8. IT Ethical and Social Issues

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Learning Objectives

1. What ethical, social, and political issues are raised by information technology?
2. What specific principles for conduct can be used to guide ethical decisions?
3. Why do contemporary information technology and the Internet pose challenges to the protection of individual privacy and intellectual property?
4. How have information technology affected everyday life?

Behavioral Targeting and Your Privacy: You’re the Target

- Problem: Need to efficiently target online ads
- Solutions: Behavioral targeting allows businesses and organizations to more precisely target desired demographics
- Google monitors user activity on thousands of sites; businesses monitor own sites to understand customers
- Demonstrates IT’s role in organizing and distributing information
- Illustrates the ethical questions inherent in online information gathering
Outline

1. Understanding Ethical and Social Issues Related to IT
2. Ethics in an Information Society
3. The Moral Dimensions of IT

Understanding Ethical and Social Issues Related to Systems

- Recent cases of failed ethical judgment in business
  - Lehman Brothers, Minerals Management Service, Pfizer
  - In many, information systems used to bury decisions from public scrutiny
- Ethics
  - Principles of right and wrong that individuals, acting as free moral agents, use to make choices to guide their behaviors

Information systems and ethics

- 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

Model for thinking about ethical, social, political issues:

- Society as a calm pond
- IT as rock dropped in pond, creating ripples of new situations not covered by old rules
- Social and political institutions cannot respond overnight to these ripples—it may take years to develop etiquette, expectations, laws
  - Requires understanding of ethics to make choices in legally gray areas
The introduction of new information technology has a ripple effect, raising new ethical, social, and political 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.

**Five moral dimensions of the information age**

1. Information rights and obligations
2. Property rights and obligations
3. Accountability and control
4. System quality
5. Quality of life

**Key technology trends that raise ethical issues**

1. Doubling of computer power
   - More organizations depend on computer systems for critical operations
2. Rapidly declining data storage costs
   - Organizations can easily maintain detailed databases on individuals
3. Networking advances and the Internet
   - Copying data from one location to another and accessing personal data from remote locations is much easier

**Key technology trends that raise ethical issues (cont.)**

4. 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
5. Mobile device growth
   - Tracking of individual cell phones
Nonobvious 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.

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Basic concepts for ethical analysis

- Responsibility:
  - Accepting the potential costs, duties, and obligations for decisions
- Accountability:
  - Mechanisms for identifying responsible parties
- Liability:
  - Permits individuals (and firms) to recover damages done to them
- Due process:
  - Laws are well known and understood, with an ability to appeal to higher authorities

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.
Candidate Ethical Principles

1. Golden Rule
   • Do unto others as you would have them do unto you

2. Immanuel Kant’s Categorical Imperative
   • If an action is not right for everyone to take, it is not right for anyone

3. Descartes’ Rule of Change
   • If an action cannot be taken repeatedly, it is not right to take at all

4. Utilitarian Principle
   • Take the action that achieves the higher or greater value

5. Risk Aversion Principle
   • Take the action that produces the least harm or least potential cost

6. Ethical “no free lunch” Rule
   • Assume that virtually all tangible and intangible objects are owned by someone unless there is a specific declaration otherwise

Professional codes of conduct and Real-world ethical dilemmas

• Professional codes of conduct
  – Promulgated by associations of professionals
    • E.g. AMA, ABA, AITP, ACM
  – Promises by professions to regulate themselves in the general interest of society

• Real-world ethical dilemmas
  – One set of interests pitted against another
    • E.g. Right of company to maximize productivity of workers vs. workers right to use Internet for short personal tasks

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The Moral Dimensions of Information Systems

- 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
  - In U.S., privacy protected by:
    - First Amendment (freedom of speech)
    - Fourth Amendment (unreasonable search and seizure)
    - Additional federal statutes (e.g. Privacy Act of 1974)

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
  - Restated and extended by FTC in 1998 to provide guidelines for protecting online privacy
- Used to drive changes in privacy legislation
  - COPPA
  - Gramm-Leach-Bliley Act
  - HIPAA

FTC FIP principles

1. Notice/awareness (core principle)
   - Web sites must disclose practices before collecting data.
2. Choice/consent (core principle)
   - Consumers must be able to choose how information is used for secondary purposes.
3. Access/participation
   - Consumers must be able to review and contest accuracy of personal data.
4. Security
   - Data collectors must take steps to ensure accuracy, security of personal data.
5. Enforcement
   - Must be mechanism to enforce FIP principles.

