

# An Introduction to Web Design and Development: Environment and Tools

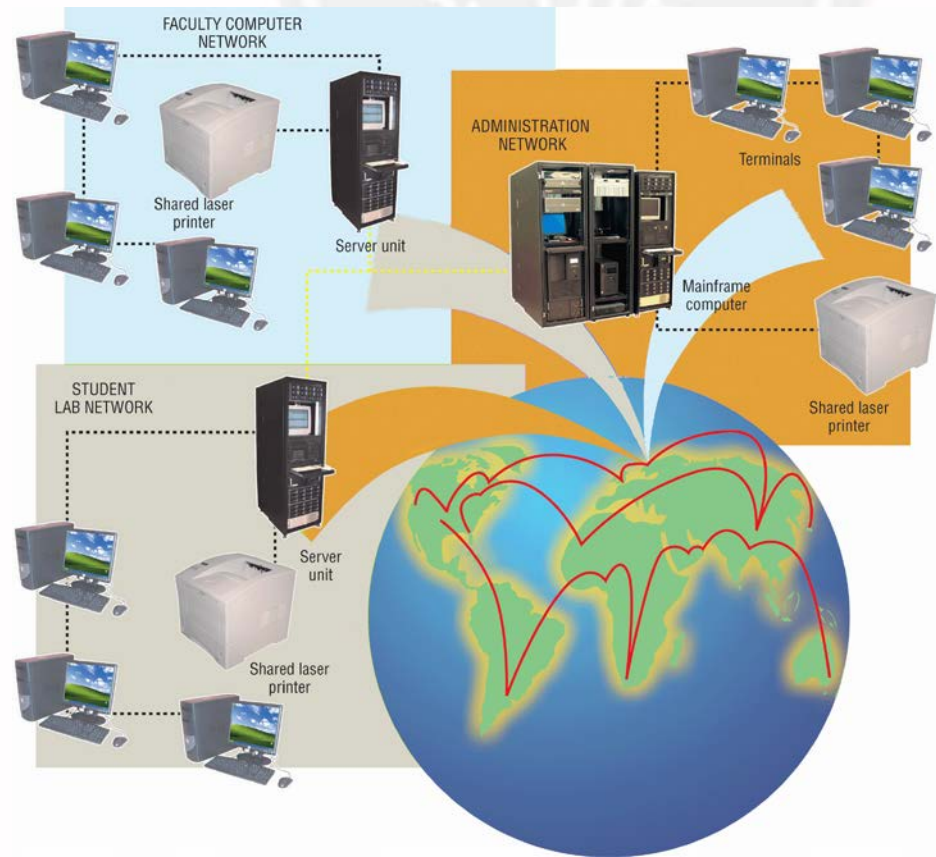


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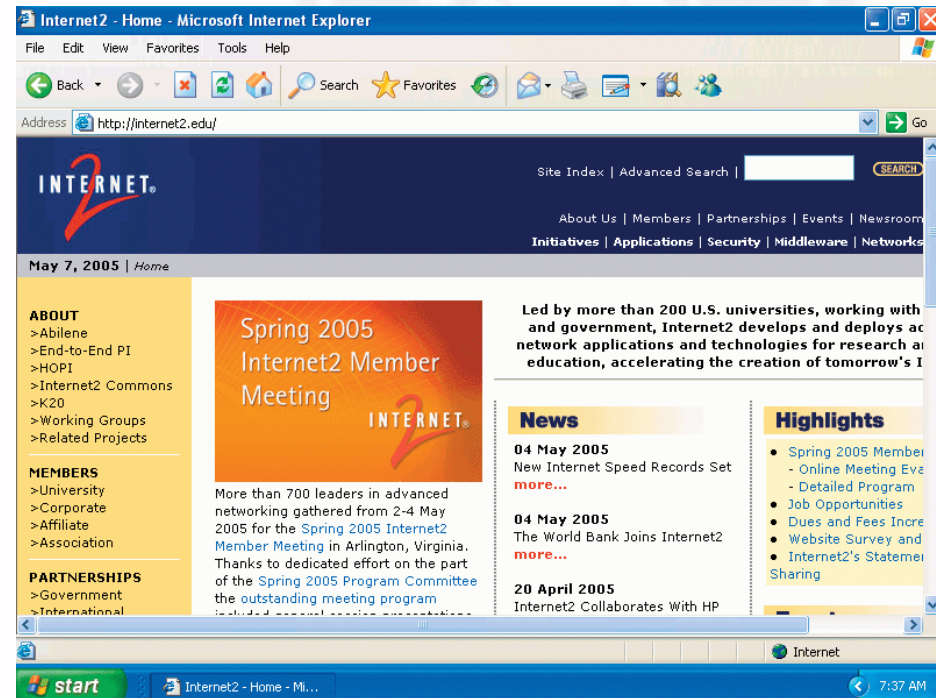
# The Internet and the World Wide Web

- The *Internet* is a worldwide collection of networks, 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



# The Internet and the World Wide Web

- *Internet 2* is a major cooperative initiative among academia, industry, and the government to increase the Internet's possibilities and correct some of its challenges
  - Bottlenecking



