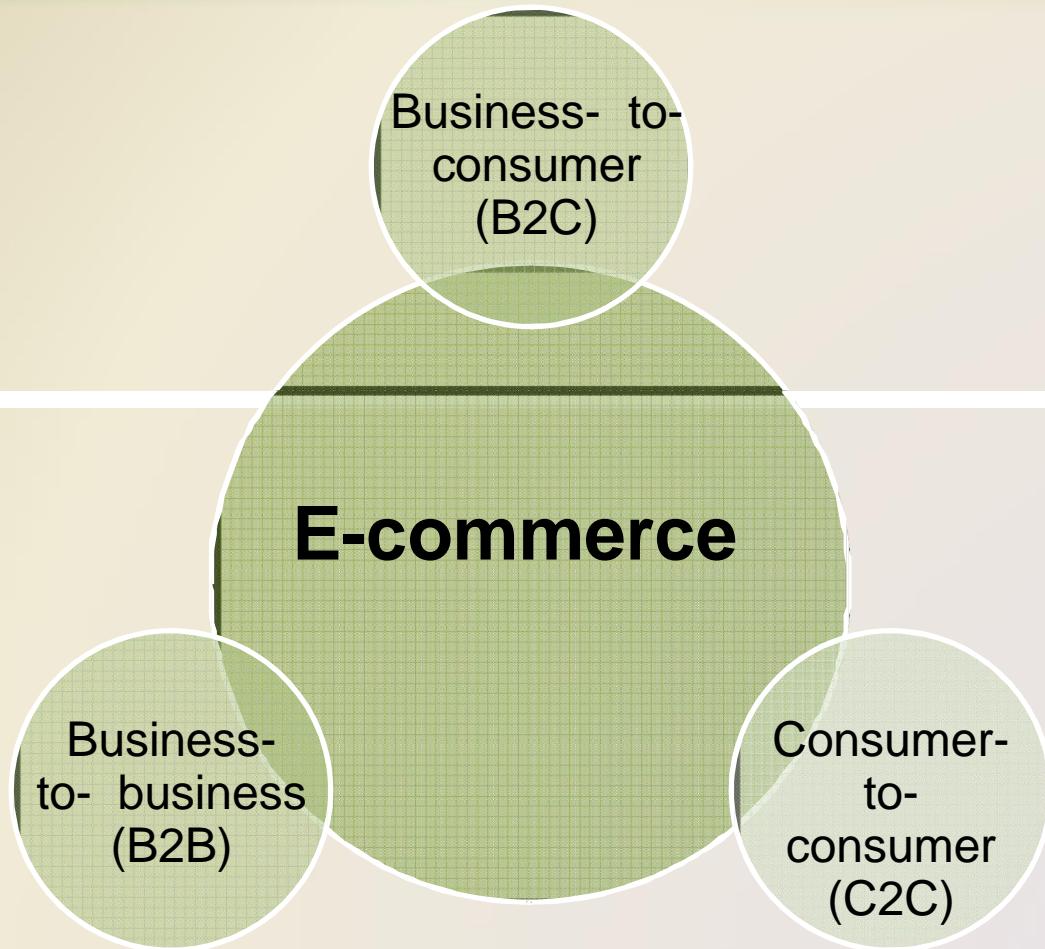
Deploy a
Web site

Maintain
a Web
site

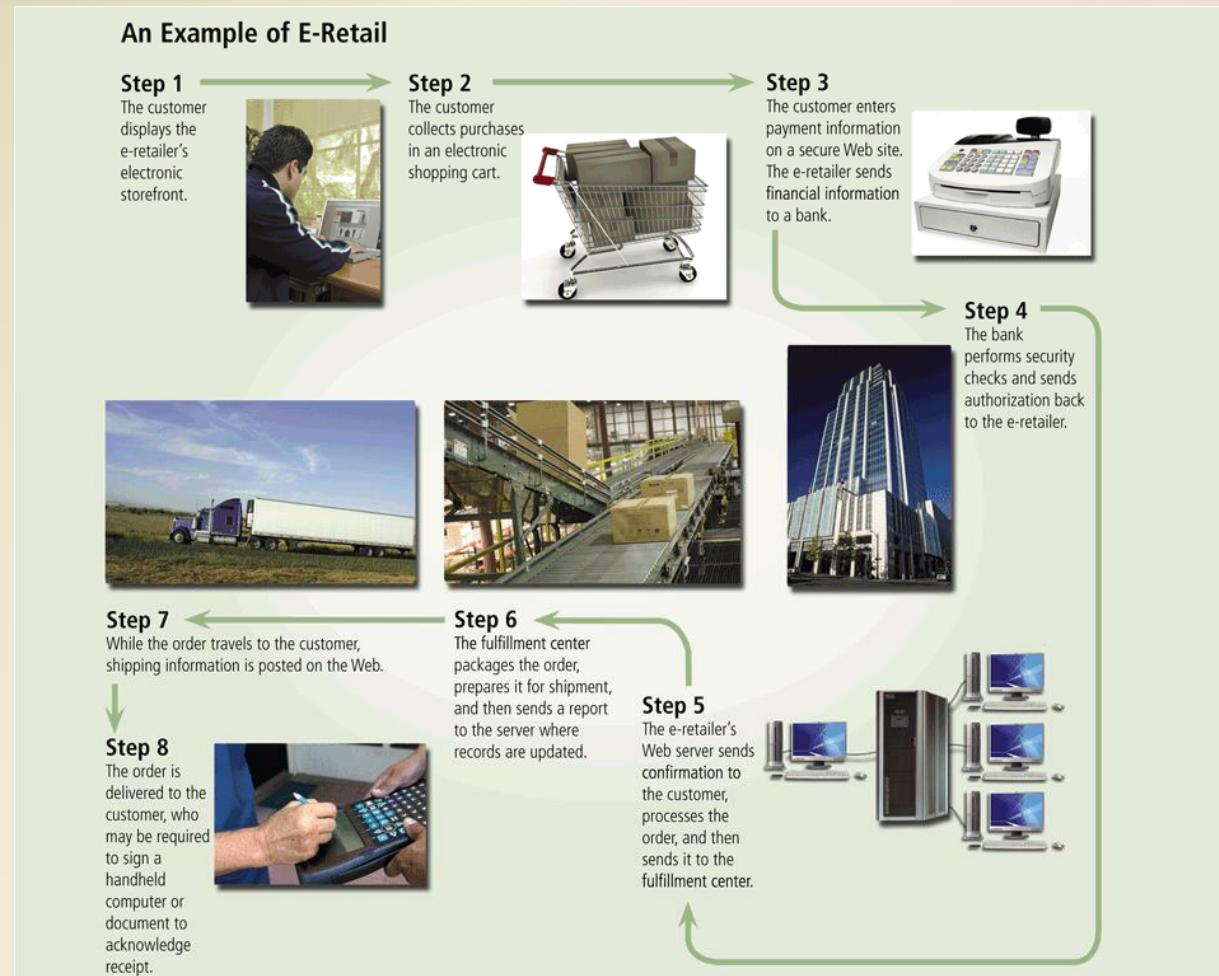
E-Commerce

- 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

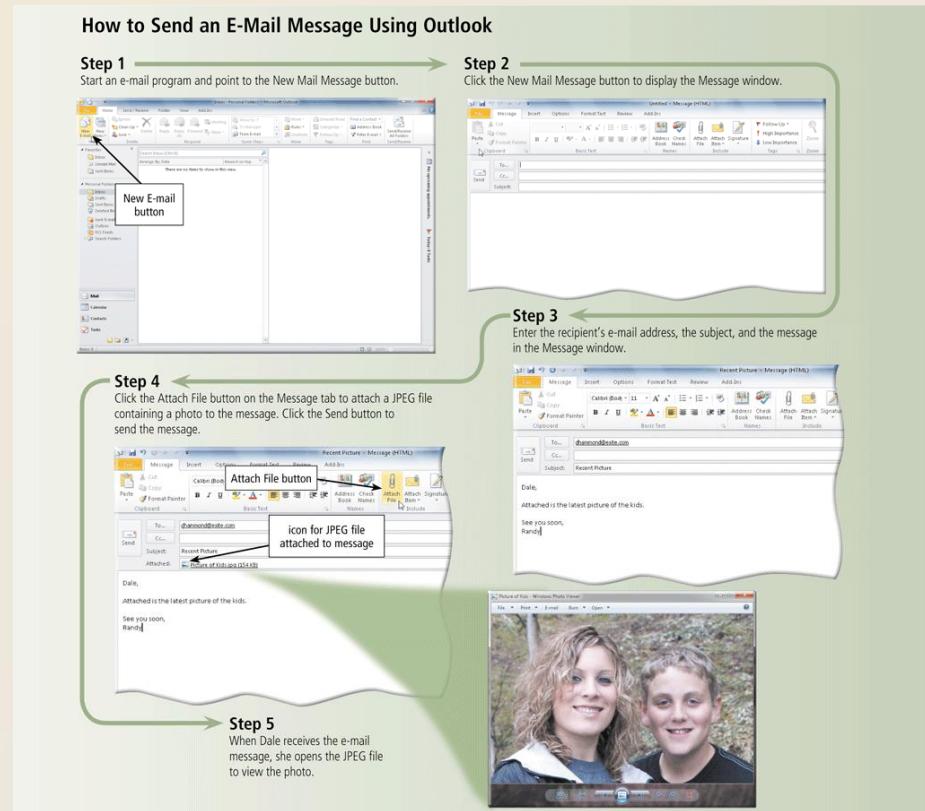


E-Commerce



