CHAPTER 1 – THE INTERNET

Brief History Of The Internet

- January 1, 1983 is the official birthday of the internet
- A new communications protocol was established called Transfer Control Protocol/Internet work Protocol (TCP/IP).
- ARPANET and the Defense Data Network officially changed to the TCP/IP standard on January 1, 1983, hence the birth of the Internet. All networks could now be connected by a universal language.
- The Internet started in the 1960s as a way for government researchers to share information. Computers in the '60s were large and immobile and in order to make use of information stored in any one computer, one had to either travel to the site of the computer or have magnetic computer tapes sent through the conventional postal system.
- Another catalyst in the formation of the Internet was the heating up of the Cold War. The Soviet Union's launch of the Sputnik satellite spurred the U.S. Defense Department to consider ways information could still be disseminated even after a nuclear attack.

The Uses of the Internet

- Send e-mail messages.
- Send (upload) or receive (down load) files between computers.
- Participate in discussion groups, such as mailing lists and newsgroups.
- Surfing the web.

What is Web?

- The Web (World Wide Web) consists of information organized into Web pages containing text and graphic images.
- It contains hypertext links, or highlighted keywords and images that lead to related information.
- A collection of linked Web pages that has a common theme or focus is called a Web site.
- The main page that all of the pages on a particular Web site are organized around and link back to is called the site's home page.

How to access the Internet?

- Many schools and businesses have direct access to the Internet using special high-speed communication lines and equipment.
- Students and employees can access through the organization's local area networks (LAN) or through their own personal computers.
- Another way to access the Internet is through Internet Service Provider (ISP).
- To access the Internet, an existing network need to pay a small registration fee and agree to certain standards based on the TCP/IP (Transmission Control Protocol/Internet Protocol) reference model.
- Each organization pays for its own networks and its own telephone bills, but those costs usually exist independent of the internet.
- The regional Internet companies route and forward all traffic, and the cost is still only that of a local telephone call.

Domain Name Addressing

- Most web browsers do not use the IP address t locate Web sites and individual pages.
- They use domain name addressing.
- A domain name is a unique name associated with a specific IP address by a program that runs on an Internet host computer.
- This program, which coordinates the IP addresses and domain names for all computers attached to it, is called DNS (Domain Name System) software.
- The host computer that runs this software is called a domain name server.

Uniform Resource Locators

- The IP address and the domain name each identify a particular computer on the Internet.
- However, they do not indicate where a Web page's HTML document resides on that computer.
- To identify a Web pages exact location, Web browsers rely on Uniform Resource Locator (URL).
- URL is a four-part addressing scheme that tells the Web browser:
- What transfer protocol to use for transporting the file
- The domain name of the computer on which the file resides
- The pathname of the folder or directory on the computer on which the file resides
- The name of the file
- 1. Scheme – The Protocol
- 2. Domain – The Hostname
- 3. Path – The Domain Name Inside a URL Points
- 4. Query – The Fragment Identifier or Question Mark

HTTP

- The transfer protocol is the set of rules that the computers use to move files from one computer to another on the Internet.
- The most common transfer protocol used on the Internet is the Hypertext Transfer Protocol (HTTP).
- Two other protocols that you can use on the Internet are the File Transfer Protocol (FTP) and the Telnet Protocol

CHAPTER 1 – THE INTERNET

How to find information on the Web

- You can find information by two basic means.
- Search by Topic and Search by keywords.
- Some search services offer both methods, others only one.
- Yahoo offers both.
- Search by Topic
- You can navigate through topic lists
- Search by keywords
- You can navigate by entering a keyword or phase into a search text box.

WEB 1.0

- It is a term coined to differentiate the first stage of the World Wide Web (www) in comparison with the present stage of the internet technology.
- At the beginning, there were few web content creators.
- Webpages were static and were called read only web.
- The only available feedback mechanism was through private emails.

WEB 2.0

- The term Web 2.0 was first used around 2004.
- Internet technology became more and more interactive.
- The internet became more available for everyone.
- The users can now interact, contribute, and create their own internet space and content (Explosion of Information & Social Media).