# The Internet and the World Wide Web

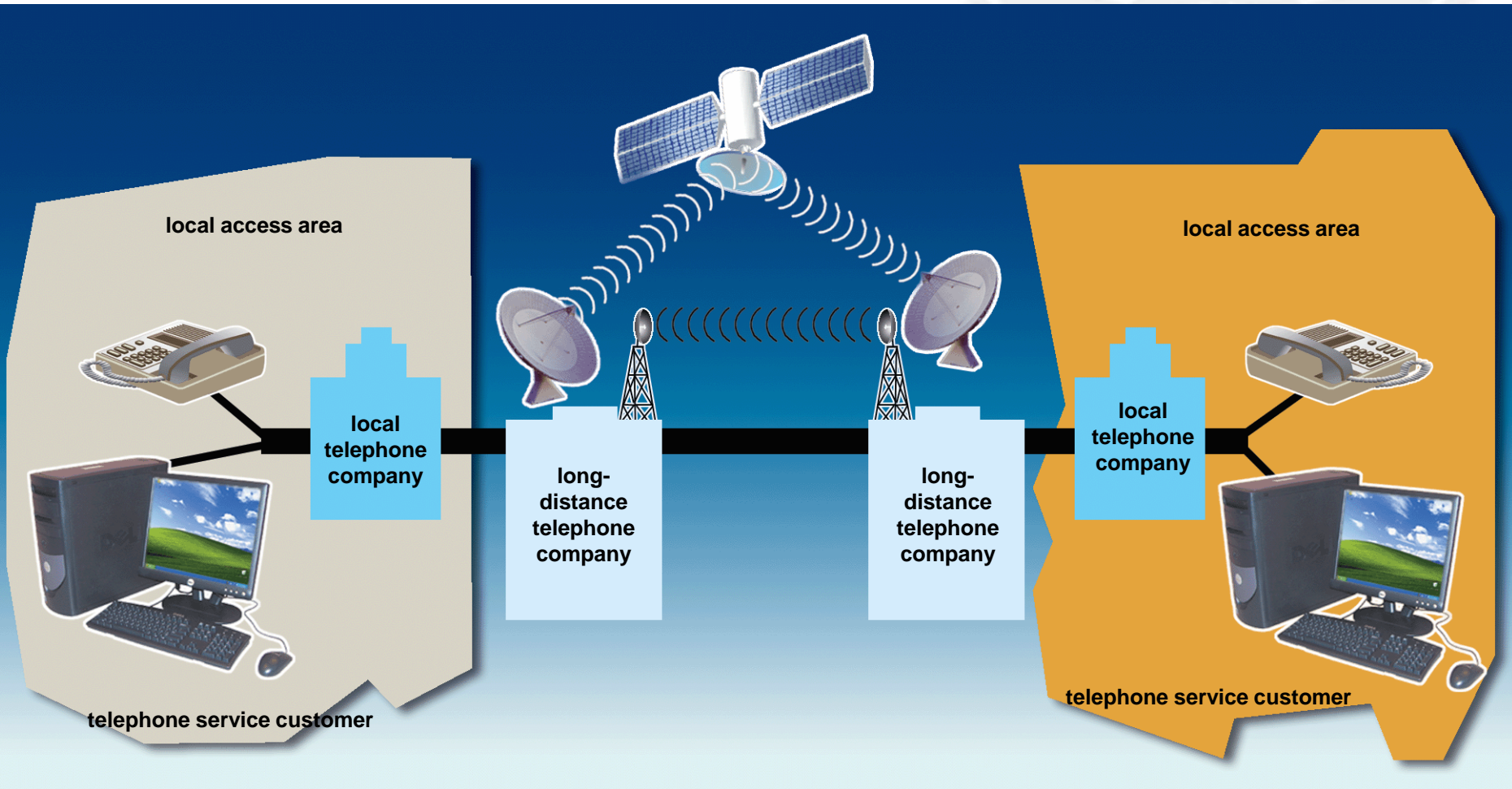
- The *World Wide Web* (*WWW* or *Web*) is a graphical interface that utilizes the Internet to distribute and retrieve information
- A *Web site* is a collection of linked *Web pages*
  - Starts with a *home page*
  - Pages are linked together with a *hyperlink*, or *link*
- *Surfing the Web*

# Accessing Information on the Web

- Users access Web sites through the *public switched telephone network*
  - Worldwide telephone system that handles voice-oriented phone calls
  - Integral part of computer communications
  - Network mostly uses digital technology



# Accessing Information on the Web



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# Dial-Up Lines

- A *dial-up line* is a temporary connection that uses one or more analog phone lines
- Requires a modem on each end of the connection
- Communication ends when either modem hangs up

