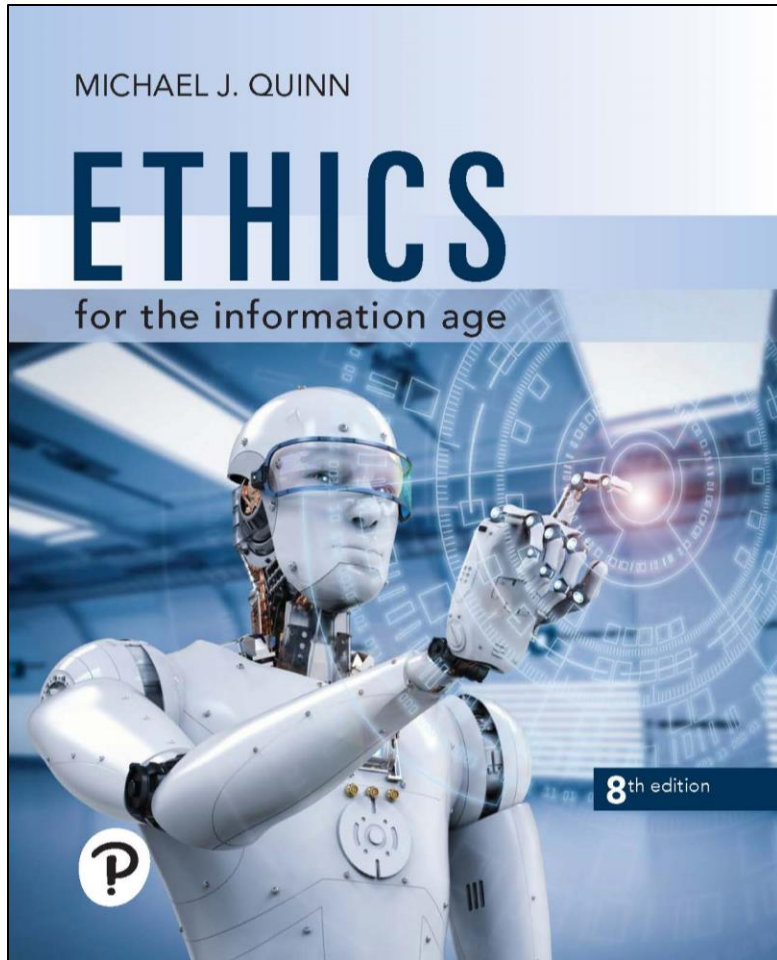


Ethics for the Information Age

Eighth Edition



Chapter 4

Intellectual Property

4.2 Intellectual Property Rights

What Is Intellectual Property?*

- Term used to describe works of the mind
 - Distinct and “owned” or created by a person or group
- Copyright law
 - Protects authored works
- Patent law
 - Protects inventions
- Trade secret law
 - Helps safeguard information critical to an organization’s success

What Is Intellectual Property?

- Definition*: IP refers to creations of the mind
 - Inventions
 - Literary and artistic works
 - Symbols, names, images used in commerce
- Intellectual property \neq physical manifestation
- Does right to own property extend to intellectual property?