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



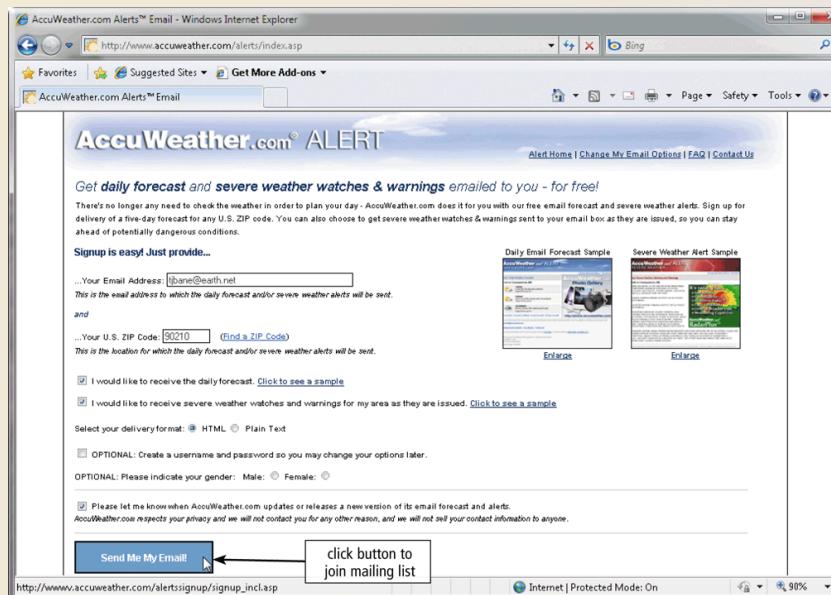
Other Internet Services

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



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