# Dial-Up Lines

## ➤ Advantages

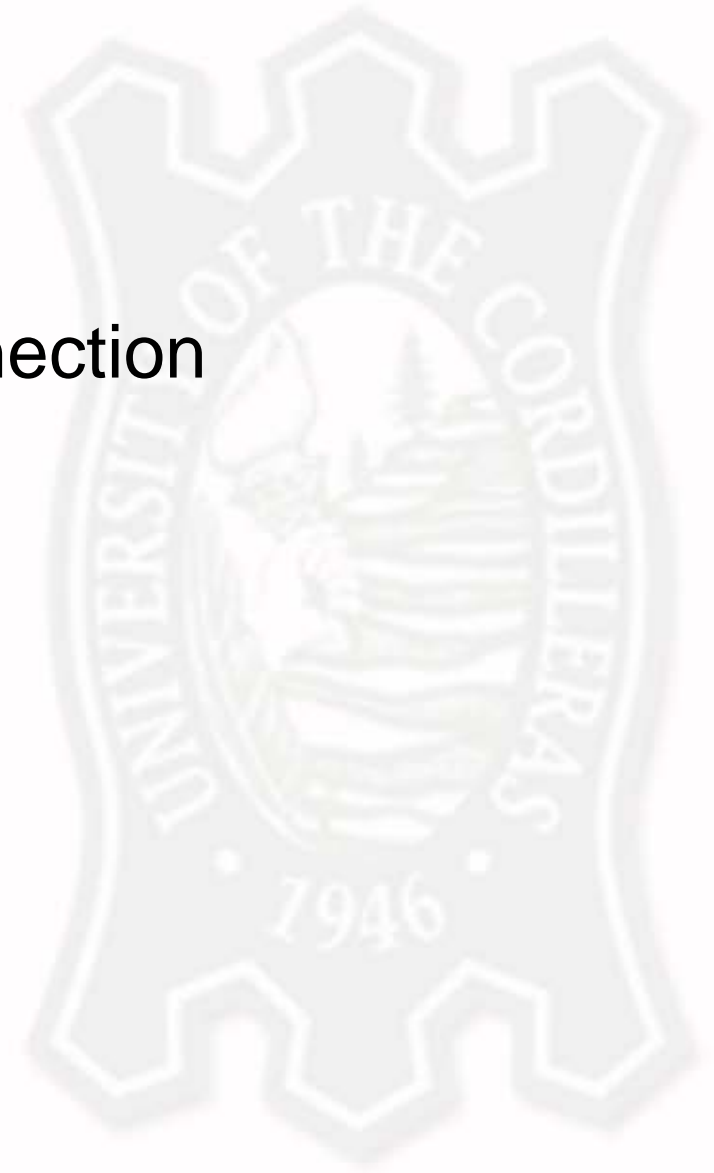
- **Cost.** Costs no more than a regular phone call
- **Availability.** Computers at any two locations can establish a connection using a modem and telephone network
- **No Contracts.** New dial-up subscribers typically do not have to enter into a contract. Broadband providers, on the other hand, often require a contract of 12 months or longer for the special rates offered to new customers.
- **Changing Service Hassles.** Having to change ISPs and add extra equipment for broadband simply is not appealing to Internet users, who only connect occasionally for e-mail and very limited web surfing.



# Dial Up Lines

## ➤ Disadvantages

- Cannot control quality of connection
- Slow transfer rates
- Requires phone lines



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# Dedicated Lines

- A *dedicated line* is a connection that always is established between two communications devices
- Can be analog or digital
- Quality, consistency, and speed of the connection are better than a dial-up line
- Businesses often use dedicated lines

# Dedicated Lines

- Three popular types of digital dedicated lines
  - ISDN lines
  - Digital Subscriber Lines
  - T-carrier Lines



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# ISDN Lines

- Integrated Services Digital Network
- ISDN allows a single telephone line to carry three or more signals (*multiplexing*)
- Faster than dial-up
- ISDN emerged as an alternative to traditional dialup networking during the 1990s.



# DSL

- Digital Subscriber Line
  - Transmits at fast speeds on existing standard copper telephone wiring
  - Some installations can also provide a dial tone
- Asymmetric Digital Subscriber Line (ADSL)
  - Faster to receive data than to send data
  - Ideal for Internet users



# T-carrier Lines

- Any of several types of digital lines that carry multiple signals over a single communications line
- Extremely fast data transfer rates

# T-carrier Lines – T1 Lines

## ➤ *T1 Line*

- Most popular T-carrier line
  - Can be copper or fiber optic cable
  - can carry 24 digitized voice channels, or it can
  - carry data at a rate of 1.544 megabits per second.
- *Fractional T1*



# T-carrier Lines – T3 Lines

## ➤ *T3 Line*

- a common aggregation of 28 T1 circuits that yields 44.736 Mbps total [network bandwidth](#).
- Besides being used for long-distance traffic, T3 lines are also often used to build the core of a business network at its headquarters.
- A T3 line typically costs more than \$3000 USD per month.

## Other Circuits

- The concept of T2, T4 and T5 aggregated lines also exist in telecommunications, but these are much less commonly used in practice.



# Cable Television Lines

- Allows users to connect to the Internet through their cable line
- Rapid transfer rates using a cable modem connected to a CATV line

# Fixed Wireless

- Internet connectivity for users who do not have access to services such as DSL or cable
- Satellite technology used instead of telephone lines
- Radio signals provide high-speed connection

# Dedicated Lines

➤ A *transfer rate* is the speed at which a line carries data and information

– Measured in *bits per second (bps)*

- Kbps
- Mbps

Type of Line	Transfer Rates
Dial-up via ISP	Up to 56 Kbps
ISDN	Up to 128 Kbps
DSL	128 Kbps–8.45 Mbps
Cable TV (CATV)	128 Kbps–36 Mbps
Fixed Wireless	256 Kbps–10 Mbps
Fractional T1	128 Kbps–768 Kbps
T1	1.544 Mbps
T3	44 Mbps

**OC3 - 155 megabits per second (84 T1s)**  
**OC12 - 622 megabits per second (4 OC3s)**  
**OC48 - 2.5 gigabits per seconds (4 OC12s)**  
**OC192 - 9.6 gigabits per second (4 OC48s)**



# Selecting a Service Provider

- *Internet Service Provider (ISP)*
  - Is a company or organization that provides temporary connections free or for a fee