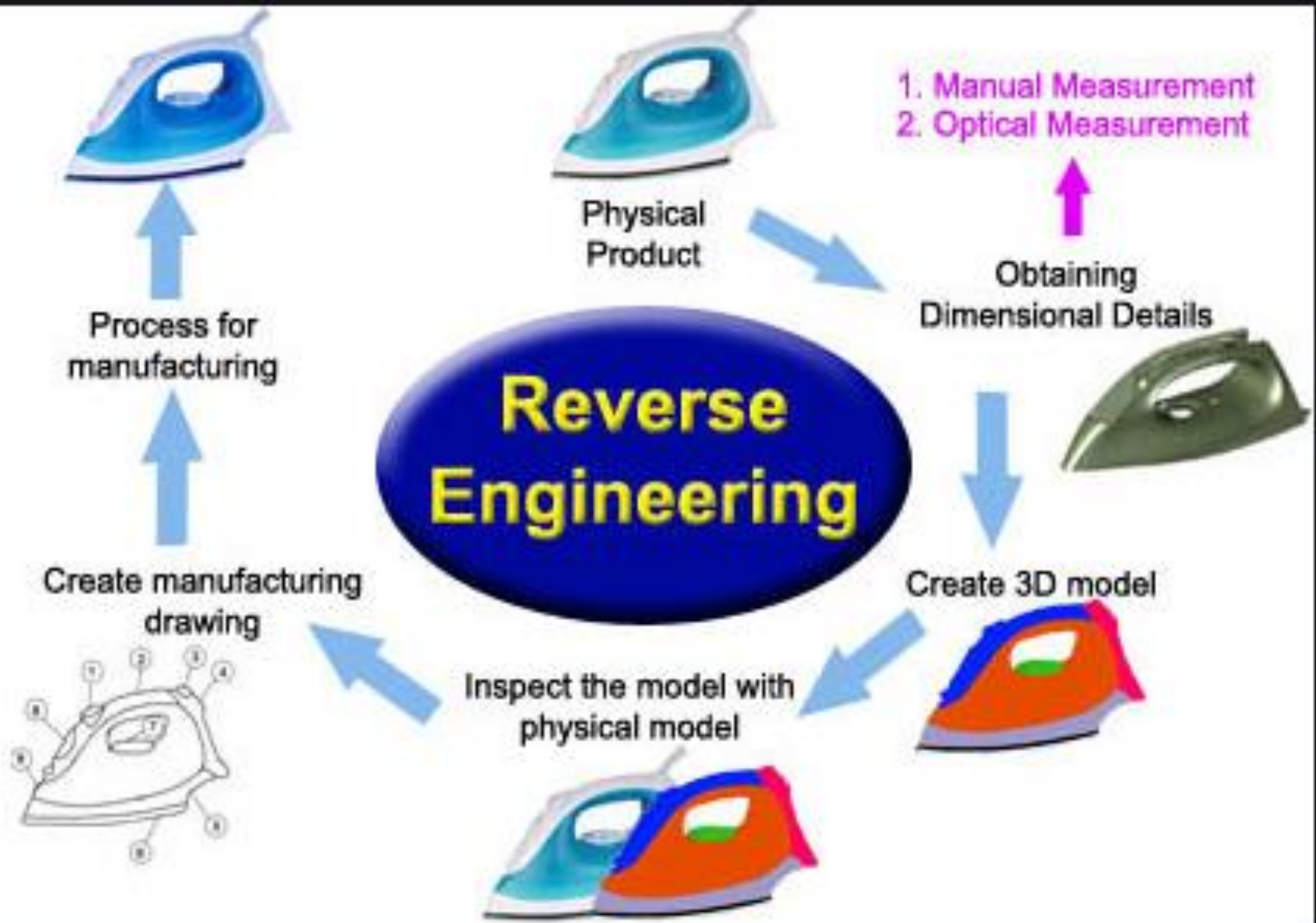
* World Intellectual Property Organization



4.3 Protecting Intellectual Property

Trade Secret

- Confidential piece of intellectual property that gives company a competitive advantage
- Never expires
- Not appropriate for all intellectual properties
- Reverse engineering allowed
- May be compromised يتعرض للخطر when employees leave firm



Trade Secret*

- **Trade secret**
 1. Business information
 2. Represents something of economic value
 3. Requires an effort or cost to develop
 4. Some degree of uniqueness or novelty
 5. Generally unknown to the public
 6. Kept confidential
- Information is only considered a trade secret if the company takes steps to protect it

Trade Secret*

- Trade secret law has a few key **advantages** over patents and copyrights
 1. No time limitations
 2. No need to file an application
 3. Patents can be ruled invalid by courts
 4. No filing or application fees
- Law doesn't prevent someone from using the same idea if it is developed independently
- Trade secret law varies greatly from country to country

Trademark, Service Mark

- **Trademark:** Identifies goods
- **Service mark:** Identifies services
- Company can establish a “brand name”
- Does not expire
- If brand name becomes common noun, trademark may be lost
- Companies advertise to protect their trademarks
- Companies also protect trademarks by contacting those who misuse them



