



CS 363

Computer
Crime/Cyber-
crime

Intellectual
Property
Infringement

Privacy

Ethical Issues

Digital Rights
Management

Legal and Ethical Aspects (Ch. 19)

CS 363 Computer Security



Computer Crime/Cybercrime

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“Computer crime, or cybercrime, is a term used broadly to describe criminal activity in which computers or computer networks are a tool, a target, or a place of criminal activity.”



Types of Computer Crimes

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the U.S. Department of Justice categorizes computer crime based on the role that the computer plays in the criminal activity:

- computers as targets: involves an attack on data integrity, system integrity, data confidentiality, privacy, or availability
- computers as storage devices: using the computer to store stolen password lists, credit card or calling card numbers, proprietary corporate information, pornographic image files, or pirated commercial software
- computers as communications tools: crimes that are committed online, such as infrastructure attack, fraud, gambling, etc



Law Enforcement Challenges

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Law enforcement agency difficulties:

- Lack of investigators knowledgeable and experienced in dealing with this kind of crime
- Required technology may be beyond their budget
- The global nature of cybercrime:
<http://map.norsecorp.com>
- Lack of collaboration and cooperation with remote law enforcement agencies



Intellectual Property Infringement

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- intellectual property is defined as “any intangible asset that consists of human knowledge and ideas”.
- infringement is “the invasion of the rights secured by copyrights, trademarks, and patents”.



Intellectual Property Infringement

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- Patents: unauthorized making, using or selling
- Copyrights: unauthorized use
- Trademarks: unauthorized use or color-able imitation



Intellectual Property: Network and Computer Security

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■ Software:

- Programs produced by vendors of commercial software
- Shareware
- Proprietary software created by an organization for internal use
- Software produced by individuals

■ Databases:

- Data that is collected and organized in such a fashion that it has potential commercial value



Intellectual Property: Network and Computer Security

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- Digital content:
 - Includes audio and video files, multimedia courseware, Web site content, and any other original digital work
- Algorithms:
 - An example of a patentable algorithm is the RSA public-key cryptosystem



What is privacy?

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... the right most valued by all civilized men the right to be let alone. — U.S. Supreme Court Justice Louis Brandeis, 1890

- To develop human excellence without interference [Aristotles Politics 350 B.C.]
- Control over information about oneself [Warren and Brandeis 1890]



“Modern” Privacy

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- overlaps with computer security
- dramatic increase in scale of information collected and stored
 - motivated by law enforcement, national security, economic incentives
- individuals have become increasingly aware of access and use of personal information and private details about their lives
- concerns about extent of privacy compromise have led to a variety of legal and technical approaches to reinforcing privacy rights



Common Criteria Privacy Class

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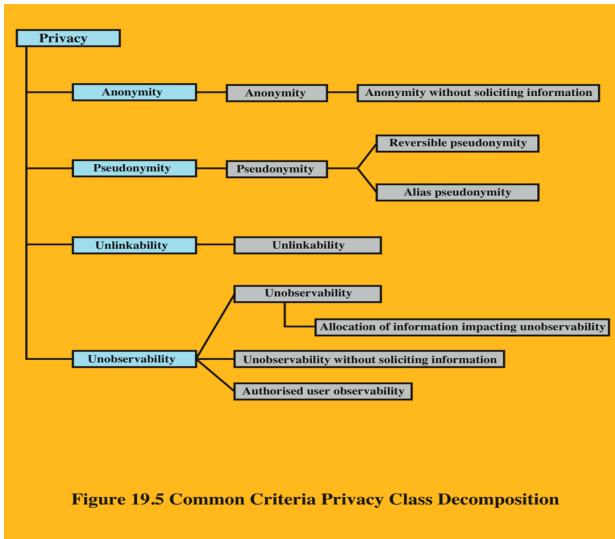


Figure 19.5 Common Criteria Privacy Class Decomposition

Privacy and Data Surveillance

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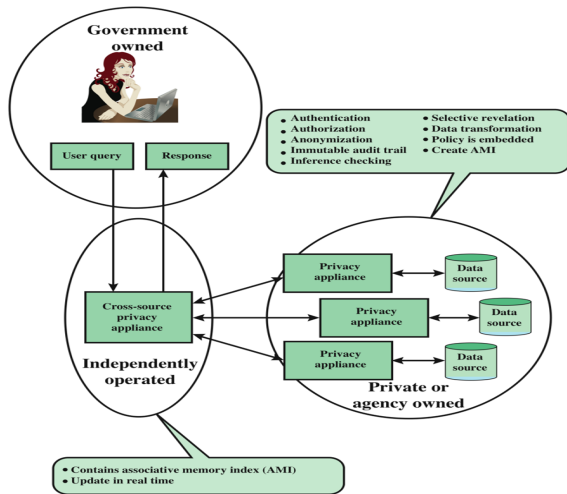


Figure 19.6 Privacy Appliance Concept



Ethical Issues

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- Ethics: “a system of moral principles that relates to the benefits and harms of particular actions, and to the rightness and wrongness of motives and ends of those actions.”
- many potential misuses and abuses of information and electronic communication that create privacy and security problems



Ethical Issues

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- basic ethical principles developed by civilizations apply
 - unique considerations surrounding computers and information systems
 - scale of activities not possible before
 - creation of new types of entities for which no agreed ethical rules have previously been formed



Ethical Question Examples

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- whistle-blower:
 - when professional ethical duty conflicts with loyalty to employer
 - e.g. inadequately tested software product
 - organizations and professional societies should provide alternative mechanisms
- potential conflict of interest
 - e.g. consultant has financial interest in vendor which should be revealed to client



Codes of Conduct

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- ethics are not precise laws or sets of facts
- many areas may present ethical ambiguity
- many professional societies have adopted ethical codes of conduct which can:
 - be a positive stimulus and instill confidence
 - be educational
 - provide a measure of support
 - be a means of deterrence and discipline
 - enhance the profession's public image



Digital Rights Management

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Digital Rights Management (DRM): Systems & procedures that ensure that holders of digital rights are clearly identified and receive the stipulated payment for their works.

- Content provider: Holds the digital rights of the content and wants to protect their rights.
- Distributor: Provides distribution channels, such as online shop or a Web retailer.



Digital Rights Management

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- Consumer: Uses the system to access the digital content by retrieving downloadable or streaming content through the distribution channel and then paying for the digital license.
- Clearinghouse: Handles the financial transaction for issuing the digital license to the consumer and pays royalty fees to the content provider and distribution fees to the distributor accordingly.



Practice:

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Consider a popular DRM system like Apple's FairPlay, used to protect audio tracks purchased from the iTunes music store. If a person purchases a track from the iTunes store by an artist managed by a record company such as EMI, identify which company or person fulfills each of the DRM component roles.



Next time

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- Cryptographic Tools