# Service Providers

## ➤ *Online Service Provider (OSP)*

- Supplies Internet access and members-only features
  - News, weather, financial data, games, travel guides
  - America Online and The Microsoft Network
- Fees are slightly higher for an OSP than ISP

# Service Providers

- *Wireless Service Provider (WSP)*
  - Company that provides wireless Internet access to users with wireless modems or Web-enabled handheld computers or devices
  - AT&T Wireless, SprintPCS
- *Bluetooth* is a short-range wireless connection that utilizes radio frequency to transmit data between two electronic devices

# Service Providers



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# Web Browsers

➤ A *Web browser* is a specific software program required to display Web pages

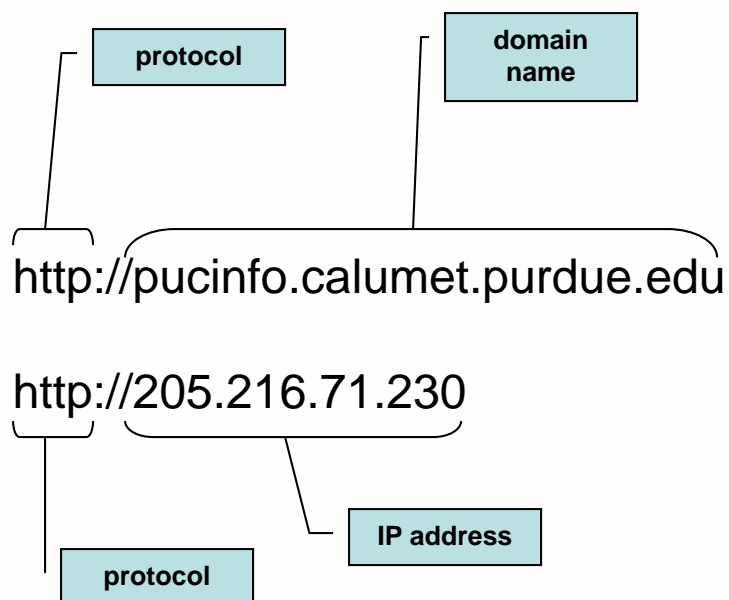




# Web Browsers

- Access Web pages by entering its *Uniform Resource Locator* (URL) into the Web browser's address bar
- URL is comprised of the *protocol*, followed by the *domain name*
  - *Hypertext Transfer Protocol*
  - Domain name can be an *IP address* or a text version of this address

# Web Browsers



## Original Top-Level Domains

### Domain Type

com	Commercial
edu	Educational
gov	Government institution
mil	Military
net	Network provider
org	Nonprofit

## New Top-Level Domains

### Domain Type

biz	Businesses
pro	Certified professionals
museum	Accredited museums
name	Families or individuals
info	Families or individuals that provide information
coop	Business cooperatives



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# Alternative Web Page Viewing Devices

## ➤ *Smart phones*

- Can be used as a regular cell phone and offer e-mail and Web access



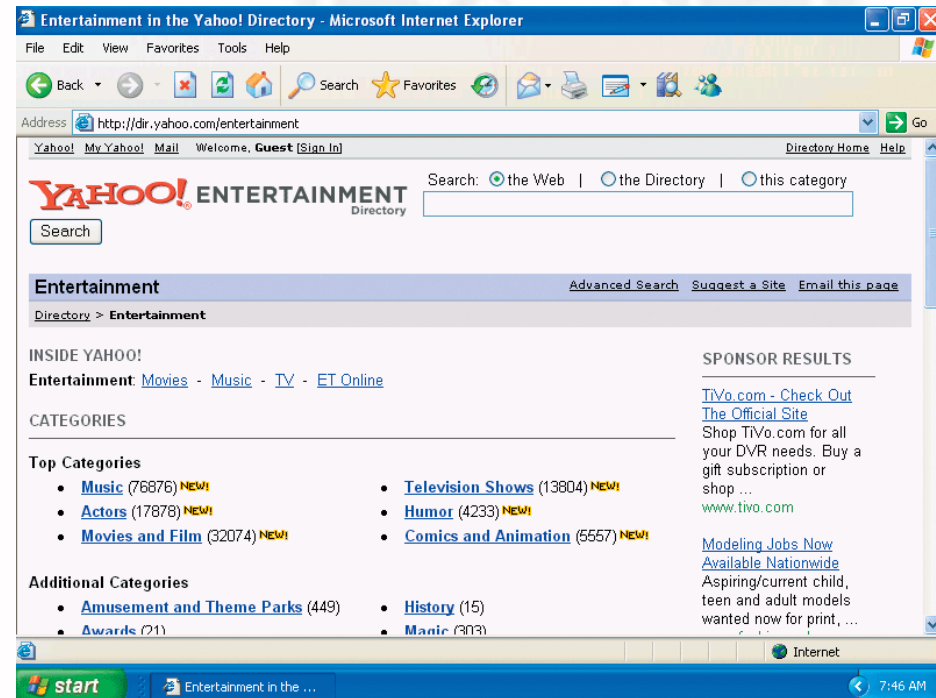
## ➤ *Handheld computers*

- Wireless, portable computers designed to fit in a user's hand
- *Personal Digital Assistant (PDA)*