Patent

- A public document that provides detailed description of **invention**
- Provides owner with exclusive right to the invention
- Owner can prevent others from making, using, or selling invention for 20 years
- **Patent troll firm**
 - Acquires patents with no intention of manufacturing anything; instead, licensing the patents to others

Patent*

- **An invention must pass four tests**
 1. Must be in one of the five statutory قانوني classes of items
 2. Must be useful
 3. Must be novel غير مألوف
 4. Must not be obvious to a person having ordinary skill in the same field
- **Items cannot be patented if they are:**
 1. Abstract ideas
 2. Laws of nature
 3. Natural phenomena

Copyright

- **Provides owner of an original work five rights**
 1. Reproduction
 2. Distribution
 3. Public display
 4. Public performance
 5. Production of derivative works
- Copyright-related industries represent 6% of U.S. gross domestic product (> \$900 billion/ year)
- Copyright protection has expanded greatly since 1790

Copyright*

- Types of work that can be copyrighted

1. Architecture
2. Art
3. Audiovisual works
4. Choreography
5. Drama
6. Graphics
7. Literature
8. Motion pictures
9. Music
10. Pantomimes فن التمثيل الإيمائي
11. Pictures
12. Sculptures منحوتات
13. Sound recordings
14. Other intellectual works:
 - As described in Title 17 of U.S. Code

