

TECHNOLOGY INFORMATION SYSTEMS

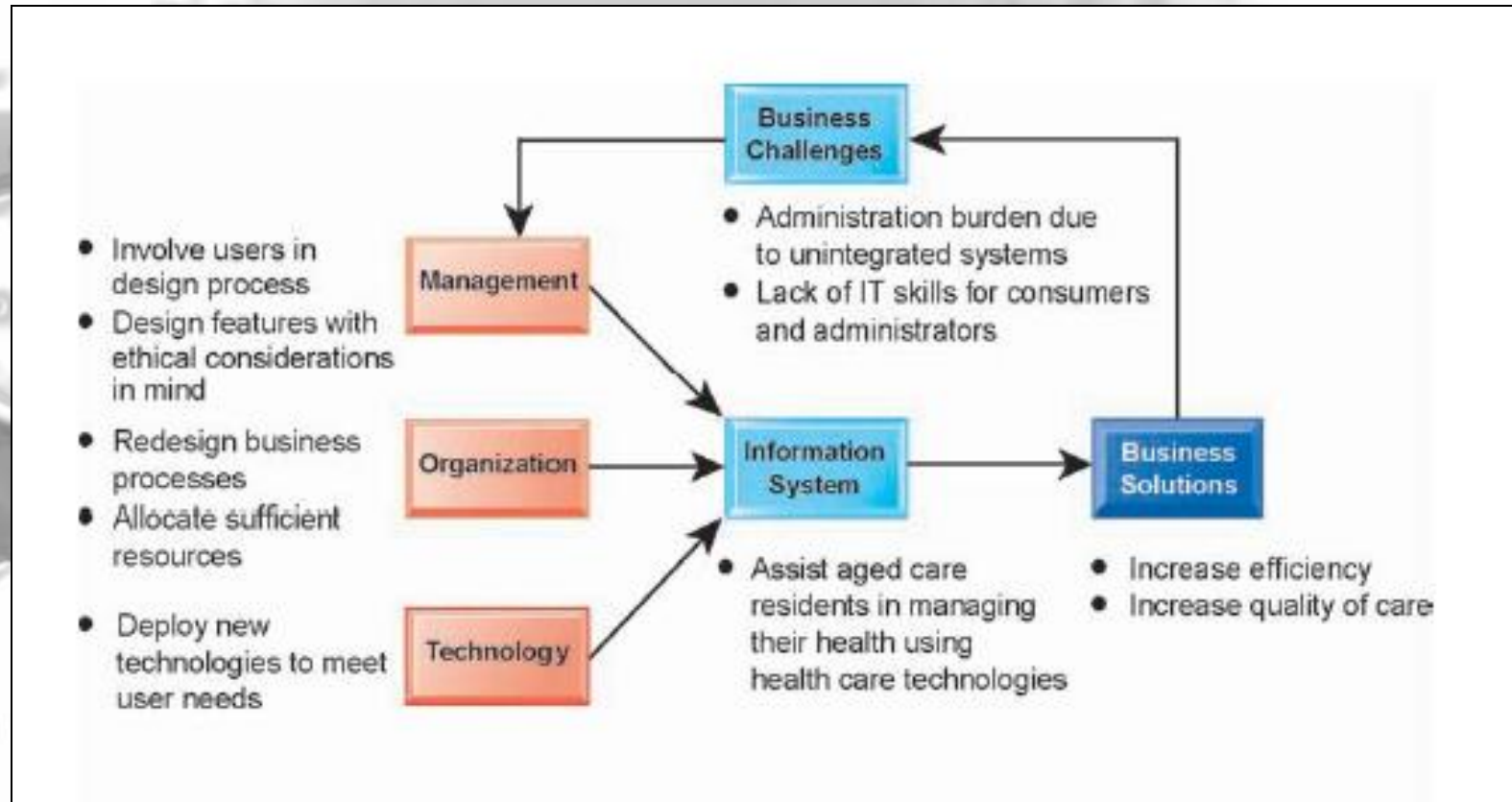
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ETHICAL AND SOCIAL ISSUES IN INFORMATION SYSTEMS



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ETHICAL ISSUES FACING THE USE OF TECHNOLOGIES FOR THE AGED COMMUNITY