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



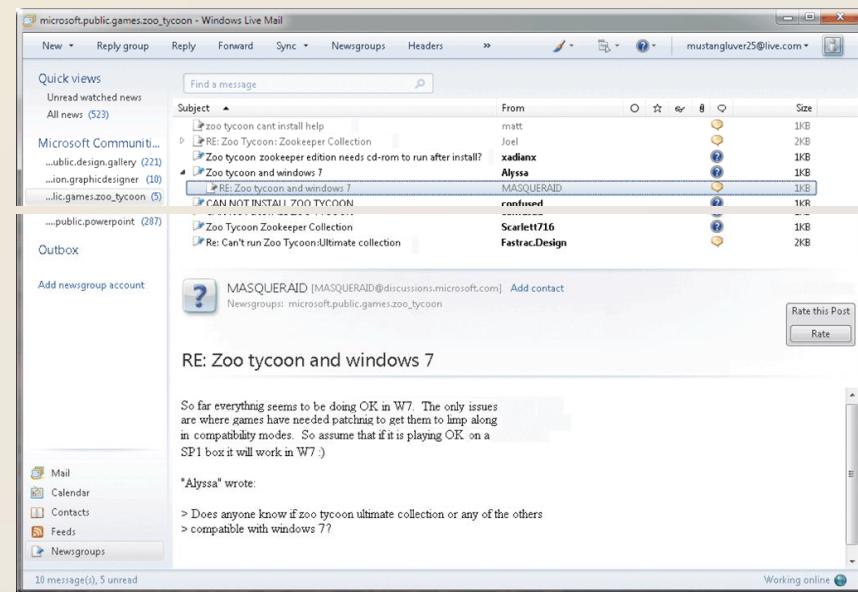
Other Internet Services

- **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

Netiquett e

- **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