Works that Can be Copyrighted



Literary



Artistic



Dramatic



Musical



Recording

4.4 Fair Use

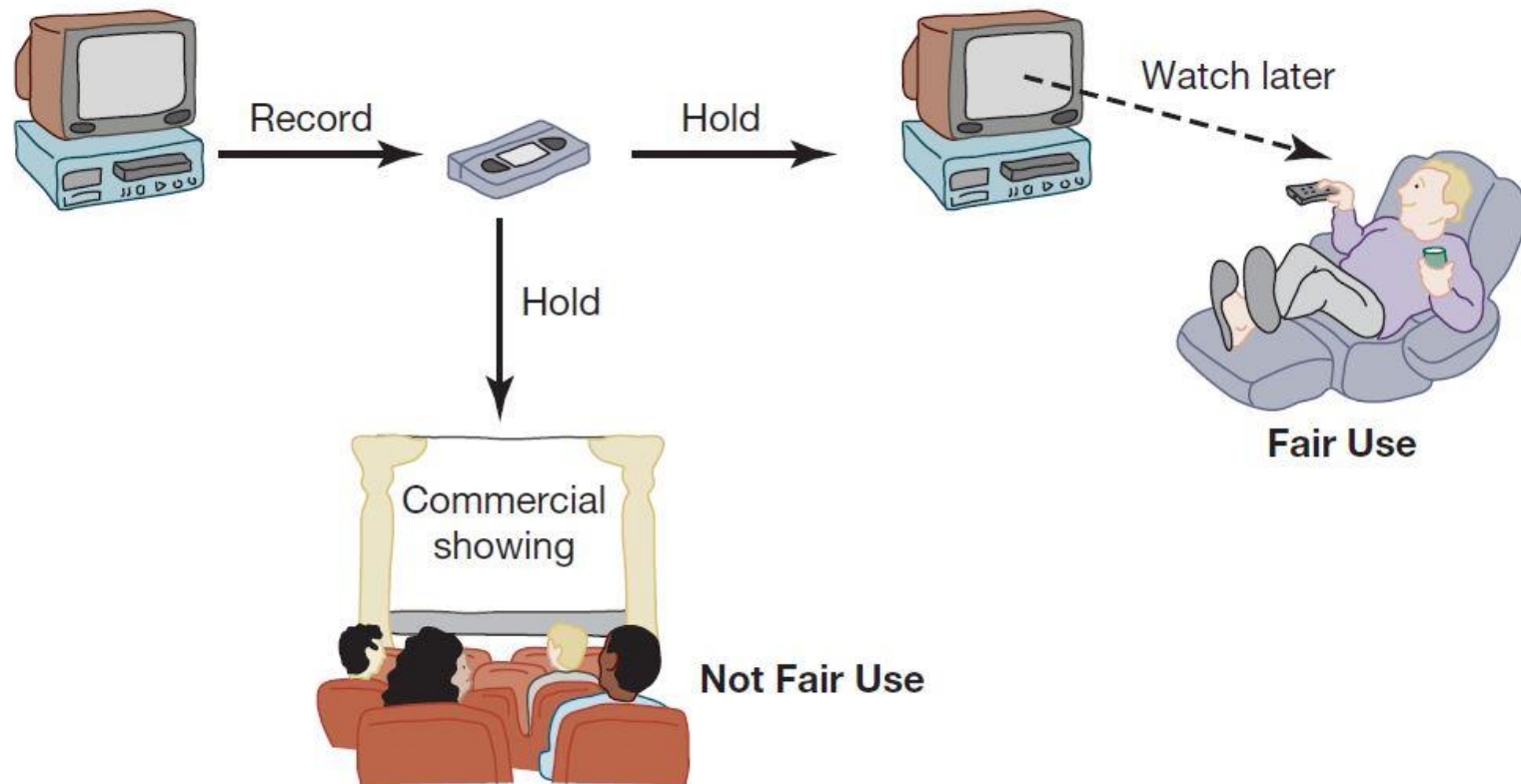
Fair Use Concept

- Sometimes legal to reproduce a copyrighted work without permission
- Those circumstances called fair use
- **To judge fair use, courts consider four factors**
 1. Purpose and character of use
 2. Nature of work
 3. Amount of work being copied
 4. Affect on market for work

Sony v. Universal City Studios

- Sony introduced Betamax VCR (1975)
- People started time shifting TV shows
- Movie studios sued Sony for copyright infringements
- U.S. Supreme Court ruled (5-4) that **time shifting** is fair use

Time Shifting



The Supreme Court ruled that videotaping television broadcasts for private viewing at a later time is fair use of the copyrighted material. This practice is called time shifting. Using videotaped material for a commercial purpose is not considered fair use.

Digital Recording Technology

- Copying from vinyl records to cassette tapes introduced hiss and distortions
- Introduction of compact disc a boon for music industry
- Cheaper to produce than vinyl records
- Higher quality
- Higher price \Rightarrow higher profits
- **But** it's possible to make a perfect copy of a CD