Ethical and Social Issues

- The Web sites you visit track the search engine queries you enter, pages visited, Web content viewed, ads clicked, videos watched, content shared, and the products you purchase.
- Google is the largest Web tracker, monitoring thousands of Web sites

Ethical and Social Issues

- Technology can be a double-edged sword:
 - It can be the source of many benefits (by showing you ads relevant to your interests)
 - but it can also create new opportunities for invading your privacy, and enabling the reckless use of that information in a variety of decisions about you

Ethical and Social Issues

- Search engine marketing is arguably the most effective form of advertising in history,
- Banner display ad marketing is highly inefficient because it displays ads to everyone regardless of their interests.
- Hence the search engine marketers cannot charge much for display ad space
- Internet users, they can develop a very clear picture of who you are, and use that information to show you ads that might be of interest to you. This would make the marketing process more efficient, and more profitable for all the parties involved

Ethical and Social Issues

- But this solution also creates an ethical dilemma:
 - Pitting the monetary interests of the online advertisers and search engines against the interests of individuals to maintain a sense of control over their personal information and their privacy.
- As a manager,
 - you will need to be sensitive to both the negative and positive impacts of information systems for your firm, employees, and customers.
 - You will need to learn how to resolve ethical dilemmas involving information systems.

Ethical and Social Issues

- Ethics

- Principles of right and wrong that individuals, acting as free moral agents, use to make choices to guide their behaviors
- Ethics is about individual choice: When faced with alternative courses of action, what is the correct moral choice?

- Information technology can be used to achieve social progress, but it can also be used to commit crimes and threaten social values.
- For instance, Information systems raise new ethical questions because they create opportunities for:
 - Intense social change, threatening existing distributions of power, money, rights, and obligations
 - New kinds of crime

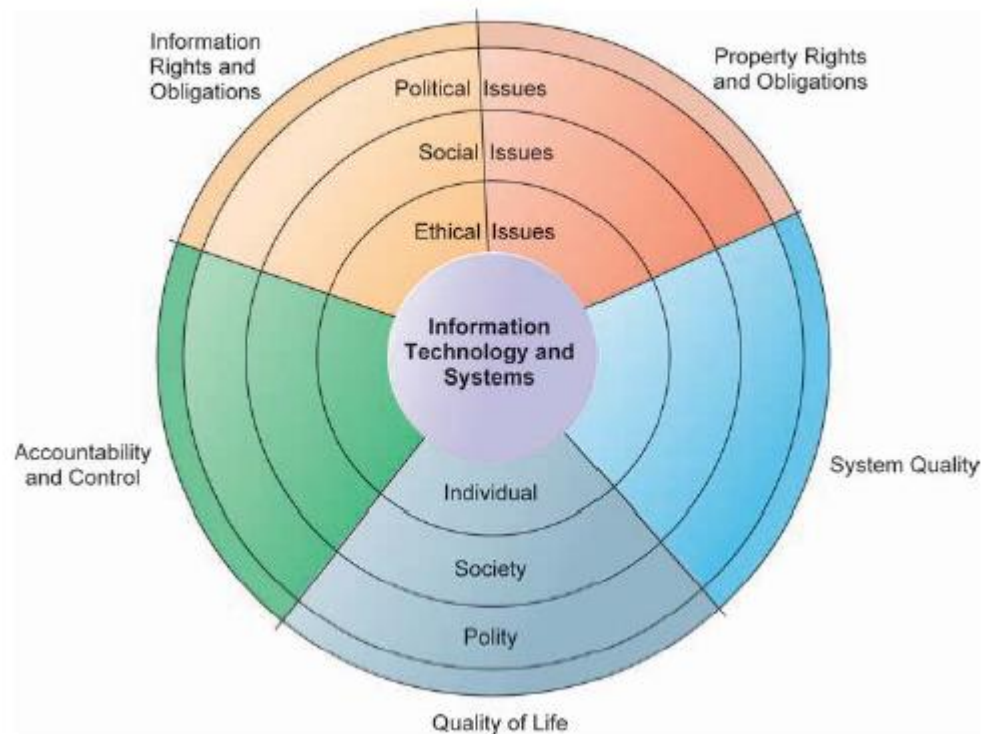
– Ethics and the Internet:

- Ethical issues in information systems have been given new urgency by the rise of the Internet and electronic commerce.
- Internet and digital firm technologies make it easier than ever to assemble, integrate, and distribute information, unleashing new concerns about the appropriate use of customer information, the protection of personal privacy, and the protection of intellectual property.

