Chapter 3
Using the Internet:
Making the Most of the Web’s Resources
The Origin of the Internet

• ARPANET or Darpanet
  – Advanced Research Projects Agency Network
  – Funded by the U.S. government in the 1960s for national defense
  – Allowed computers at leading universities and research organizations to communicate with each other over great distances to test the system
The Web vs. the Internet

• The Web is part of the Internet, distinguished by:
  – Common communication protocols
  – Special links (hyperlinks)
  – Use of the mouse to choose next step
• 1989: Web invented by Tim Berners-Lee
• 1993: Mosaic browser
• 1994: Netscape: beginning of the Web’s major growth
Internet Communications

- Instant messaging (IM)
- Podcasts
- Blogs and vlogs (video logs)
- Webcasts
- Wikis
- Voice over Internet (VoIP)
- E-mail
Instant Messaging

• Real-time, text-based conversations
• List of contacts: buddy list
• Contacts must be online
• IM software detects presence
• Example: [AOL Instant Messenger]
Podcasts

- **Podcasts**: Compressed audio/video files distributed on the Internet
- RSS (Really Simple Syndication) technology allows constant updates for subscribers
- Podcasts are all over the Web
  - Need “aggregator” software to gather podcasts
  - Need media player software to play them
- Simple to create
Blogs and Vlogs

• Weblogs: blogs
  – Available to the public
  – Simple to create, read, and manage
  – Entries listed on a single page, with most recent entry at the top
  – Searchable

• Video blogs: vlogs (YouTube)
  – Digital video clips playable on media player software
Webcasts and Wikis

- **Webcasts**: Broadcasts of audio/visual content over the Internet
  - Not updated automatically
  - Use *streaming* media

- **Wikis**: Web sites that allow anyone to change their content
  - Provide source for collaborative writing
Voice over Internet Protocol

• VoIP: Using the Internet to place phone calls
• Uses technology similar to e-mail to send voice data digitally
• Requires speakers, a microphone, an Internet connection, and a VoIP provider
• Services differ:
  – Free services require an account on both ends.
  – Paid services connect phone to computer.
  – Cable/DSL providers offer phone through broadband.
  – WiFi IP phones call through Internet hotspots and wireless networks See next slide.
The **Wi-Fi Phone** is a standalone device that does not require a computer to use.

**All you need is an 802.11g or 802.11b wireless network with high-speed Internet access to make and receive calls**. Use it at home, hotels, offices, airports, Internet cafes, school campuses, or just about anywhere there is a wireless connection available.

In addition, with a growing number of Wi-Fi hotspots and metropolitan areas deploying low-cost or free high-speed wireless Internet connection, you have more places available to make and receive VoIP calls. This Wi-Fi Phone uses Session Initiation Protocol (SIP) and is ready to be used with an Internet (VoIP) phone service plan. For accessing secure wireless networks, the Wi-Fi Phone supports WEP, WPA, and WPA2 encryption. With features like echo cancellation, packet delay compensation, and lost packet recovery, you can expect the voice quality from the Wi-Fi Phone to be similar to traditional phones calls.
Voice over Internet Protocol

Advantages

• Free (Skype) or low cost (Vonage)
• Portability
• Convenience

Disadvantages

• Sound quality
• Less reliability
• Loss of service when power is interrupted
• Security issues
E-mail

- Electronic mail
- E-mail accounts
  - Client-based
  - Web-based
Group Communication

- Internet social networks (Facebook)
- Multiplayer online game services
- Chat rooms
- Newsgroups
- Listservs
Social Networks

- Social networks: online personal networks
  - MySpace.com and Facebook.com
- Members share common interests.
- Members communicate by voice, chat, IM, video, and blogs.
- Members create personalized profiles.
- Growth has been explosive.
- Risks must be recognized and reduced.
Multiplayer Online Game Services

- Multiplayer online games: play occurs over the Internet among many other players
- Persistent or ever-on game environment
- Some games let you interact with other players
Chat Rooms

- Real-time, text-based conversations
- Rooms can focus on specific topics or interests or be general interest
- Identity protection
  - Username
- Netiquette: rules of polite interaction
Newsgroups and Listservs

• Newsgroups
  – Online discussion forums
  – Members post and reply to messages
  – Create or respond to “threads”

• Listservs
  – Electronic mailing lists of e-mail addresses of people interested in a topic
  – Threads are sent as e-mails
  – Less public than newsgroups
Web Entertainment

• Multimedia:
  – Involves forms of media and text
    • Graphics
    • Audio
    • Video
  – Streaming audio and video
  – Some files require a plug-in program
E-Commerce

• E-Commerce: conducting business online
  – Business-to-consumer (B2C)
  – Business-to-business (B2B)
  – Consumer-to-consumer (C2C)
E-Commerce Safeguards

• Online transactions can be safer than traditional retail shopping.
• VeriSign is a company that certifies that online transactions are secure.
• A closed padlock icon indicates a secure Web site.
• The URL changes from http:// to https://.
Online Shopping Guidelines