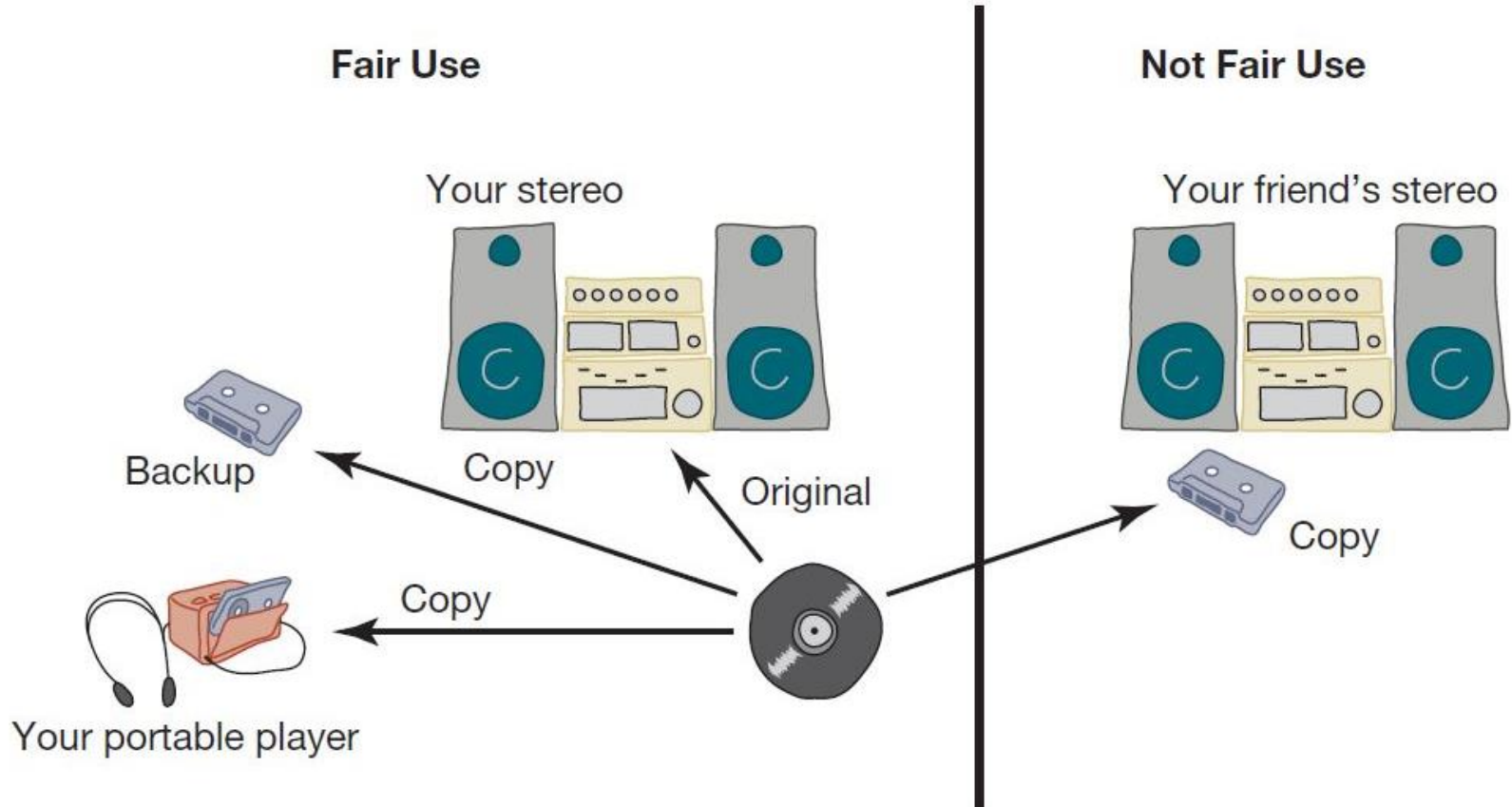
Audio Home Recording Act of 1992

- **Protects rights of consumers** to make copies of analog or digital recordings for personal, noncommercial use
 - Backup copy
 - Give to family member
- Digital audio recorders must incorporate Serial Copyright Management System (SCMS), so consumers can't make a copy of a copy

RIAA v. Diamond Multimedia

- MP3 compression allowed songs to be stored in 10% of the space, with little degradation
- Diamond introduced Rio MP3 player (1998)
- People started space shifting their music
- RIAA started legal action against Diamond for violation of the Audio Home Recording Act
- U.S. Court of Appeals, 9th Circuit, affirmed that **space shifting** is consistent with copyright law

Space Shifting



Space shifting is the creation of a copy for backup purposes or for use in a portable device, and it is considered fair use. Making a copy for a friend is not considered fair use.

Kelly v. Arriba Soft

- Kelly: photographer who maintained Web site with copyrighted photos
- Arriba Soft: created search engine that returned thumbnail images
- Kelly sued Arriba Soft for copyright infringement
- U.S. Court of Appeals, 9th Circuit, affirmed that Arriba Soft's use of Kelly's images was "significantly transformative" and fair use

Authors Guild v. Google (1 of 3)

- Google announced plan to scan millions of books held by several huge libraries, creating searchable database of all words
- If public domain book, system returns PDF
- If under copyright, user can see a few sentences; system provides links to libraries and online booksellers
- Authors Guild and publishers sued Google for copyright infringement (copying books for commercial reasons)
- Judge ruled in favor of Google and dismissed lawsuit

Authors Guild v. Google (2 of 3)

- Judge: Google Books is a fair use of copyrighted works
- Purpose and character:
 - Purpose is to create a massive index
 - Character is highly transformative
 - Precedent: **Kelly v. Arriba Soft Corporation**
 - Weighs in favor of fair use
- Nature of work being scanned: mostly nonfiction
 - Weighs in favor of fair use

Authors Guild v. Google (3 of 3)