- Three levels: individual, social, and (legal) political
- A model for thinking about ethical, social, and legal Issues
 - Think of a society as a calm pond
 - IT as rock dropped in pond, creating ripples of new situations not covered by old rules
 - Social (e.g. family, education, etc.) and legal (political) institutions cannot respond overnight to these ripples—it may take years to develop expectations and laws

Moral Dimensions

THE RELATIONSHIP BETWEEN ETHICAL, SOCIAL, AND POLITICAL ISSUES IN AN INFORMATION SOCIETY



The introduction of new information technology has a ripple effect, raising new ethical, social, and legal issues that must be dealt with on the individual, social, and political levels. These issues have five moral dimensions: information rights and obligations, property rights and obligations, system quality, quality of life, and accountability and control.

Moral Dimensions

- Five moral dimensions of the information age:
 - Information rights and obligations
 - Property rights and obligations
 - Accountability and control
 - System quality
 - Quality of life

Moral Dimensions

- Information rights and obligations:
 - What information rights do individuals possess with respect to themselves? What can they protect?
- Property rights and obligations
 - How will traditional intellectual property rights be protected in a digital society in which tracing and accounting for ownership are difficult?
- Accountability and control
 - Who can and will be held accountable and liable for the harm done to individual and collective information and property rights?

Moral Dimensions

– System quality

- What standards of data and system quality should we demand to protect individual rights and the safety of society?

– Quality of life

- What values should be preserved in an information- and knowledge-based society? Which institutions and values should we protect from violation?

TECHNOLOGY TRENDS AFFECTING ETHICS

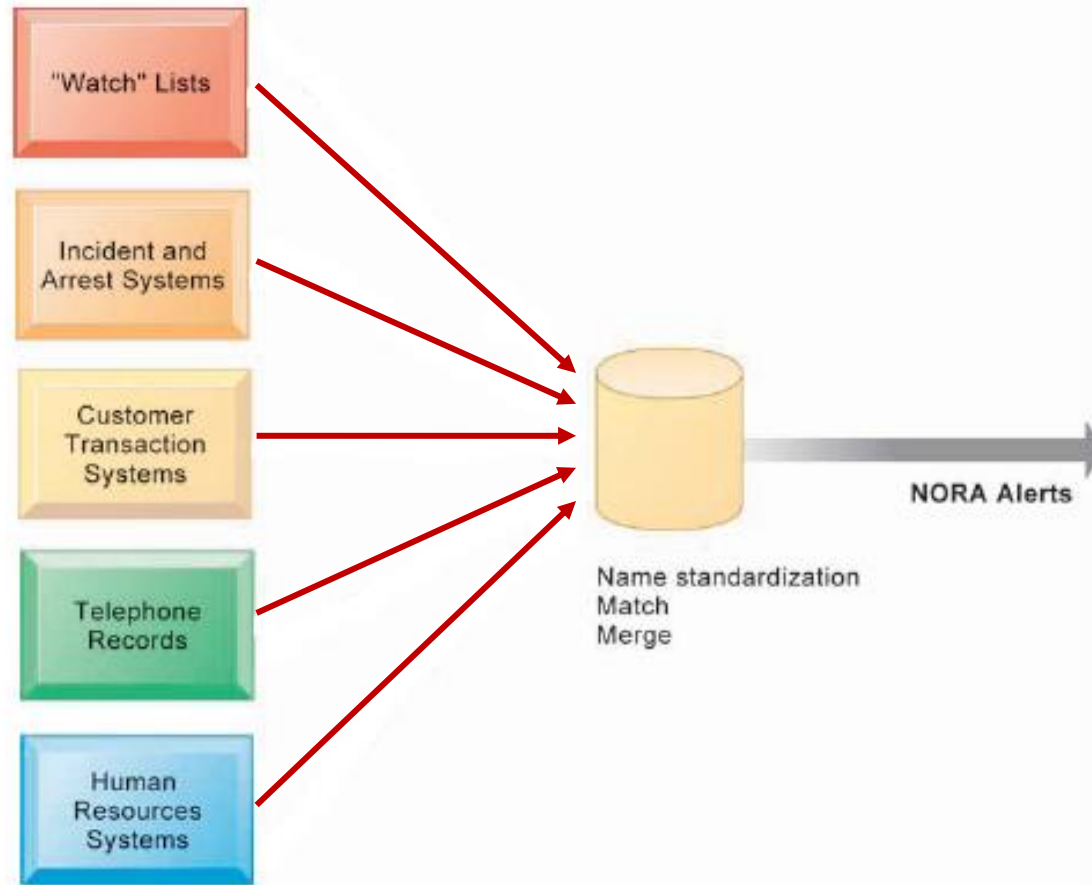
- Key technology trends that raise ethical issues
 - Doubling of computer power
 - More organizations depend on computer systems for critical operations.
 - Rapidly declining data storage costs
 - Organizations can easily maintain detailed databases on individuals.
 - Networking advances and the Internet
 - Copying data from one location to another and accessing personal data from remote locations are much easier.