• Shop at well-known, reputable sites.
• Pay by credit card, not debit card.
• Check the return policy.
Online Annoyances

• Spam
• Cookies
• Adware/pop-ups
• Spyware
• Malware
• Phishing, **Pharming** and hoaxes
Spam

• Junk e-mail
• Avoid spam:
  – Separate e-mail account
  – Spam filters
  – Antispam practices
Cookies

- Text files stored on client computers when visiting Web sites
- Used on return visits to Web sites
- Unique ID number
- Personal information remembered
- Privacy risk
Malware

• Software that has a malicious intent
• Spyware is a form of malware
• Other forms are viruses, worms, and Trojan horses
• Designed to render a computer useless or to penetrate it completely
Adware and Pop-Ups

• Adware
  – Programs that download on your PC when you install/use other software
  – Enable sponsored ads to appear in your browser window or as pop-ups

• Pop-ups can be eliminated by pop-up blockers.
Spyware

- Added as a program piggybacked with a requested program
- Gathers information, usually about surfing habits
- Antivirus software doesn’t detect it
- Spyware removal programs are required
Phishing and Hoaxes

• Phishing
  – Phony communication that attempts to scam someone into revealing personal information
  – Often looks very official

• Pharming  --going to a phony web site that looks like the one you misspelled to get account numbers and passwords

• Hoaxes
  – Contain information that is untrue
  – May request that people send money
Navigating the Web: Web Browsers

• Computer software
• Graphical
• Enables Web navigation
• Popular browsers:
  – Internet Explorer
  – Mozilla’s Firefox
  – Apple’s Safari
  – Opera
  – Camino (Mac OS X)
Browser Features

• Quick tabs: Show thumbnail images of all open Web pages in open tabs
• Tabbed browsing: Multiple pages available in same browser window
Getting Around the Web

- Web sites
- URLs
- Hyperlinks
- Favorites and bookmarks
- follows
Web Sites

• Web site:
  – Collection of related Web pages
  – First page known as home or index page

• Web page:
  – HTML document
    • Text and graphics
  – Unique address
  – Hyperlinks
URLs

• URL:
  – Uniform Resource Locator
  – Unique Web site address
## Current Unponsored TLDs

<table>
<thead>
<tr>
<th>TLD</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.biz</td>
<td>Businesses</td>
</tr>
<tr>
<td>.com</td>
<td>Originally for commercial sites but can be used by anyone now</td>
</tr>
<tr>
<td>.edu</td>
<td>Degree-granting institutions</td>
</tr>
<tr>
<td>.gov</td>
<td>United States government</td>
</tr>
<tr>
<td>.info</td>
<td>Information service providers</td>
</tr>
<tr>
<td>.int</td>
<td>Limited to organizations, offices, and programs that are sanctioned by a treaty between two or more nations</td>
</tr>
<tr>
<td>.mil</td>
<td>United States military</td>
</tr>
<tr>
<td>.name</td>
<td>Individuals</td>
</tr>
<tr>
<td>.net</td>
<td>Originally for networking organizations but no longer restricted</td>
</tr>
<tr>
<td>.org</td>
<td>Organizations (often nonprofits)</td>
</tr>
</tbody>
</table>
# Current Sponsored TLDs

<table>
<thead>
<tr>
<th>TLD</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.aero</td>
<td>Members of the air transport industry</td>
</tr>
<tr>
<td>.asia</td>
<td>For companies, organizations, and individuals based in Asia, Australia, and the Pacific</td>
</tr>
<tr>
<td>.cat</td>
<td>For Web sites in the Catalan language</td>
</tr>
<tr>
<td>.coop</td>
<td>Cooperative associations</td>
</tr>
<tr>
<td>.jobs</td>
<td>Posting and recruiting job opportunities</td>
</tr>
<tr>
<td>.mobi</td>
<td>Compatible for use with mobile devices</td>
</tr>
<tr>
<td>.museum</td>
<td>Museums</td>
</tr>
<tr>
<td>.pro</td>
<td>Credentialed professionals</td>
</tr>
<tr>
<td>.tel</td>
<td>Internet communication services</td>
</tr>
<tr>
<td>.travel</td>
<td>Travel-related services</td>
</tr>
</tbody>
</table>
Clicking any of these hyperlinks will bring you to another Web page about two-year colleges in that state.
Favorites and Bookmarks

- List of favorite Web pages
- Easy method of returning to Web pages
- IE and Safari = Favorites
- Firefox = Bookmarks
Search Engines

• User keys word or phrase in search box
• “Spider” or “Web crawler” program scans Web pages
• Results are indexed and sent to the client
Subject Directories

- Web pages organized by topics and subtopics
- Do not use keywords to search
- Narrow search by clicking on subfolders
### Boolean Operators