- How much being scanned: entire work
 - Weighs against fair use
- Effect on the market: stimulating book sales
 - Weighs in favor of fair use

4.6 Peer-to-Peer Networks and Cyberlockers

Peer-to-Peer Networks

- Peer-to-peer network
 - Transient network
 - Connects computers running same networking program
 - Computers can access files stored on each other's hard drives
- How P2P networks facilitate data exchange
 - Give each user access to data stored in many other computers
 - Support simultaneous file transfers among arbitrary pairs of computers
 - Allow users to identify systems with faster file exchange speeds

Cyberlockers

- Also called **file-hosting services** or **cloud storage services**
- Internet-based file-sharing services
- Allow users to upload and download password-protected files
- Support workgroup collaboration
- Make sharing of copyrighted material easy

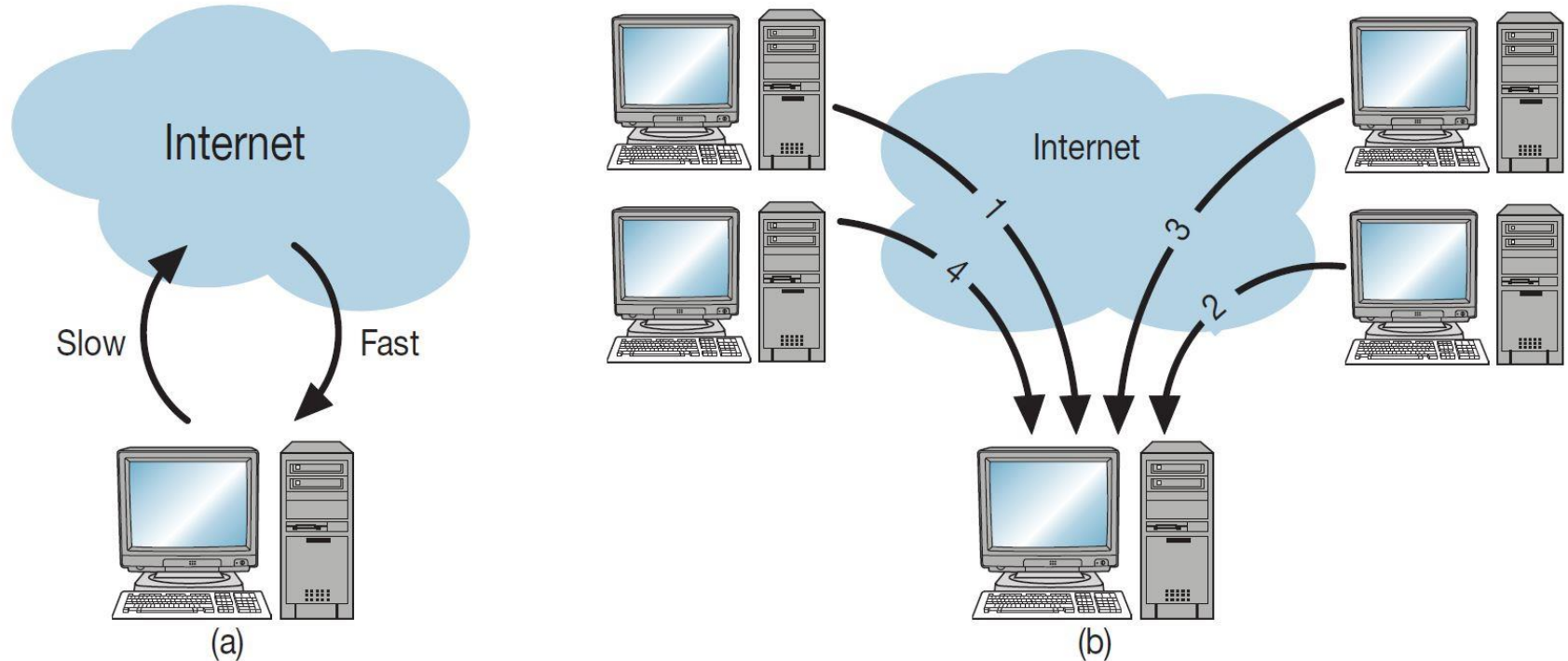
Napster

- Peer-to-peer music exchange network
- Began operation in 1999
- Sued by RIAA for copyright violations
- Courts ruled in favor of RIAA
- Went off-line in July 2001
- Re-emerged in 2003 as a subscription music service