TECHNOLOGY TRENDS AFFECTING ETHICS

- Advances in data analysis techniques
 - Profiling
 - Combining data from multiple sources to create dossiers of detailed information on individuals
 - Nonobvious relationship awareness (NORA)
 - Combining data from multiple sources to find obscure hidden connections that might help identify criminals or terrorists
- Mobile device growth
 - Tracking of individual cell phones

TECHNOLOGY TRENDS AFFECTING ETHICS

NONOBTVIOUS RELATIONSHIP AWARENESS (NORA)



NORA technology can take information about people from disparate sources and find obscure, nonobvious relationships. It might discover, for example, that an applicant for a job at a casino shares a telephone number with a known criminal and issue an alert to the hiring manager.

Ethics is a concern of humans who have freedom of choice.

Ethical choices are decisions made by individuals who are responsible for the consequences of their actions.

Ethics in an Information Society

- Basic concepts for ethical analysis (key elements in ethical action):
 - **Responsibility:** Accepting the potential costs, duties, and obligations for decisions (accepting the consequences of your decision)
 - **Accountability:** means that mechanisms are in place to determine who took the action, and who is responsible.
 - **Liability:** Extends the concept of responsibility further to the area of laws. It means a body of laws is in place that permits individuals to recover the damages done to them by other actors.
 - **Due process:** a process in which laws are known and understood, and there is an ability to appeal to higher authorities to ensure that the laws are applied correctly. Individuals can recover damages done to them through a set of laws characterized by due process.

- **Five-step ethical analysis**
 1. Identify and clearly describe the facts.
 2. Define the conflict or dilemma and identify the higher-order values involved.
 3. Identify the stakeholders.
 4. Identify the options that you can reasonably take.
 5. Identify the potential consequences of your options.

Ethics in an Information Society

- **Five-step ethical analysis**
 - 1. Identify and clearly describe the facts:** Find out who did what to whom, and where, when, and how
 - 2. Define the conflict or dilemma and identify the higher-order values involved:** The parties to a dispute all claim to be pursuing higher values, e.g. the need to improve health care record keeping and the need to protect individual privacy
 - 3. Identify the stakeholders:** players in the game who have an interest in the outcome, who have invested in the situation, etc.

Ethics in an Information Society

- **Five-step ethical analysis**
 4. **Identify the options that you can reasonably take:**
arriving at a good or ethical solution may not always be a balancing of consequences to stakeholders.
 5. **Identify the potential consequences of your options:**
Some options may be ethically correct but disastrous from other points of view. Other options may work in one instance but not in other similar instances

Ethics in an Information Society

Once your analysis is complete, what ethical **approaches** or rules should you use to make a decision?

Although you are the only one who can decide which among many ethical principles you will follow, and how you will prioritize them, it is helpful to consider some ethical **approaches** with deep roots in many cultures that have survived throughout recorded history, next slide

Candidate ethical approaches

– Golden Rule

- Do unto others as you would have them do unto you, Putting yourself into the place of others

– Categorical Imperative

- If an action is not right for everyone to take, it is not right for anyone. Ask yourself, “If everyone did this, could the organization, or society, survive?”