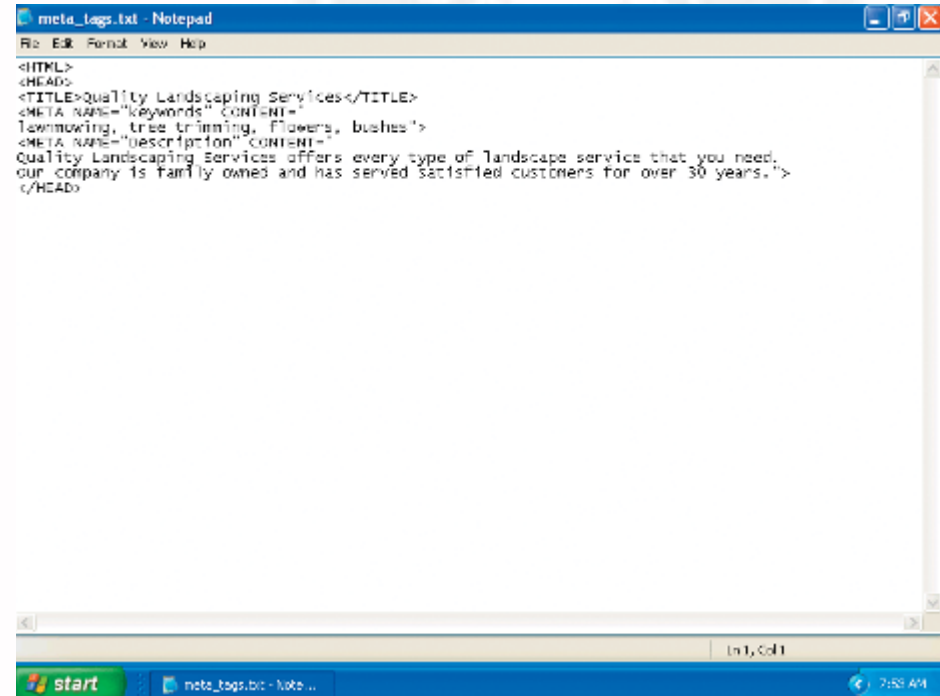
# Search Engines / Portals

- Software programs that find Web sites and Web pages
- Enter a *keyword* into a search engine's text box to locate a Web page about a particular topic
- *Directories* classify Web pages into various categories



# Search Engines / Portals

- Search services create their own Web site databases in different ways
  - *Spiders or robots*
  - *Meta tags*
    - Special tags added to Web pages containing information on content



The screenshot shows a Notepad window titled 'meta\_tags.txt'. The text inside is HTML meta tags for a website. The tags include a title, keywords, and a description. The text is as follows:

```
<HTML>
<HEAD>
<TITLE>Quality Landscaping Services</TITLE>
<META NAME="keywords" CONTENT="
lawnmowing, tree trimming, flowers, bushes">
<META NAME="description" CONTENT="
Quality Landscaping Services offers every type of landscape service that you need.
Our company is family owned and has served satisfied customers for over 30 years.">
</HEAD>
```

# Search Engines / Portals

➤ *Portals* are web sites that offer more than just search services

- E-mail, chat rooms, news and sports, etc.
- Google, MSN, and Yahoo!



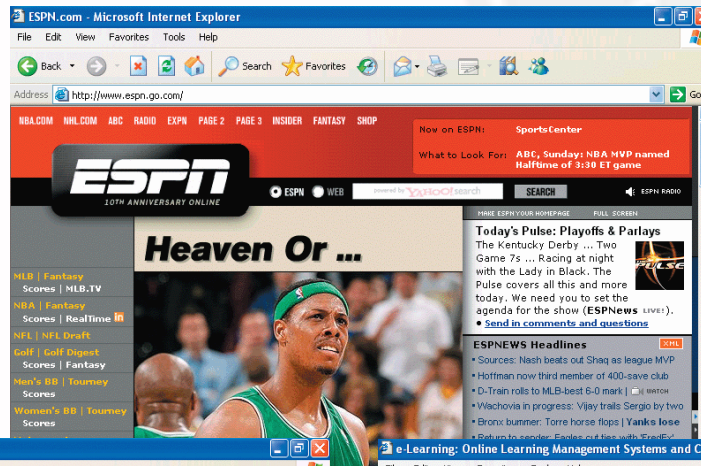
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# Impact of the Internet and the Web

- Communication
- Education
- Entertainment
- Business



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# Communication

## ➤ Email

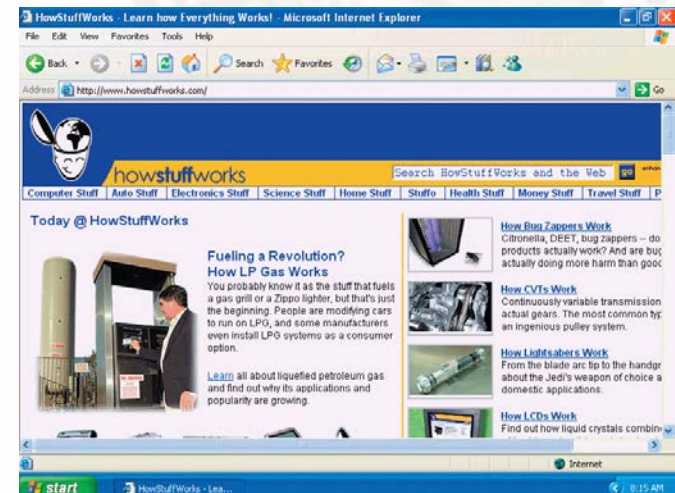
- Transfers messages and files
- Message can be communicated positively or negatively

