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Accounting Information Systems

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A.I.S. Class 25: Outline

- Learning Objectives for Chapter 4
- Telecommunications
- Networks
- Group Work for Chapter 4
- Ethical Use of AIS

Learning Objectives for Chapter 4

- After studying this chapter you should be able to:
  * identify the five components of a telecommunications network,
  * distinguish between terminals and workstations,
  * explain the various types of transmission links, including physical and "through the air" links,
  * differentiate between alternative transmission methods such as analog and digital transmission, circuit switching and packet switching,
  * describe in general terms the functioning of line sharing devices and switches,
  * explain the role of network architecture and standards,
  * explain the OSI telecommunications model,
  * distinguish between local area networks and wide area networks,

Learning Objectives for Chapter 4

- After studying this chapter you should be able to:
  * describe alternative computer network configurations including ring, star, and bus networks,
  * understand the various types of wide area networks, including the options for centralized data processing networks and distributed data processing networks,
  * explain the concept of a client/server system,
  * understand the architecture and functioning of the Internet,
  * distinguish between the Internet and Intranets,
  * describe the operation of electronic data interchange arrangements between organizations,
  * explain the concept of e-business and its emerging importance in the global economy.

Telecommunications

- Terminals and workstations
- Transmission links
- Transmission methods
- Line sharing and switching
- Architecture and standards

Terminals and Workstations

- Dumb terminals
- Intelligent workstations
- Network interface cards
- Net PCs

Transmission Links

- Twisted-pair cables
- Coaxial cables
- Fiber optic cables
- Infra-red transmission
- Microwaves
- Satellite transmission

Transmission Methods

- Analog
- Digital
- Circuit switching
- Packet switching
- Asynchronous
- Synchronous

Line Sharing and Switching

- Multiplexers (MUX)
  - time
  - frequency
- Front-end processors
- Bridges
- Routers
- Brouters
- Gateways

Architecture and Standards

- ISO's OSI model
  * physical
  * link
  * network
  * transport
  * session
  * presentation
  * application

Communication Protocols

- Full Duplex
  (Duplex)

- Half Duplex
  (Simplex)

Networks

- Local area networks
- Network topologies
  - bus
  - token ring
  - star
  - hybrid
- Novell NetWare
- Windows 2003 Server

Networks

- Wide area networks
- Modems
- ISDN
- DSL
- Cable Modems

Networks

- Dedicated connections
  * T1
  * T3
  * etc.
- Lines
  * switched
  * WATS
  * leased

Networks

- Centralized data processing
  * point-to-point
  * multidrop
  * multiplexed
- Distributed data processing
- Client-server systems

Networks

- Internet
  - Telnet
  - FTP
  - Usenet (News Groups)
  - E-mail
  - WWW
  - IRC
  - MUD
- Intranets
- Extranets

Networks

- Electronic Data Interchange (EDI)
- Electronic Funds Transfer (EFT, EFTPOS)
- Value Added Network (VAN)
- ASC.X12
- EDI via Internet

Electronic Commerce

- Web presence
- Business to consumer (B2C)
  * electronic retailing, banking, trading
- Business to business (B2B)
  * e-procurement
- Business to government (B2G)
- Business to employees (B2E)
- Individual to government

Electronic Commerce

- Issues
  * payment
    - EFT
    - credit cards
    - electronic wallets
    - PayPal
    - e-cash
  * security
  * privacy
  * authentication and non-repudiation
    - WebTrust
  * jurisdiction and legal issues

Group Work for Chapter 4

- Discussion Questions
- Problems 1 & 2

Ethical Use of AIS

- What is Ethics?
  - Ethics is about our choices as to how we behave, and how we treat one another
  - Ethics concerns:
    - Our actions
    - Their consequences
    - Our character as individuals
    - Our motives for acting as we do

Ethical Use of AIS

- What is Ethics?
  - well based standards of right and wrong that prescribe what humans ought to do, usually in terms of rights, obligations, benefits to society, fairness, or specific virtues
  - the study and development of one's ethical standards
  - the continuous effort of studying our own moral beliefs and our moral conduct, and striving to ensure that we, and the institutions we help to shape, live up to standards that are reasonable and solidly-based

Manuel Velasquez, Claire Andre, Thomas Shanks, S.J., and Michael J. Meyer

Ethical Use of AIS

- Ethical principles may be based on:
  * Rules, duties and obligations
  * Rights
  * Justice and fairness
  * Consequences and utility
  * Motives
  * Virtue and character
  * Religion
- Some believe that ethical principles are all relative, other believe that there are objective rights and wrong ethical choices

Ethical Use of AIS

- What is "Computer Ethics"?
  - the analysis of the nature and social impact of computer technology and the corresponding formulation and justification of policies for the ethical use of such technology.