– Rule of Change

- If an action cannot be taken repeatedly, it is not right to take at all. An action may bring about a small change now that is acceptable, but if it is repeated, it would bring unacceptable changes in the long run.

Ethics in an Information Society

- **Candidate ethical principles (cont.)**
 - **Utilitarian Principle**
 - Take the action that achieves the higher or greater value. This rule assumes you can prioritize values in a rank order and understand the consequences of various courses of action
 - **Risk Aversion Principle**
 - Take the action that produces the least harm or potential cost. Some actions have extremely high failure costs of very low probability (e.g. building a nuclear generator)
 - **Ethical “No Free Lunch” Rule**
 - Assume that virtually all tangible and intangible objects are owned by someone unless there is a specific declaration otherwise. (relate to copyrights, patents, etc.)

Ethics in an Information Society

- **Professional codes of conduct**
 - Proclaimed by associations of professionals
 - Examples: American Medical Association (AMA)
 - Promises by professions to regulate themselves in the general interest of society (e.g. avoiding harm to others)
 - These professional groups take responsibility for the partial regulation of their professions by determining entrance qualifications and competence (put rules to be qualified).
- **Real-world ethical dilemmas**
 - One set of interests pitted against another
 - Example: right of company to maximize productivity of workers versus workers right to use Internet for short personal tasks, replacing people for technology, reducing the size of workforce, etc.

Challenges to Privacy and Intellectual Property

- **Information rights:** privacy and freedom in the Internet age
 - Privacy:
 - Claim of individuals to be left alone, free from surveillance or interference from other individuals, organizations, or state; claim to be able to control information about yourself
 - Information technology and systems threaten individual claims to privacy
 - In the United States, privacy protected by:
 - First Amendment (freedom of speech)
 - Fourth Amendment (unreasonable search and seizure)
 - Additional federal statutes (e.g., Privacy Act of 1974)

Challenges to Privacy and Intellectual Property

- **Fair information practices:**

- Set of principles governing the collection and use of information
 - Basis of most U.S. and European privacy laws
 - Based on mutuality of interest between record holder and individual, once information is gathered by record holder, the individual maintains an interest in the record, and the record may not be used to support other activities without the individual's consent.
 - Restated and extended by FTC (Federal Trade Commission) in 1998 to provide guidelines for protecting online privacy
- Used to drive changes in privacy legislation
 - COPPA, Gramm-Leach-Bliley Act, HIPAA, Do-Not-Track Online Act of 2011

Challenges to Privacy and Intellectual Property

- **FTC FIP principles:**

- **Notice/awareness (core principle)**

- Web sites must disclose practices before collecting data, e.g. uses of data; other recipients of data, etc.

- **Choice/consent (core principle)**

- Consumers must be able to choose how information is used for secondary purposes.

- **Access/participation**

- Consumers must be able to review and contest accuracy of personal data.

- **Security**

- Data collectors must take steps to ensure accuracy, security of personal data.

- **Enforcement**

- Must be mechanism to enforce FIP principles.