## ➤ Web sites

- Delivers messages successfully and persuasively
- Site design requires much planning
  - Trustworthiness, currency, and value

# Education

- Formal and informal teaching and learning
- Enhances traditional teaching methods
  - Instructors often publish syllabi, grades, and helpful information for research



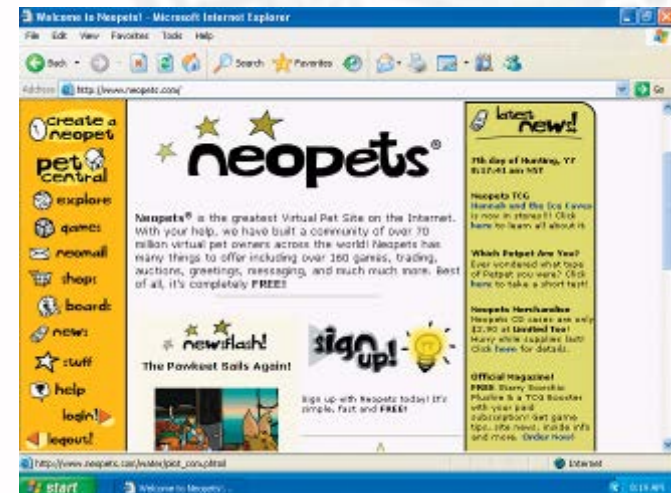
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# Entertainment

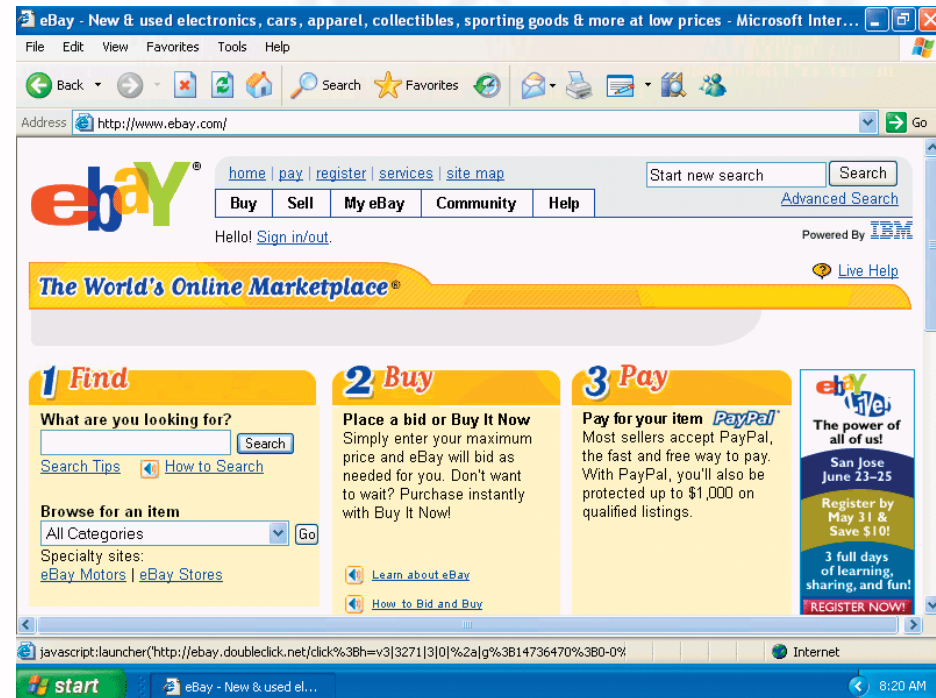
- Entertainment web sites include music, videos, sports, games, and more
- It is important to identify what would appeal to your audience when developing an entertainment element



# Business

➤ *Electronic commerce (e-commerce)* is the practice of conducting business activities online, such as shopping

- *Business-to-consumer (B2C)*
- *Business-to-business (B2B)*
- *Consumer-to-consumer (C2C)*

