

# Ethics in Information Technology, Second Edition

## *Chapter 6* *Intellectual Property*

# Objectives

- What does the term *intellectual property* encompass, and why are companies so concerned about protecting it?
- What are the strengths and limitations of using copyrights, patents, and trade secret laws to protect intellectual property?
- What is plagiarism, and what can be done to combat it?

# Objectives (continued)

- What is reverse engineering, and what issues are associated with applying it to create a look-alike of a competitor's software program?
- What is open source code, and what is the fundamental premise behind its use?
- What is the essential difference between competitive intelligence and industrial espionage, and how is competitive intelligence gathered?

# Objectives (continued)

- What is cybersquatting, and what strategy should be used to protect an organization from it?

# What is Intellectual Property?

- Term used to describe works of the mind
  - Art, books, films, formulas, inventions, music, and processes.
  - Distinct and “owned” or created by a person or group
- **Copyright law**
  - Protects authored works (art, books, film, music).
- **Patent laws**
  - Protect inventions
- **Trade secret laws**
  - Help safeguard information critical to an organization’s success

# Protecting computer software?

- Copyright law
  - Expression of an idea
- Patent law
  - A process to change a computer's internal structure
- In history, software was judged to be a series of mental steps, making it inappropriate for ownership and ineligible for any form of protection.

# Copyrights

- Established in the U.S. Constitution that Congress shall have the power “to promote the Progress of Science and useful Arts, by securing for limited times to authors and inventors the exclusive rights to their respective writings and discoveries.”
- A copyright grants the creators of “original works of authorship in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device, the exclusive right to distribute, display, perform, or reproduce the work in copies or to prepare derivative works based upon the work”.

# Copyrights

- Author may grant exclusive right to others
- When new forms of expression develop, they can be awarded copyright protection.
  - **Audiovisual** works were added and **computer programs** were assigned to the literary works category in 1976.

# Copyrights (continued)

- Types of work that can be copyrighted
  - Architecture, Art, Audiovisual works, Choreography, Drama, Graphics, Literature, Motion pictures, Music, Pantomimes, Pictures, Sculptures, Sound recordings
  - Other intellectual works
    - As described in Title 17 of U.S. Code
- Work must fall within one of the preceding categories
- Must be original
  - Evaluating originality can cause problems

# Copyrights (continued)

- Fair use doctrine factors include:
  - Purpose and character of the use (commercial or nonprofit, educational use)
  - Nature of the copyrighted work
  - Portion of the copyrighted work used
  - Effect of the use upon the value of the copyrighted work
- An idea cannot be copyrighted, but the **expression of an idea** can be.
- Copyright infringement: copy a substantial and material part of another's copyrighted work, without permission

# Copyrights (continued)

- Area of copyright infringement
  - Worldwide sale of counterfeit consumer supplies
- Copyrights to protect computer software exist
  - To prove infringement, copyright holders must show a **striking resemblance** between the original software and the new software that could be explained only by copying
- World Intellectual Property Organization (WIPO)
  - Agency of the United Nations
  - Advocates for the interests of intellectual property owners

# Copyrights (continued)

- Digital Millennium Copyright Act (DMCA)
  - Added new provisions to WIPO
  - Circumvent a technical protection.
  - Develop and provide tools that allow others to access a technologically protected work. (hacker program)
  - Manufacture, import, provide or traffic in tools that enable others to circumvent protection and copy a protected work. (e.g., DVD player that ignores the regional code)

# Patents

- Grant of property rights to inventors
- Issued by the U.S. Patent and Trademark Office (USPTO)
- Permits an owner to exclude the public from making, using, or selling the protected invention
- Allows legal action against violators
- Prevents independent creation (unlike copyright law)
- Extends only to the United States and its territories and possessions

# Patents (continued)

- Applicant must file with the USPTO
  - USPTO searches prior art
  - Takes an average of 25 months
- Prior art
  - Patents and published materials issued before.
  - Existing body of knowledge available to a person of ordinary skill in the art