European Directive on Data Protection

- Companies must inform people 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 with no similar privacy protection (e.g. U.S.)
- U.S. businesses use safe harbor framework
  - Self-regulating policy to meet objectives of government legislation without involving government regulation or enforcement.
### Internet Challenges to Privacy

- **Cookies**
  - Tiny files downloaded by Web site to visitor’s hard drive
  - Identify visitor’s browser and track visits to site
  - **Super cookies (Flash cookies)**
  - Allow Web sites to develop profiles on visitors

- **Web beacons/bugs**
  - Tiny graphics embedded in e-mail and Web pages
  - Monitor who is reading message

- **Spyware**
  - Surreptitiously installed on user’s computer
  - May transmit user’s keystrokes or display unwanted ads

- **Google’s services and behavioral targeting**

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### 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.

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### The Moral Dimensions of Information Systems

- U.S. 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
  - Statements of information use
  - Opt-out selection boxes
  - Online “seals” of privacy principles

### How Google uses the data it collects

<table>
<thead>
<tr>
<th>GOOGLE FEATURE</th>
<th>DATA COLLECTED</th>
<th>USE</th>
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</thead>
<tbody>
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<td>Google Search</td>
<td>Google search topics, users’ Internet addresses</td>
<td>Targeting text ads placed in search results</td>
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<td>Gmail</td>
<td>Contents of e-mail messages</td>
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<td>DoubleClick</td>
<td>Data about Web sites visited on Google’s ad network</td>
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<tr>
<td>YouTube</td>
<td>Data about videos uploaded and downloaded; some profile data</td>
<td>Targeting ads for Google display-ad network</td>
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<tr>
<td>Mobile Maps with My Location</td>
<td>User’s actual or approximate location</td>
<td>Targeting mobile ads based on user’s ZIP code</td>
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<td>Google Toolbar</td>
<td>Web-browsing data and search history</td>
<td>No ad use at present</td>
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<td>Google Buzz</td>
<td>Users’ Google profile data and connections</td>
<td>No ad use at present</td>
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<tr>
<td>Google Chrome</td>
<td>Sample of address-bar entries when Google is the default search engine</td>
<td>No ad use at present</td>
</tr>
<tr>
<td>Google Checkout</td>
<td>User’s name, address, transaction details</td>
<td>No ad use at present</td>
</tr>
<tr>
<td>Google Analytics</td>
<td>Traffic data from Web sites using Google’s Analytics service</td>
<td>No ad use at present</td>
</tr>
</tbody>
</table>
Technical solutions

- E-mail encryption
- Anonymity tools
- 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
- Three main ways that protect intellectual property
  1. Trade secret: Intellectual work or product belonging to business, not in the public domain
  2. Copyright: Statutory grant protecting intellectual property from being copied for the life of the author, plus 70 years
  3. Patents: Grants creator of invention an exclusive monopoly on ideas behind invention for 20 years

Challenges to intellectual property rights

- Digital media different from physical media (e.g. books)
  - Ease of replication
  - Ease of transmission (networks, Internet)
  - Difficulty in classifying software
  - Compactness
  - Difficulties in establishing uniqueness
- Digital Millennium Copyright Act (DMCA)
  - Makes it illegal to circumvent technology-based protections of copyrighted materials

Accountability, Liability, Control

- Computer-related liability problems
  - If software fails, who is responsible?
    - If seen as part of machine that injures or harms, software producer and operator may be liable
    - If seen as similar to book, difficult to hold author/publisher responsible
    - What should liability be if software seen as service? Would this be similar to telephone systems not being liable for transmitted messages?
**System Quality: Data Quality and System Errors**

- What is an acceptable, technologically feasible level of system quality?
  - Flawless software is economically unfeasible
- Three principal sources of poor system performance:
  - Software bugs, errors
  - Hardware or facility failures
  - Poor input data quality (most common source of business system failure)

**Quality of life: Equity, access, and boundaries**

- Negative social consequences of systems
  - Balancing power: Although computing power decentralizing, key decision-making remains centralized
  - Rapidity of change: Businesses may not have enough time to respond to global competition
  - Maintaining boundaries: Computing, Internet use lengthens work-day, infringes on family, personal time
  - Dependence and vulnerability: Public and private organizations ever more dependent on computer systems

**Computer crime and abuse, Employment, Equity and access**

- Computer crime and abuse
  - Computer crime: Commission of 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
- 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

**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
The office environment

Symptoms of MSDs

Pain
Loss of strength
Discomfort
Tingling
Stiffness
Numbness
Swelling
Fatigue
Aching
Reduced range of motion

What are MSD’S?