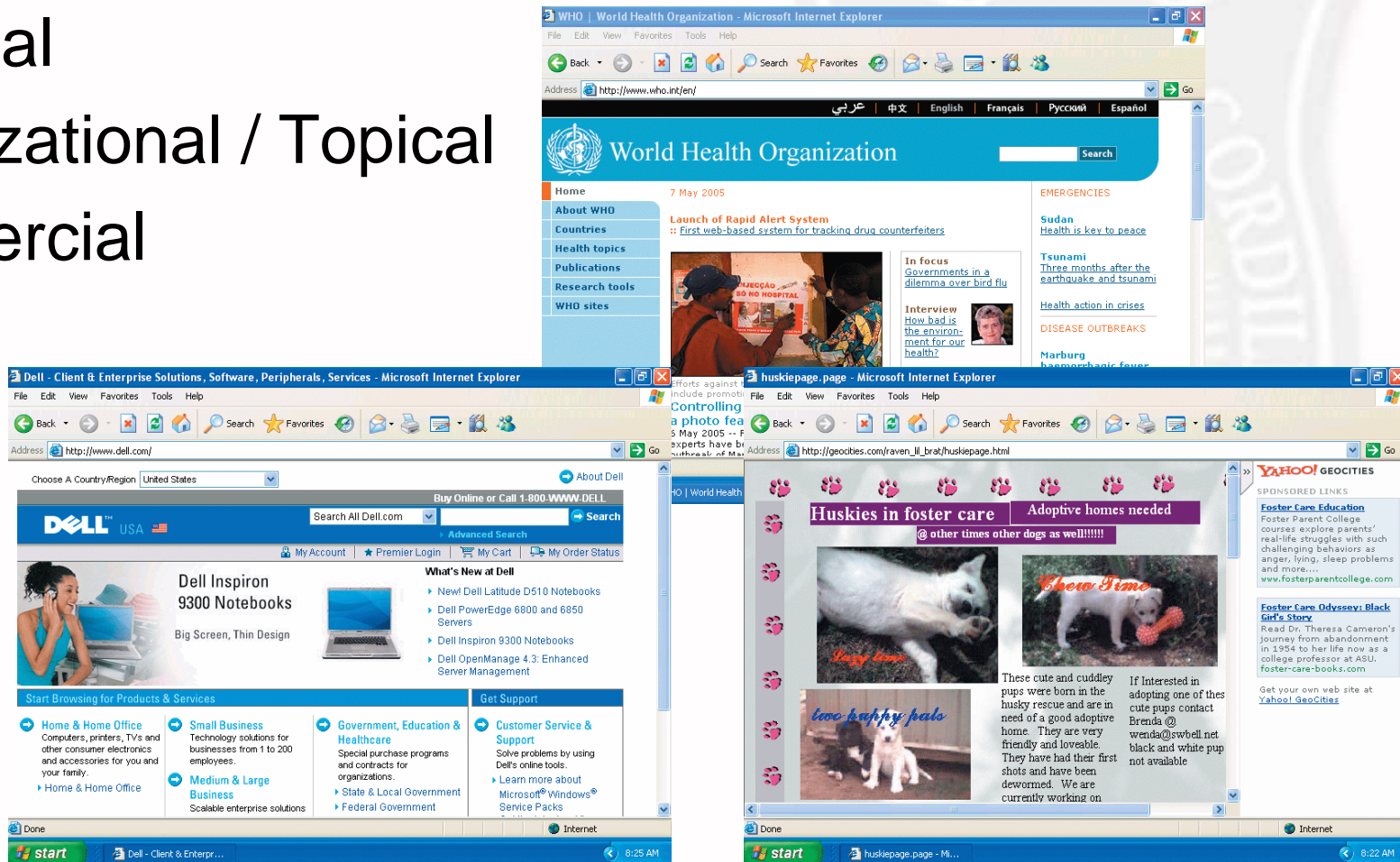


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# Types of Web Sites

- Personal
- Organizational / Topical
- Commercial



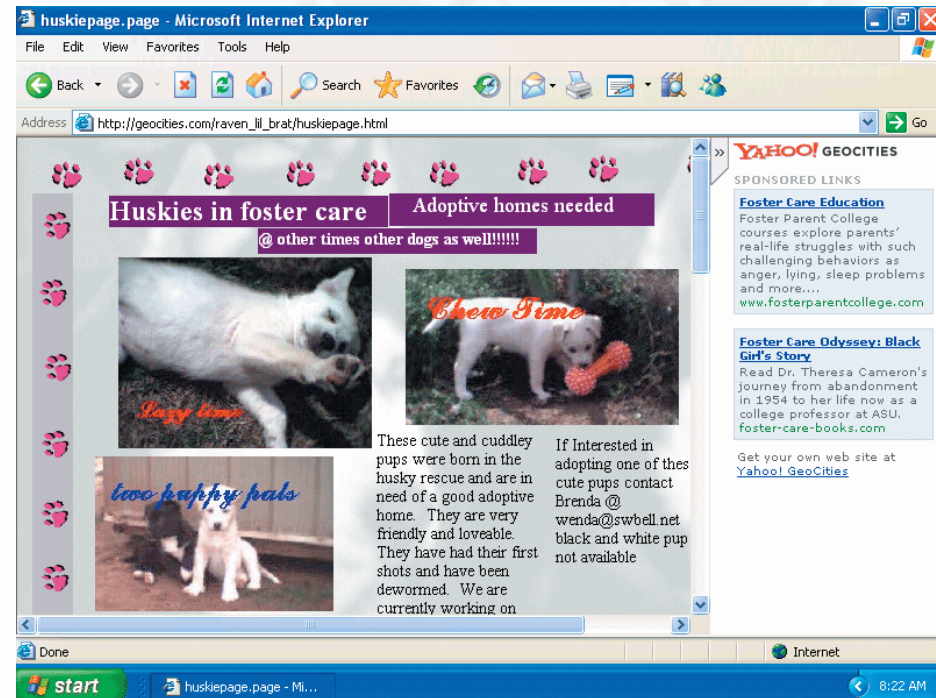
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# Personal

- Limited developmental resources
- Uses
  - Advertise employment credentials
  - Meet new friends
  - Share common interests
- Do not post information that can be misused



