

Advanced Topics on the Legal and Ethical Issues in IS

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CH. ONE INTRODUCTION

Example 1: Therac-25

- The Therac-25 was a software-controlled radiation-therapy machine used to treat people with cancer.

- Overdoses of radiation
 - Normal dosage is 100–200 rads.
 - It is estimated that 13,000 and 25,000 rads were given to six people.
 - Three of the six people died.

Example 1: Therac-25

- Multiple Causes of the radiation overdose:
 - Poor safety design.
 - Insufficient testing and debugging.
 - Software errors.
 - Lack of safety interlocks.
 - Overconfidence.
 - Inadequate reporting and investigation of accidents.

- Ethical and Legal issues?

Example 2: Ariane 5

- June 4, 1996 an unmanned **Ariane 5 rocket** launched by the European Space Agency exploded just forty seconds after lift-off. costing \$7 billion.
- Cause of failure: software error Specifically a 64 bit floating point number related to the horizontal velocity of the rocket with respect to the platform was converted to a 16 bit signed integer. The number was larger than 32,768, the largest integer storable in a 16 bit signed integer

Example 3: NASA case

- In October of 1999 the \$125 million NASA Mars Climate Orbiter spacecraft was lost in space due to a simple data conversion error. It was determined that spacecraft software used certain data in English units that should have been in metric units. Several investigating panels were convened to determine the process failures that allowed the error to go undetected.

Problem 1: Computer Errors

□ Problems:

- Malfunction of computer cost millions or even injury or death
- Bigger problem is that failure may not be immediately detected
- Use of computers in weapon systems
- Use of computers in Air Traffic Control Sys
- Use in Money and Banking
- Use in Medical Field

Example 4: Privacy

□ Invisible Information Gathering

- Examples:
 - Customer information: personal and financial
 - Satellite surveillance
 - Interception of communications, including:
 - Telephone, E-mail, and Web activity
 - 800- or 900-number calls.
 - Loyalty cards.
 - Web-tracking data; cookies.
 - Peer-to-peer monitoring.
 - Others (to discuss and expose in class)

Example 4: Privacy

- The ministry of Interior think to sell voter registration records on tape or disk. The records include the voting history, family name and may be political party which registrant belongs to and the elections in which he or she voted.
Is this legal?
Is this right?

Example 4: Privacy

- A business maintains a database containing the names of shoplifters. It distributes the list to stores that subscribe.

Is this legal?
Is this right?

Example 5: Competitions

- When Microsoft released Windows 95, they included a "registration wizard" that would search a user's hard disk for dozens of software applications, and, with the user's consent, report the information back to Microsoft via a modem or network.
 - Microsoft: This wizard could potentially be used to collect information for marketing, or to detect pirated software.
 - Microsoft's competitors found that Microsoft was collecting--for free--a large list of their customers.

Is this legal?
Is this right?

Example 6: E-commerce

- Auctions
 - Selling and buying goods online has become popular.
 - Example of fraud: selling laptops with delay
 - Problems:
 - sellers don't send the goods,
 - sellers send inferior goods,
 - price is driven up by shill bidding
 - illegal goods sold.
 - Stolen receipts, mailed notices, and cards.
 - Interception of online transaction or weak e-commerce security.

Problem 2: Trust

- Trust in Government
- Trust in computers
- Trust in Software (invisible factors)
- Trust in e-commerce companies

Example 7: Crimes

- Percentages of organizations suffering loss
 - Virus infection 65%
 - Laptop theft 57%
 - Abusive use of the Internet 31%
 - Unauthorized computer use 16%
 - Telecommunications fraud 16%
 - Information theft 14%
 - Financial fraud 12%
 - Sabotage 11%
 - Network break-ins 8%

Example 6: Crimes

- Estimated losses are really unknown
- Why statistics unknown
 - private companies prefer to handle computer abuse internally to avoid embarrassment and adverse publicity
 - surveys of computer abuse are often ambiguous, making it difficult to interpret the data
 - most computer abuse is probably not discovered.

Problem 3: Security

- Security of Hardware
- Security of Software
- Security of Information
- Security of Communications
- Security of Transactions

Example 8: Software Piracy

- ❑ Software piracy costs the industry \$355 every second, \$21,308 every minute, \$1.2 million every hour, \$30.6 million every day and \$214.7 million every week.”
- ❑ One dollar out of every five lost to piracy occurred in the United States.”
- ❑ In Middle East and Africa three dollars out of four lost to piracy

Remarks

- ❑ For each one of these examples, we need to answer the following questions:
 - What are the ETHICAL issues in each case?
 - What are the Legal issues in each case?
 - Who are the interested parties and what do you suppose EACH of them would like you to do?
 - Propose three possible solutions (two extremes and a compromise). Number them 1, 2 & 3. Give (a) a best-case and worst-case outcome for EACH solution, and (b) for EACH solution, state whether you could tolerate the worst-case outcome.

Legal and Ethical issues

- ❑ Ethics: The branch of philosophy that deals with what is considered to be right and wrong.
- ❑ Legal: is an action or behavior established or founded upon law or official and accepted rules.
- ❑ What is unethical is not necessarily illegal
- ❑ What is legal is not necessarily ethical
- ❑ What is popular is not necessarily ethical

Legal and Ethical issues

- ❑ Some actions are both legal and ethical: purchasing software with your own money and installing it on your home computer.
- ❑ Some things are legal but not ethical: using pirated software in country with no software copyright laws.
- ❑ Some things are ethical but not legal, for example, copying software to use as a backup when prohibited by the license.
- ❑ Some actions are neither ethical nor legal, for example, erasing someone's disk, either directly or with a virus.

Legal and Ethical issues

- ❑ The "information revolution" has significantly altered many aspects of life -- in banking and commerce, work and employment, medical care, national defense, transportation and entertainment.
- ❑ Information technology has begun to affect (in both good and bad ways) community life, family life, human relationships, education, freedom, democracy, and so on.
- ❑ Computers are special technology and they raise some special ethical and legal issues

Legal and Ethical Topics

- ❑ Computer Crime
- ❑ Privacy
- ❑ Security issues
- ❑ Human Rights
- ❑ Intellectual Property Rights: Patent, CopyRight
- ❑ Professional Responsibility
- ❑ Software Issues: Risks, Liabilities, and the invisible factors
- ❑ Globalization
- ❑ Computers in the Workplace

Next Session

- Homework:
 - Short case study (see the examples)
 - Use the worksheet
- Reading:
 - What is Computer Ethics?
 - James H. Moor
- Presentations