• Boolean operators: Used to refine searches

<table>
<thead>
<tr>
<th>Operator</th>
<th>Example</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>AND</td>
<td>Car AND Ford</td>
<td>Only those documents that contain both the words <strong>Car AND Ford</strong>. Most search engines assume that the word AND is used as a default.</td>
</tr>
<tr>
<td>NOT</td>
<td>Car NOT Ford</td>
<td>Only those documents that contain the word <strong>Car</strong> but do NOT also contain the word <strong>Ford</strong>. This is the most restrictive of all searches and will return the smallest number of documents.</td>
</tr>
<tr>
<td>OR</td>
<td>Car OR Ford</td>
<td>All documents that contain either the word <strong>Car</strong> OR the word <strong>Ford</strong> OR both words. This results in the greatest number of documents.</td>
</tr>
<tr>
<td>Combinations</td>
<td>(Car AND Ford) NOT</td>
<td>All documents referring to <strong>Car</strong> and <strong>Ford</strong>, but no documents relating to the 38th U.S. president, Gerald Ford.</td>
</tr>
<tr>
<td></td>
<td>Gerald</td>
<td></td>
</tr>
<tr>
<td>Quotation</td>
<td>“Lord of the Rings”</td>
<td>Only those documents that contain the string of words “Lord of the Rings” in that exact order. Without the quotation marks, you would get documents containing any of those words.</td>
</tr>
<tr>
<td>Marks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wildcard*</td>
<td>Psych*</td>
<td>Stands in place of a series of letters. Good for those searches when you are searching for a term that can have several different endings,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>such as psychology or psychiatry, and you want to research all of them.</td>
</tr>
<tr>
<td>Wildcard%</td>
<td>Goldsm%th</td>
<td>Stands in place of a single letter. Good to use when there are different spellings of the same word, such as <strong>Goldsmith</strong> and <strong>Goldsmyth</strong>.</td>
</tr>
</tbody>
</table>
Evaluating Web Sites

• Who is the author of the article or Web site sponsor?
• Is the site biased?
• Is the information current?
• Toward what audience is the site geared?
• Are links available?
Internet Basics

• Clients and servers
• Connecting to the Internet
• Finding an Internet service provider
Clients and Servers

• The Internet is a client/server network.
• Client computer:
  – Users connected to the Internet
  – Requests data and Web pages
• Server computer:
  – Stores Web pages and data
  – Returns the requested data to the client
• IP addresses
Connecting to the Internet

- Dial-up connections
- Broadband connections
  - Cable
  - Satellite
  - DSL
Broadband Connections

• Cable
  – Uses coaxial cable and a cable modem
  – Fast connection speed
  – Speed depends on number of users
  – Not available in all areas
Broadband Connections

- Digital Subscriber Line (DSL)
  - Uses telephone lines
  - Faster than dial-up
  - Doesn’t tie up phone line
  - Requires special DSL modem
Broadband Connections

• Fiber-Optic Service (FiOS)
  – Sends light through fiber optics
  – Fast
  – Expensive
  – Available only in certain areas
Wireless

- Increases mobility and productivity
- Requires WiFi (wireless fidelity) hotspot
- Requires either internal or external wireless access card for device
- Aircards provide wireless access through cellphones when WiFi hotspot is not available
Dial-Up Connections

- Use standard telephone line
- Require a modem to convert analog and digital signals
- Slowest connection speed (56K)
Comparing Internet Connection Options

<table>
<thead>
<tr>
<th></th>
<th>DSL</th>
<th>Cable</th>
<th>Fiber-Optic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum upload speeds</strong></td>
<td>Average speeds of 1.5 Mbps, with a maximum of 6+ Mbps</td>
<td>Average speeds of 3 Mbps, with a maximum of 12+ Mbps</td>
<td>Average speeds of 20 Mbps, with a maximum speed of 30 Mbps</td>
</tr>
<tr>
<td><strong>Pros</strong></td>
<td>Lets you surf the Net and talk on the same phone line simultaneously.</td>
<td>Speeds are not dependent on distance from central office.</td>
<td>Increased speeds. Service is not shared or dependent on distance from central office.</td>
</tr>
<tr>
<td><strong>Cons</strong></td>
<td>Speed drops as you get farther from phone company’s central office.</td>
<td>Line shared with others in neighborhood; speeds may vary.</td>
<td>Cost, although this is a diminishing concern as the technology continues to be deployed and accepted.</td>
</tr>
<tr>
<td></td>
<td>Not every phone line will work; no easy way to find out if yours will.</td>
<td>May require professional installation if cable not already present.</td>
<td>Not available in all areas.</td>
</tr>
</tbody>
</table>

*Note: The data transfer rates listed in this table are approximations. As technologies improve, so do data transfer rates.*
Internet Service Providers

• Provide user access to the Internet
• National, regional, or local companies
• Broadband connection: broadband provider is your ISP
• Dial-up connection: need to determine ISPs available in your area
Future of the Internet

• Large Scale Networking (LSN)
  – Research and development of cutting-edge networking and wireless technologies

• Internet2
  – Project sponsored by universities, government, and industry to develop new Internet technologies
  – Internet2 backbone supports transmission speeds of 9.6 Gbps