Chapter 2: Basic components of IS

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Hardwares

- Refer to books on harwdare

Multiprotocol Networks (1)

- Introduction
  - Protocol is a procedure for communication between two PCs
  - Internet is the network of the networks
  - Even when any new protocol becomes the primary protocol used in the internet tomorrow, there will sill be IPv4 systems (the current dominant protocol) in use.
  - The next generation internet protocol should have features that support its use with a variety of protocol architectures.
- Multiprotocol system example
  - ESANET

Multiprotocol Networks (2)

- Multiprotocol techniques
  - Encapsulation/tunneling
  - Translation/conversion
  - Multi-protocol End-Systems
- Multiprotocol Network Features
  - Addressing
  - Header option handling
  - Multiplexing
  - Status/control feedback
  - Switching
  - Fragmentation

Communication Media

- Focuses on following issues:
  - Technologies used in communications systems?
  - Telecommunications transmission media to use?
  - How should organization design its networks?
  - What alternative network services are available to our organization?
  - What telecommunications applications can be used for electronic commerce and
  - electronic business?

Communication Media (Contd…)

- Communication of information by electronic means
  - Includes digital data transmission as well as voice transmission
  - Use computers to process information
  - Use Terminals or input/output devices that send or receive data
  - Include Communications processors
  - Use Communication software
  - Transmits information
  - Establishes interface between sender and the receiver
  - Routes messages along most efficient paths
  - Performs elementary processing of information
  - Performs editorial tasks on data
  - Converts message speed or format
  - Controls flow of information
  - Translates computer's digital signals into analog and vice versa

Communicating devices and media

- MODEMS:
  - Twisted wire: Telephone systems
  - Coaxial cable: Cable television
- LAN
  - Fiber optics and optical networks: Dense wave division multiplexing (DWDM)
  - Workstations: Manages communications for the host computer
  - Concentrator: Collects and temporarily stores messages
  - Multiplexer: Enables single communication channel to carry data transmissions

Communicating devices and media

- Wireless LANs
  - Wi-Fi (802.11b) standard: Up to 11 Mbps, low cost, high-speed mobile Internet access, links work groups
  - Bluetooth standard: Up to 720 Kbps, small personal area networks
- Wide Area Networks (WANs)
  - Variety of cable, satellite, and microwave technologies
  - Switched lines, dedicated lines
- Other Network Services
  - Packet switching, Frame Relay, Asynchronous transfer mode (ATM),Integrated Services Digital Network (ISDN), Digital subscriber line (DSL), Cable modems, T1 line - Broadband

Standard User Interface

- A design that creates an effective communication medium between a human and a computer
- It begins with identification of user, task and environment requirements.
- Standard user interface is a window to software because it molds user's perception of quality of system.

Interface Problems

- Excessive use of computer jargon and acronyms
- Non obvious or less-than-intuitive design
- Inability to distinguish between alternative actions ("what do I do next?")
- Inconsistent problem-solving approaches
- Design inconsistency
- These problems result in confusion, panic, frustration, boredom, misuse, abandonment, and other undesirable consequences.

Commandments of User Interface Design

- Understand your users and their tasks.
- Involve the user in interface design.
- Test the system on actual users.
- Practice iterative design.

Human Engineering Guidelines

- The system user should always be aware of what to do next.
  - Tell the user what the system expects right now.
  - Tell the user that data has been entered correctly.
  - Tell the user that data has not been entered correctly.
  - Explain to the user the reason for a delay in processing.
  - Tell the user that a task was completed or was not completed.
- The screen should be formatted so that the various types of information, instructions, and messages always appear in the same general display area.
- Messages, instructions, or information should be displayed long enough to allow the system user to read them

Human Engineering Guidelines

- Use display attributes sparingly.
- Default values for fields and answers to be entered by the user should be specified.
- Anticipate the errors users might make.
- A user should not be allowed to proceed without correcting an error, if occurs.

Guidelines for dialogue, Tone and Terminology

- Tone:
  - Use simple, grammatically correct sentences.
  - Don’t be funny or cute!
  - Don’t be condescending.
- Terminology
  - Don’t use computer jargon.
  - Avoid most abbreviations.
  - Use simple terms.
  - Be consistent in your use of terminology.
  - Carefully phrase instructions—use appropriate action verbs.

Common Approaches to Showing the Display Area

- **Paging** displays a complete screen of characters at a time
- The complete display area is known as a page (or screen).
- The page is replaced on demand by the next or previous page, much like turning the pages of a book.
- **Scrolling** moves the displayed information up or down on the screen, one line at a time.
- This is similar to the way movie and television credits scroll up the screen at the end of a movie.

Styles or Strategies Used For Designing Graphical User Interfaces

- Windows and frames
- Menu-driven interfaces
- Instruction-driven interfaces
- Question-answer dialogue

GUI Menus

- Pull down and cascading menus
- Tear-off and pop-up menus
- Toolbar and iconic menus
- Hypertext and hyperlink menus

Special Considerations for User Interface Design

- Internal controls—authentication and authorization
- On-line help