Challenges to Privacy and Intellectual Property

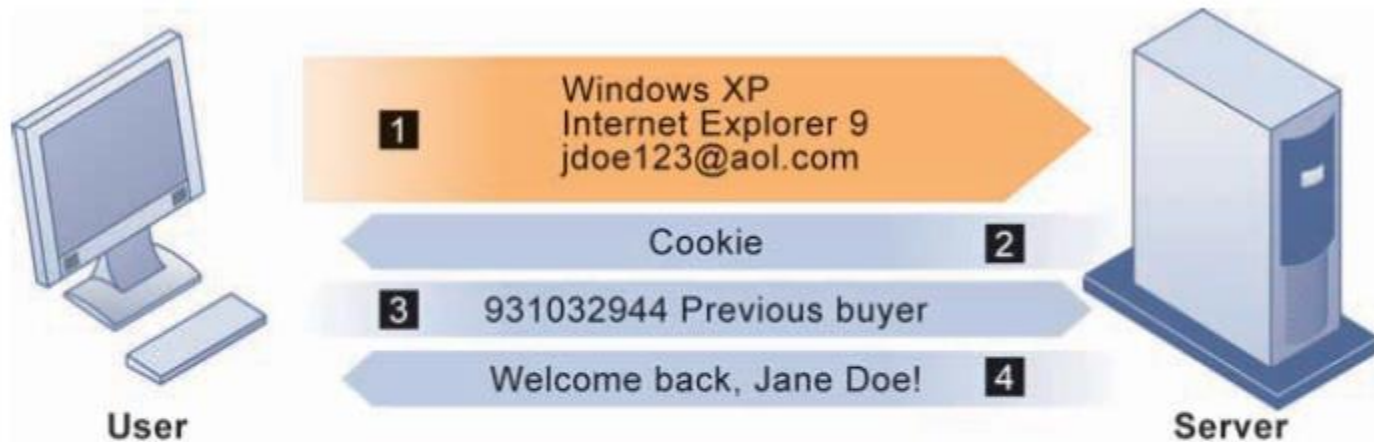
- European Directive on Data Protection:
 - Companies must inform people that information is collected and disclose how it is stored and used.
 - Requires informed consent of customer.
 - EU member nations cannot transfer personal data to countries without similar privacy protection (e.g., the United States).

Challenges to Privacy and Intellectual Property

- Internet challenges to privacy:
 - Cookies
 - Identify browser and track visits to site
 - Super cookies (Flash cookies)
 - Web beacons (Web bugs)
 - Tiny graphics embedded in e-mails and Web pages
 - Monitor who is reading e-mail message or visiting site
 - Spyware
 - Installed on user's computer
 - May transmit user's keystrokes or display unwanted ads
 - Google services and behavioral targeting

HOW COOKIES IDENTIFY WEB VISITORS

HOW COOKIES IDENTIFY WEB VISITORS



1. The Web server reads the user's Web browser and determines the operating system, browser name, version number, Internet address, and other information.
2. The server transmits a tiny text file with user identification information called a cookie, which the user's browser receives and stores on the user's computer hard drive.
3. When the user returns to the Web site, the server requests the contents of any cookie it deposited previously in the user's computer.
4. The Web server reads the cookie, identifies the visitor, and calls up data on the user.

Cookies are written by a Web site on a visitor's hard drive. When the visitor returns to that Web site, the Web server requests the ID number from the cookie and uses it to access the data stored by that server on that visitor. The Web site can then use these data to display personalized information.

Challenges to Privacy and Intellectual Property

- >> Google has been using **behavioral targeting** to help it display more relevant ads based on users' search activities.
- >> One of its programs enables advertisers to target ads based on the search histories of Google users, along with any other information the user submits to Google that Google can obtain, such as age, demographics, region, and other Web activities
- >> Google has also been scanning the contents of messages received by users of its free Web-based e-mail service called Gmail. Ads that users see when they read their e-mail are related to the subjects of these messages.

Challenges to Privacy and Intellectual Property

- **The United States allows businesses to gather transaction information and use this for other marketing purposes.**
 - Opt-out vs. opt-in model
- **Online industry promotes self-regulation over privacy legislation.**
- **However, extent of responsibility taken varies:**
 - Complex/ambiguous privacy statements
 - Opt-out models selected over opt-in
 - Online “seals” of privacy principles

Challenges to Privacy and Intellectual Property

>> An **opt-out** model permits the collection of personal information until the consumer specifically requests that the data not be collected.

>> **Opt-in** model of informed consent in which a business is prohibited from collecting any personal information unless the consumer specifically takes action to approve information collection and use.

Challenges to Privacy and Intellectual Property

- Besides legislations, there are Technical solutions to protect a user privacy:
 - E-mail encryption
 - Anti-spyware tools
 - Browser features
 - “Private” browsing
 - “Do not track” options
 - _ Overall, few technical solutions

- **Property rights:** Intellectual property
 - Intellectual property: intangible property of any kind created by individuals or corporations
 - Information technology has made it difficult to protect intellectual property because computerized information can be so easily copied or distributed on networks.