WEB 3.0

- It is described by Time Berners-Lee (Father of the WWW) as the read-write-execute web.
- It is referred to as the semantic web or data driven web content and response.
- The context of the search of the user is processed by a programming language to help the user by presenting options of what the person is interested in.
- It will not make Web 2.0 obsolete.

Technology Convergence

It is an evolution of technological developments that merge into a new system bringing together different types of applications and media.

SOCIAL MEDIA

It is a collection of internet-based communication tools and computer assisted channels dedicated to allow users to interact, communicate, and share information in a virtual community and network.

MOBILE MEDIA

A range of handheld devices, from mobile phones, tablets, and e-readers to game consoles, primarily used as personal, interactive, Internet-enabled and user-controlled portable platforms that allow interconnected users to exchange personal and nonpersonal information (Wei, 2013).

ASSISTIVE MEDIA

- It is a nonprofit organization founded in 1996 in Michigan, USA. It was founded by David H. Harvey.
- The organization was the first internet-based reading service for persons with visual and reading impairments.
- The produce and publish voice-recorded written materials on cassettes, cds, and in the internet.

CHAPTER 2 – WEB APP DESIGN AND E-COMMERCE

Design & WebApp Quality

- Security
    - Rebuff external attacks
    - Exclude unauthorized access
    - Ensure the privacy of users/customers
- Availability
    - the measure of the percentage of time that a WebApp is available for use
- Scalability
    - Can the WebApp and the systems with which it is interfaced handle significant variation in user or transaction volume
- Time to Market

Quality Dimensions for End-Users

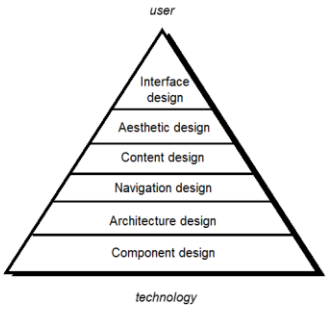
- Time
    - How much has a Web site changed since the last upgrade?
    - How do you highlight the parts that have changed?
- Structural
    - How well do all of the parts of the Web site hold together.
    - Are all links inside and outside the Web site working?
    - Do all of the images work?
    - Are there parts of the Web site that are not connected?
- Content
    - Does the content of critical pages match what is supposed to be there?
    - Do key phrases exist continually in highly-changeable pages?
    - Do critical pages maintain quality content from version to version?
    - What about dynamically generated HTML pages?
- Accuracy and Consistency
    - Are today's copies of the pages downloaded the same as yesterday's? Close enough?
    - Is the data presented accurate enough? How do you know?
- Response Time and Latency
    - Does the Web site server respond to a browser request within certain parameters?
    - In an E-commerce context, how is the end to end response time after a SUBMIT?
    - Are there parts of a site that are so slow the user declines to continue working on it?
- Performance
    - Is the Browser-Web-Web site-Web-Browser connection quick enough?
    - How does the performance vary by time of day, by load and usage?
    - Is performance adequate for E-commerce applications?

WebApp Design Goals

- Consistency
    - Content should be constructed consistently
    - Graphic design (aesthetics) should present a consistent look across all parts of the WebApp
    - Architectural design should establish templates that lead to a consistent hypermedia structure
    - Interface design should define consistent modes of interaction, navigation and content display
    - Navigation mechanisms should be used consistently across all WebApp elements
- Identity
    - Establish an “identity” that is appropriate for the business purpose
- Robustness
    - The user expects robust content and functions that are relevant to the user’s needs
- Navigability
    - designed in a manner that is intuitive and predictable
- Visual appeal
    - the look and feel of content, interface layout, color coordination, the balance of text, graphics and other media, navigation mechanisms must appeal to end-users

- Compatibility
    - With all appropriate environments and configurations

WebE Design Pyramid



WebApp Interface Design

- *Where am I?* The interface should
    - provide an indication of the WebApp that has been accessed
    - inform the user of her location in the content hierarchy.
- *What can I do now?* The interface should always help the user understand his current options
    - what functions are available?
    - what links are live?
    - what content is relevant?
- *Where have I been, where am I going?* The interface must facilitate navigation.
    - Provide a "map" (implemented in a way that is easy to understand) of where the user has been and what paths may be taken to move elsewhere within the WebApp.