# Patents (continued)

- An invention must pass four tests
  - Must be in one of the five statutory classes of items: processes, machines, manufactures, compositions of matter (e.g., chemical compounds)
  - Must be useful
  - Must be novel
  - Must not be obvious to a person having ordinary skill in the same field
- Items cannot be patented if they are
  - Abstract ideas (math formulas)
  - Laws of nature
  - Natural phenomena

# Patents (continued)

- Patent infringement
  - Someone makes unauthorized use of a patent
  - No specified limit to the monetary penalty
- Software patent
  - Claims as all or substantially all of its invention some feature, function, or process embodied in instructions executed on a computer
- 20,000 software-related patents per year have been issued since the early 1980s

# Patents (continued)

- Before obtaining a software patent, do a patent search
- Software Patent Institute is building a database of information
- Cross-licensing agreements
  - Large software companies agree not to sue others over patent infringements
  - Small businesses have no choice but to license patents

# A case study

- Amazon patented its “one-click shopping” system.
- In 1999, Amazon filed a lawsuit against Barnes & Noble for infringing the patent with its “express lane” feature.
- Critics complain that patents are too broad covering unoriginal concepts.
- Amazon and Barnes & Noble settled out of court in 2002.

# Patents (continued)

- Defensive publishing
  - Alternative to filing for patents
  - Company publishes a description of the innovation
  - Establishes the idea's legal existence as prior art
  - Costs mere hundreds of dollars
  - No lawyers
  - Fast

# Patents (continued)

- Standard is a definition or format
  - Approved by recognized standards organization
  - Or accepted as a de facto standard by the industry
  - Enables hardware and software from different manufacturers to work together
  - Programming languages, operating systems, data formats, communication protocols, and electrical interfaces.
- Example: TCP/IP protocol, jpeg data format.

# Patents (continued)

- Submarine patent
  - Hidden within a standard
  - Does not surface until the standard is broadly adopted
- Patent farming involves
  - Influencing a standards organization to make use of a patented item
  - Demanding royalties from all parties that use the standard
- Jerome Lemelson: 562 patents, covering barcode reader, camcorder, VCR, etc, 1.3 billion in royalties.

# Trade Secret Laws

- Uniform Trade Secrets Act (UTSA) established uniformity in trade secret law
- Trade secret
  - Business information
  - Represents something of economic value
  - Requires an effort or cost to develop
  - Some degree of uniqueness or novelty
  - Generally unknown to the public
  - Kept confidential
- Computer hardware and software can qualify for trade secret protection

# Trade Secret Laws (continued)

- Information is only considered a trade secret if the company takes steps to protect it
- Greatest threat to loss of company trade secrets is employees
- Nondisclosure clauses in employee's contract
  - Enforcement can be difficult
  - Confidentiality issues are reviewed at the exit interview

# Trade Secret Laws (continued)

- Noncompete agreements
  - Protect intellectual property from being used by competitors when key employees leave
  - Require employees not to work for competitors for a period of time
- Safeguards
  - Limit outside access to corporate computers
  - Guard use of remote computers by employees

# Trade Secret Laws (continued)

- Trade secret law has a few key advantages over patents and copyrights
  - No time limitations
  - No need to file an application
  - Patents can be ruled invalid by courts
  - No filing or application fees
- Law doesn't prevent someone from using the same idea if it is developed independently
- World Trade Organization (WTO)
  - Trade-Related Aspects of Intellectual Property Rights
  - TRIPs Agreement provides for a minimum level of protection for intellectual property

# Summary of the WTO TRIPs Agreement

**TABLE 6-1** Summary of the WTO TRIPs Agreement

Form of intellectual property	Key terms of agreement
Copyright	Computer programs are protected as literary works. Authors of computer programs and producers of sound recordings have the right to prohibit the commercial rental of their works to the public.
Patent	Patent protection must be available for inventions for at least 20 years and for both products and processes in almost all fields of technology. (Controversy has arisen over whether this protection applies to computer software.)
Trade secrets	Trade secrets and other types of undisclosed information that have commercial value must be protected against breach of confidence and other acts that are contrary to honest commercial practices. However, reasonable steps must have been taken to keep the information secret.