Challenges to Privacy and Intellectual Property

– Three main ways that intellectual property is protected:

- **Trade secret** (ةيراجتلا رارسلا): intellectual work or product belonging to business (e.g. formula for Coke)
- **Copyright** (رشنلاو عبطلا قوقح): statutory grant protecting intellectual property from being copied for the life of the author, plus 70 years (copyright of a photo, book)
- **Patents** (عارتخلا ةءارب): grants the owner an exclusive monopoly on the ideas behind an invention for 20 years (Amazon's One Click shopping).

Challenges to Privacy and Intellectual Property

- Challenges to intellectual property rights
 - Digital media different from physical media (e.g., books)
 - Digital media differ from books, periodicals, and other media in terms of ease of replication; ease of transmission; ease of alteration; difficulty in classifying a software work as a program, book, or even music; compactness—making theft easy; and difficulties in establishing uniqueness.
- Mechanisms are being developed to sell and distribute books, articles, and other intellectual property legally on the Internet, and the Digital Millennium Copyright Act (DMCA) of 1998 is providing some copyright protection. Internet service providers (ISPs) are required to take down sites of copyright infringers that they are hosting once they are notified of the problem

- **Accountability, liability, control**
 - Computer-related liability problems
 - If software fails, who is responsible?
 - If a person is injured by a machine controlled, in part, by software, who should be held accountable and, therefore, held liable?
 - Uploading offensive material, responsibility of website developers (e.g. youtube) or broadcasters?
 - In conclusion, it is difficult to ascribe liability to software developers for the same reason that it is difficult to ascribe a publisher liability for the effects of a book.

- **System quality:** Data quality and system errors
 - Liability and accountability for unintentional consequences lead the other moral dimension – System Quality
 - What is an acceptable, technologically feasible level of system quality?
 - Individuals and organizations may be held responsible for avoidable and foreseeable consequences, which they have a duty to perceive and correct. And the gray area is that some system errors are foreseeable and correctable only at very great expense, an expense so great that pursuing this level of perfection is not feasible economically—no one could afford the product (so in gray areas, what should organizations do?).

– **Three principal** sources of poor system performance:

- Software bugs, errors
- Hardware failures
- Poor input data quality

Quality of life: Equity, access, boundaries-

Computers and information technologies potentially can destroy valuable elements of our culture and society even while they bring us benefits.

Quality of life: Equity, access, boundaries-

Negative social consequences of systems

- Balancing power: centralized mainframe computers would centralize power at corporate headquarters and in the nation's capital. However, the shift toward highly decentralized computing, coupled with an ideology of empowerment of thousands of workers, and the decentralization of decision making to lower organizational levels, have reduced the fears of power centralization in institutions.

Negative social consequences of Systems.

- Rapidity of change: Information systems have helped to create much more efficient national and international markets. However, businesses may not have enough time to respond to global competition
- Maintaining boundaries: Technology impact the balance between Family, Work, and Leisure
- Dependence and vulnerability: public and private organizations ever more dependent on computer systems, therefore, they are highly vulnerable if these systems fail.

Negative social consequences of systems (cont.)

- Computer crime and abuse
 - Computer crime: illegal acts through use of computer or against a computer system—computer may be object or instrument of crime
 - Computer abuse: unethical acts, not illegal
 - Spam: high costs for businesses in dealing with spam
 - Spam is junk e-mail sent by an organization or individual to a mass audience of Internet users who have expressed no interest in the product or service being marketed

Negative social consequences of systems (cont.)

- Employment:
 - Reengineering work resulting in lost jobs
- Equity and access—the digital divide:
 - Certain ethnic and income groups in the United States less likely to have computers or Internet access. For example: A similar digital divide exists in U.S. schools, with schools in high-poverty areas less likely to have computers, high-quality educational technology programs, or Internet access availability for their students.

Negative social consequences of systems (cont.)

- Health risks:

- Repetitive stress injury (RSI)
 - Largest source is computer keyboards
 - Carpal tunnel syndrome (CTS)
- Computer vision syndrome (CVS)
 - Eyestrain and headaches related to screen use
- Technostress
 - Aggravation, impatience, fatigue

Source:

>> Management Information Systems, Managing the Digital Firm, 13 Edition (2014), Laudon and Laudon.