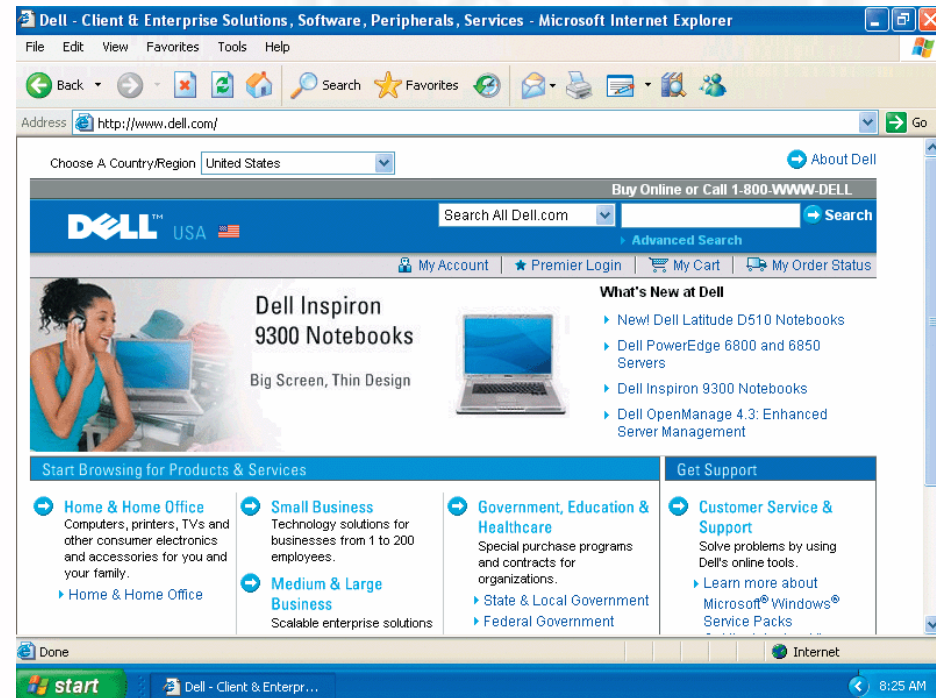
# Organizational / Topical

- *Organization Web sites* contain information on particular organizations
- *Topical Web sites* contain information on the developer's interests and hobbies
- Not all information is accurate



# Commercial

- Used to promote and sell a product for a business via the Internet
- More complex commercial Web sites generally produce greater revenue
- Obtain product and service information from a company's marketing department



# Researching Web Technologies

- What specifically can this technology do to further the purpose of my Web site?
- Will it appeal to my audience?
- What will it cost to put it into action?
- How soon will I see a return on investing in this new technology?
- What impact will adding this technology have on security and other Web site elements?



# Tools for Creating Web Pages

- Hypertext Markup Language (HTML)
- eXtensible Markup Language (XML), eXtensible HTML (XHTML), and Wireless Markup Language (WML)
- Cascading Style Sheets
- Scripting Languages

# Hypertext Markup Language

- Formatting language used to create Web pages
- Defines a Web page through *tags* or *markups*
- *World Wide Web Consortium (W3C)* sets standards for HTML and *HTTP*



# eXtensible Markup Language (XML), eXtensible HTML (XHTML), and Wireless Markup Language (WML)

- *XML* uses markups to define the content of a Web page
- *XHTML* is a markup language that is a combination of the features of XML and HTML
- *WML* is a subset of XML
  - Used to design Web pages for microbrowsers

# Cascading Style Sheets (CSS)

- Control the presentation of the content by applying styles to such elements
  - Type
  - Margins
  - Positioning
  - Colors

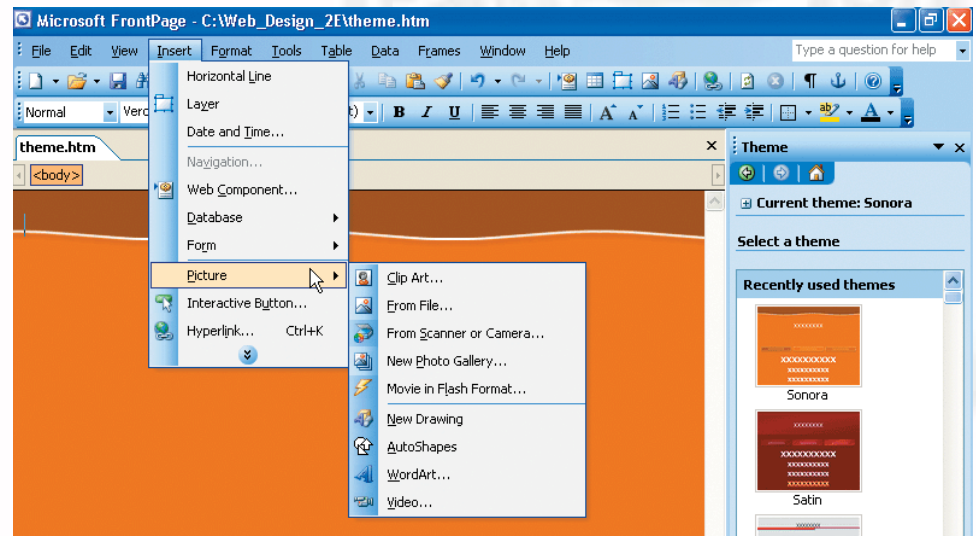
# Scripting Languages

- Short programs that your visitors' browsers run
- Browsers must support this technology
- Javascript
- Active Server Pages (ASP)
- Hypertext Preprocessor (PHP)
- MySql



# WYSIWYG

- Packages that automatically generate HTML code
- There are packages available for every level of expertise
  - Microsoft FrontPage
  - Macromedia Dreamweaver
  - Adobe Go Live



# Web Design Roles

- Web design can be done independently or with a partner or group
- Creative Role
  - *Content writer / editor*
  - *Web page designer*
  - *Web artist / graphic designer*
  - *Multimedia producer*

# Web Design Roles

## ➤ Hi-Tech Role

- *Web programmer*
- *Database developer*
- *Network / security administrator*

## ➤ Oversight Role

- *Content managers*
- *Content management system*



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