Effective WebApp Interfaces

- Bruce Tognozzi [TOG01] suggests…
    - Effective interfaces are visually apparent and forgiving, instilling in their users a sense of control. Users quickly see the breadth of their options, grasp how to achieve their goals, and do their work.
    - Effective interfaces do not concern the user with the inner workings of the system. Work is carefully and continuously saved, with full option for the user to undo any activity at any time.
    - Effective applications and services perform a maximum of work, while requiring a minimum of information from users.

Interface Design Principles-I

- Anticipation—A WebApp should be designed so that it anticipates the use's next move.
- Communication—The interface should communicate the status of any activity initiated by the user
- Consistency—The use of navigation controls, menus, icons, and aesthetics (e.g., color, shape, layout)
- Controlled autonomy—The interface should facilitate user movement throughout the WebApp, but it should do so in a manner that enforces navigation conventions that have been established for the application.
- Efficiency—The design of the WebApp and its interface should optimize the user's work efficiency, not the efficiency of the Web engineer who designs and builds it or the client-server environment that executes it.

Interface Design Principles-III

- Focus—The WebApp interface (and the content it presents) should stay focused on the user task(s) at hand.
- Fitt's Law—"The time to acquire a target is a function of the distance to and size of the target."
- Human interface objects—A vast library of reusable human interface objects has been developed for WebApps.
- Latency reduction—The WebApp should use multi-tasking in a way that lets the user proceed with work as if the operation has been completed.
- Learnability— A WebApp interface should be designed to minimize learning time, and once learned, to minimize relearning required when the WebApp is revisited.

Interface Design Principles-II

- Maintain work product integrity—A work product (e.g., a form completed by the user, a user specified list) must be automatically saved so that it will not be lost if an error occurs.
- Readability—All information presented through the interface should be readable by young and old.
- Track state—When appropriate, the state of the user interaction should be tracked and stored so that a user can logoff and return later to pick up where she left off.
- Visible navigation—A well-designed WebApp interface provides "the illusion that users are in the same place, with the work brought to them."

CHAPTER 2 – WEB APP DESIGN AND E-COMMERCE

Aesthetic Design

- Don't be afraid of white space.
- Emphasize content.
- Organize layout elements from top-left to bottom right.
- Group navigation, content, and function geographically within the page.
- Don't extend your real estate with the scrolling bar.
- Consider resolution and browser window size when designing layout.

Content Design

- Develops a design representation for content objects
    - For WebApps, a content object is more closely aligned with a data object for conventional software
- Represents the mechanisms required to instantiate their relationships to one another.
    - analogous to the relationship between analysis classes and design components described in Chapter 11
- A content object has attributes that include content-specific information and implementation-specific attributes that are specified as part of design

Architecture Design

- Content architecture focuses on the manner in which content objects (or composite objects such as Web pages) are structured for presentation and navigation.
    - The term information architecture is also used to connote structures that lead to better organization, labeling, navigation, and searching of content objects.
- WebApp architecture addresses the manner in which the application is structured to manage user interaction, handle internal processing tasks, effect navigation, and present content.
- Architecture design is conducted in parallel with interface design, aesthetic design and content design.

MVC Architecture

- The model contains all application specific content and processing logic, including
    - all content objects
    - access to external data/information sources,
    - all processing functionality that are application specific
- The view contains all interface specific functions and enables
    - the presentation of content and processing logic
    - access to external data/information sources,
    - all processing functionality required by the end-user.
- The controller manages access to the model and the view and coordinates the flow of data between them.