# Legal Overview: The Battle Over Customer Lists

- Employees make unauthorized use of an employer's customer list
  - Customer list not automatically considered a trade secret
  - Educate workers about the confidentiality of such lists

# Key Intellectual Property Issues

- Issues that apply to intellectual property and information technology
  - Plagiarism
  - Reverse engineering
  - Open source code
  - Competitive intelligence
  - Cybersquatting

# Plagiarism

- Theft and passing off of someone's ideas or words as one's own
- Many students
  - Do not understand what constitutes plagiarism
  - Believe that all electronic content is in the public domain
- Plagiarism detection systems
  - Check submitted material against databases of electronic content

# Reverse Engineering

- Process of taking something apart in order to
  - Understand it
  - Build a copy of it
  - Improve it
- Applied to computer
  - Hardware
  - Software
- Convert a program code to a higher level design
- Convert an application that ran on one vendor's database to run on another's

# Reverse Engineering (continued)

- Compiler
  - Language translator
  - Converts computer program statements expressed in a source language to machine language
- Software manufacturer
  - Provides software in machine language form
- Decompiler
  - Reads machine language
  - Produces source code

# Reverse Engineering (continued)

- Courts have ruled in favor of using reverse engineering
  - To enable interoperability, prevent existing manufacturers to monopolize the market.
- Software license agreements forbid reverse engineering
- Semiconductor Chip Protection Act (SCPA)
  - Established a new type of intellectual property protection for mask works

# Open Source Code

- Program source code made available for use or modification
  - As users or other developers see fit
- Basic premise
  - Software improves
  - Can be adapted to meet new needs
  - Bugs rapidly identified and fixed
- High reliability
- GNU General Public License (GPL) was a precursor to the Open Source Initiative (OSI)
- [www.opensource.com](http://www.opensource.com)

# Competitive Intelligence

- Gathering of legally obtainable information
  - To help a company gain an advantage over rivals
- Often integrated into a company's strategic plans and decision making
- Not industrial espionage
- Nearly 25 colleges and universities offer courses or programs
- Without proper management safeguards it can cross over to industrial espionage

# Competitive intelligence

- Unlike industrial espionage, competitive intelligence uses only published information:
  - Annual report, shareholder filings, quarterly reports, press releases, promotional materials, websites, stock report, credit reports, interviews, customer service, articles in the trade press, patents, environmental impact statements.
- P&G hired a contactor who hired subcontractors to go through its competitor's dumpster. The two companies settled secretly.

# Cybersquatting

- Trademark is anything that enables a consumer to differentiate one company's products from another's
  - May be Logo, Package design, Phrase, Sound, Word
- Trademark law
  - Trademark's owner has the right to prevent others from using the same mark
    - Or confusingly similar mark

# Cybersquatting (continued)

- Cybersquatters
  - Registered domain names for famous trademarks or company names
  - Hope the trademark's owner would buy the domain name
    - For a large sum of money

# Cybersquatting (continued)

- To curb cybersquatting
  - Register all possible domain names: .org, .com, .info
- Internet Corporation for Assigned Names and Numbers (ICANN)
  - Current trademark holders are given time to assert their rights in the new top-level domains before registrations are opened to the general public

# Summary

- Intellectual property is protected by
  - Copyrights
  - Patents
  - Trade secrets
- Plagiarism is stealing and passing off the ideas and words of another as one's own
- Reverse engineering
  - Process of breaking something down
  - In order to understand, build copy, or improve it

# Summary (continued)

- Open source code
  - Made available for use or modification as users or other developers see fit
- Competitive intelligence
  - Not industrial espionage
  - Uses legal means and public information
- Cybersquatting
  - Registration of a domain name by an unaffiliated party