James H. Moor

Ethical Use of AIS

- The Ten Commandments of Computer Ethics
  1. Thou shalt not use a computer to harm other people.
  2. Thou shalt not interfere with other people's computer work.
  3. Thou shalt not snoop around in other people's computer files.
  4. Thou shalt not use a computer to steal.
  5. Thou shalt not use a computer to bear false witness.
  6. Thou shalt not copy or use proprietary software for which you have not paid.
  7. Thou shalt not use other people's computer resources without authorization or proper compensation.
  8. Thou shalt not appropriate other people's intellectual output.
  9. Thou shalt think about the social consequences of the program you are writing or the system you are designing.
  10. Thou shalt always use a computer in ways that ensure consideration and respect for your fellow humans.

Computer Ethics Institute

Ethical Use of AIS

- Ethical standards are promulgated by a number of bodies including:
  - Association for Computing Machinery
    - http://www.acm.org/about/code-of-ethics
  - British Computer Society
    - http://www.bcs.org/server.php?show=nav.6029
- Center for Computing and Ethical Responsibility
  - ETHICOMP E-journal
    - http://www.ccsr.cse.dmu.ac.uk/journal/

Ethical Use of AIS

- What is Information Systems Ethics?
  - Ethics is required to overcome the following ethical issues:
    - *Privacy:* What information about one's self or one's associations must a person reveal to others, under what conditions and with what safeguards? What things can people keep to themselves and not be forced to reveal to others?
    - *Accuracy:* Who is responsible for the authenticity, fidelity and accuracy of information? Similarly, who is to be held accountable for errors in information and how is the injured party to be made whole?
    - *Property:* Who owns information? What are the just and fair prices for its exchange? Who owns the channels, especially the airways, through which information is transmitted? How should access to this scarce resource be allocated?
    - *Accessibility:* What information does a person or an organization have a right or a privilege to obtain, under what conditions and with what safeguards?
  - Information System ethics explores and evaluates:
    - the development of moral values in the information field
    - the creation of new power structures in the information field, information myths
    - hidden contradictions and intentionalities in information theories and practices
    - the development of ethical conflicts in the information field, etc.

Ethical Use of AIS

- What is Information Systems Ethics?
  - Association for Information Systems
    - http://cyberethics.cbi.msstate.edu/
  - Information Ethics Roundtable
    - http://library.hunter.cuny.edu/tdoyle/informationethicsbib.htm

Ethical Use of AIS

- ISACA® sets forth this Code of Professional Ethics to guide the professional and personal conduct of members of the association and/or its certification holders. Members and ISACA certification holders shall:
  * Support the implementation of, and encourage compliance with, appropriate standards, procedures and controls for information systems.
  * Perform their duties with objectivity, due diligence and professional care, in accordance with professional standards and best practices.
  * Serve in the interest of stakeholders in a lawful and honest manner, while maintaining high standards of conduct and character, and not engage in acts discreditable to the profession.
  * Maintain the privacy and confidentiality of information obtained in the course of their duties unless disclosure is required by legal authority. Such information shall not be used for personal benefit or released to inappropriate parties.
  * Maintain competency in their respective fields and agree to undertake only those activities, which they can reasonably expect to complete with professional competence.
  * Inform appropriate parties of the results of work performed; revealing all significant facts known to them.
  * Support the professional education of stakeholders in enhancing their understanding of information systems security and control.

Ethical Use of AIS

- Key Ethical Issues for AIS
  - Displacing/replacing human labor, deskilling work, etc.
  - Computer Crime – compromising:
    - Privacy and confidentiality of data
    - Integrity – data and programs not modified without proper authority
    - Unimpaired service and availability of systems when needed
    - Consistency – data and behavior we see today not the same tomorrow
    - Control over access to resources – including theft of computer time
  - Intellectual property rights for algorithms, programs, data designs, etc.
  - Professional responsibility of analysts, software engineers, programmers, DBAs, etc.
  - Loss of personal privacy and anonymity
  - Informed consent for collection and dissemination of information
  - Use, management and control of *personal* data (regulated in EC but not US)
  - Damage from dissemination of inaccurate information e.g. incorrect credit history
  - Competitive disadvantage arising from disclosure of corporate information
  - Financial misrepresentation
  - Employer access to employee use of e-mail, Internet
  - Surveillance and monitoring of individuals e.g. usage logs, keystrokes, etc.