Navigation Design

- Begins with a consideration of the user hierarchy and related use-cases
- Each actor may use the WebApp somewhat differently and therefore have different navigation requirements
- As each user interacts with the WebApp, she encounters a series of navigation semantic units (NSUs)
- NSU—"a set of information and related navigation structures that collaborate in the fulfillment of a subset of related user requirements"

Navigation Syntax

- Individual navigation link—text-based links, icons, buttons and switches, and graphical metaphors..
- Horizontal navigation bar—lists major content or functional categories in a bar containing appropriate links. In general, between 4 and 7 categories are listed.
- Vertical navigation column
    - lists major content or functional categories
    - lists virtually all major content objects within the WebApp.
- Tabs—a metaphor that is nothing more than a variation of the navigation bar or column, representing content or functional categories as tab sheets that are selected when a link is required.
- Site maps—provide an all-inclusive tab of contents for navigation to all content objects and functionality contained within the WebApp.

Component-Level Design

- WebApp components implement the following functionality
    - perform localized processing to generate content and navigation capability in a dynamic fashion
    - provide computation or data processing capability that are appropriate for the WebApp's business domain

- provide sophisticated database query and access
- establish data interfaces with external corporate systems.

CHAPTER 3 – E-BUSINESS TECHNOLOGY AND NETWORKS

What is E-business?

- E-business (electronic business) is the conducting of business on the Internet, not only buying and selling but also servicing customers and collaborating with business partners.
- The processes and tools that allow an organization to use Internet-based technologies and infrastructure, both internally and externally, to conduct day to day business process operations.
- Stands for electronic business and refers to any kind of sales, services, purchasing or commerce on the Internet.
- A new-tech jargon word used more for marketing than for technical description. Most commonly it broadly refers to conducting business over the Internet (email and web) by communicating and perhaps transacting (buying and selling) with customers, suppliers, and business partners.

Consumer to Consumers

- Abbreviation for consumer-to-consumer commerce; that is, commerce with no middle business people The most notable examples are Web-based auction and classified as sites. Most large venues for such models (for example, eBay and Classifieds2000) are quickly permeated by consumers who participate so actively and regularly that they become small businesses for them.
- C2C stands for consumer to consumer electronic commerce. The Internet has facilitated new types of C2C although it is important to note that this kind of commerce -- in the form of barter, yard sales, flea markets, swap meets, and the like -- has existed since time immemorial. Notably, most of the highly successful C2C examples using the Internet actually use some type of corporate intermediary and are thus not strictly "pure play" examples of C2C.

Business to Business

- B2B stands for "business-to-business," as in businesses doing business with other businesses. The term is most commonly used in connection with e-commerce and advertising, when you are targeting businesses as opposed to consumers.
- On the Internet, B2B (business-to-business), is the exchange of products, services, or information between businesses. B2B is e-commerce between businesses. B2B Communication using XML over HTTP B2B - the basics
- Business-to-business electronic commerce (B2B) typically takes the form of automated processes between trading partners and is performed in much higher volumes than business-to-consumer (B2C) applications.

Business to Consumers

- Refers to businesses selling products or services to end-user consumers.
- B2B stands for transaction activities involving two business entities (business-to-business transaction). B2C stands for transaction activities involving a business and a consumer (business-to-consumer transaction).
- Electronic commerce comprises commercial transactions, involving both organisations and individuals. From the technical point of view e-commerce is the processing and transmission of digitised data. E-commerce decreases the distance between producers and consumers. Consumers can make their purchase without entering a traditional shop.

Business to Administration (Government)

- Short for business-to-administration, also known as e-government. B2A is the idea that government agencies and businesses can use central Web sites to conduct business and interact with each other more efficiently than they usually can off the Web. FindLaw is an example of a site offering B2A services -- a single place to locate court documents, tax forms and filings for many different local, state and federal government organizations

E-Business Category

- E-banks
- E-trade
- E-consulting
- E-engineer
- E-learning
- E-mail
- E-marketing
- E-transactions

Can my business benefit from e-Business?

- Reduce administrative and operating costs

CHAPTER 3 – E-BUSINESS TECHNOLOGY AND NETWORKS

- Reduce inventory costs
- Reduce the cost of procurement
- Improve customer service and satisfaction
- Streamline procurement procedures
- Increase communication efficiency and interaction with employees, vendors, customers and strategic partners
- Increase revenues and profit margins