• MSD’s are injuries caused by sustained exposure to stressors or repetitive motion.
• They may affect muscles, tendons, ligaments, bones, circulation, or nerves.
• Some well-known MSD’s are:
  – Carpel tunnel syndrome
  – Guyner’s syndrome
  – Trigger finger
  – Tennis elbow

Source: Jack Dennerlein, Harvard School of Public Health
### Carpal Tunnel Syndrome

One of the best known MSDs

The median nerve does not work properly due to pressure on the nerve as it runs through an opening called the carpal tunnel.

Numbness is usually first symptom.

Pain & tingling, can go up the arm to the shoulder and neck, causing waking to pain in middle of night.

#### Guyon’s Canal Syndrome

Similar To Carpal Tunnel

Guyon’s affects the ulnar nerve as it passes through the Guyon canal in the wrist; this is similar to carpal tunnel, but involves a different nerve.

Unlike carpal tunnel, Guyon’s affects the little and ring fingers.

Can be in conjunction with carpal tunnel.

### Trigger Finger

- Trigger finger affects the ability of tendons to slip back and forth. The tendon and/or ligament thicken and a nodule forms.
- This can be caused by rheumatoid arthritis, lacerations of tendon, gripping power tools, long hours of grasping steering wheel, or birth defects.
- Symptoms are pain and a funny clicking sensation.

### Tennis Elbow

- Overuse or misuse of the forearm muscles can cause tendonitis, or a painful inflammation of the tendons connecting these muscles to bone.
- This condition is brought on or aggravated by poor leverage causing an uneven distribution of force on a few muscles.
- This may be when working, or during certain leisure activities, such as sports and gardening.
- Symptoms are severe pain.
The backbone is the main support of our body. It protects at the same time the nerve paths. The right way requires special elasticity and stability of backbone. The natural form of backbone is S-form.

If the natural form of the backbone is not supported, then arise complaints.

A good chair supports therefore the backbone in particular within the range of the lumbar vertebra.
Disk

- The disks lie like cushions between the individual vertebra.
- They consist of a gelatinous mass, which is surrounded by a fiber ring.
- In such a way they steam the vibrations and prevent that the vertebra rub together.

Disk: Normal strain

- At correct sitting posture the volume disk is loaded evenly.
- The change between strain and discharge (dynamic sitting) ensures separation of pollutants by volume disks and take up liquid and nutrients.

Disk: Wrong strain

- Continuous wrong strain by static body posture can lead to one-sided intensified wear.
- Further it can come to the volume disk incident.
- The volume disk deforms and presses at worst on at the spinal column running nerves.
In quiescent positions with small muscle activity blood need and blood circulation are balanced.

With static work postures with strained musculature the blood circulation is unsatisfactory.

It comes to a under supply and thus to complaints.

At dynamic muscle work the muscle is well supplied with blood, so that the increased blood need will therefore be balanced.

For that chairs and work design should enable and promote dynamic sitting.

Risk Factors which can lead to MSDs (Stressors)

Not all of these may occur at the same time

1. **Static position**: sitting in one posture for 4 hours without moving is a high level of static posture load.

2. **Repetitive movement**: repetitive motion of the fingers, and hands while continuously typing.

3. **Awkward body positions**: twisting and turned body position to reach something behind you.

4. **Forceful motions/exertions**: hitting the keys too hard, or grasping the mouse too much

5. **Contact stress**: the forearms in contact with the working surface.

6. **Work stress**: working tensed up due to a deadline.

7. **Risk factors outside work**: crocheting or chopping wood.

Most MSDs are the result of combined risk factors.
1. Does the Tuscon data mining project inappropriately violate users’ privacy, or is it an acceptable tradeoff to more intelligently combat terrorism? Explain your answer.

- It does, based on freedom of speech and privacy rights of individuals.
- The individuals being monitored may not have actually done anything wrong aside from use a keyword marked for surveillance. You may say that it’s worth it to more accurately identify potential terrorists and prevent future attacks.

2. Were the local police justified in their handling of Holm? Why or why not? For whichever view you take, briefly describe the opposing viewpoint.

- Local police were justified in their handling of Holm due to his two conversations with one of the apprehended terrorists.
- They were not justified, since the courts ruled in Holm’s favor, and he appears to be a victim of circumstance.
3. What other issues dealing with data and privacy have you encountered on the Web?

- Facebook and their battles with privacy advocates on several occasions (changing their Terms of Use, Facebook Beacon, etc.), or Google marketing ads based on the content of their e-mail.

4. What is meant by the 'Dark Web'?

- The dark Internet or 'Dark Web' refers to unreachable network hosts on the Internet. The World Wide Web is a system of pages connected via links to and from one another, but sites in the Dark Web are not connected to the rest of the Web. This makes them difficult to detect and a helpful resource to terrorists or hackers launching DDoS attacks.