BitTorrent

- **Broadband connections: download much faster than upload**
- BitTorrent speeds downloading
 - Files broken into pieces
 - Different pieces downloaded from different computers
- Used for downloading large files
 - Computer programs
 - Television shows
 - Movies

Concept Behind BitTorrent



(a) Broadband Internet connections provide higher speeds for downloading than for uploading. (b) BitTorrent reduces downloading times by enabling a computer to download different pieces of a file simultaneously from many different peers.

Legal Action Against the Pirate Bay (1 of 2)

- The **Pirate Bay** started in Stockholm, Sweden
- One of world's biggest **BitTorrent** file-sharing sites
- People download songs, movies, TV shows, etc.
- After 2006 raid by police, popularity increased
- In 2008 the International Federation of the Phonographic Industry sued four individuals connected with site

Legal Action Against the Pirate Bay (2 of 2)

- Defendants said the Pirate Bay just a search engine
- Found guilty; sentenced to prison and fined \$6.5 million
- Meanwhile, the Pirate Bay still operational
- More than 150 proxy servers all over the world

PRO-IP Act

- **Gives federal law enforcement agencies right to seize domain names of sites facilitating copyright infringement**
- Operation In Our Sites (2010)
 1. Seized domain names of 10 Web sites making available full-run movies
 2. Seized several hundred more domain names over next 1 ½ years

Megaupload Shutdown

- Megaupload a prominent cyberlocker
 - Based in Hong Kong
 - More than 180 million users
 - Once the world's 13th most popular Web site
 - Founder, Kim Dotcom, lived in Auckland, New Zealand
- 2012 – Cooperation between law enforcement agencies in US, New Zealand, and Hong Kong
 - Shut down Megaupload
 - Arrested Kim Dotcom for violating PRO-IP Act
- Other cyberlockers responded by disabling sharing functionality

4.7 Protections for Software

Software Copyrights

- Copyright protection began 1964
- What gets copyrighted?
 - Expression of idea, not idea itself
 - Object program, not source program
- Companies treat source code as a trade secret

Violations of Software Copyrights

- Copying a program to give or sell to someone else
- Preloading a program onto the hard disk of a computer being sold
- Distributing a program over the Internet

Important Court Cases

- **Apple Computer v. Franklin Computer**
 - Established that **object programs are copyrightable**
- **Sega v. Accolade**
 - Established that disassembling object code to determine technical specifications is fair use
- **Oracle v. Google**
 - Google's copying of 11,500 lines of declaring code from 37 Java API packages was not fair use and violated Oracle's copyright

Safe Software Development

- Reverse engineering okay
- Applied to computer:
 1. Hardware
 2. Software
- Companies must protect against unconscious غير مقصود copying
- Solution: “**clean room**” software development strategy
 - Team 1 analyzes competitor’s program and writes specification
 - Team 2 uses specification to develop software

Software Patents (1 of 3)

- Until 1981, Patent Office refused to grant software patents
 - Saw programs as mathematical algorithms, not processes or machines
- U.S. Supreme Court decision led to first software patent in 1981
- Further court rulings led to patents being granted for wider range of software

Software Patents (2 of 3)

- Thousands of software patents now exist
 - Microsoft files ~ 3,000 applications annually
 - Licensing patents a **source of revenue**
- Secondary market for software patents
 - Patent-holding companies (a.k.a. **patent trolls**):
Companies that specialize in buying patents and enforcing patent rights
 - Based on assumption that companies would rather **settle out** **تسوية** **of court than spend time** and money going to trial **المحاكمة**
 - RIM didn't settle quickly; ended up paying \$612 million

Software Patents (3 of 3)

- Critics say too many patents have been issued
 - Patent Office doesn't know about prior art, so it issues **bad software patents**
 - **Obvious inventions** get patents
- Companies with new products fear getting sued for patent infringement
 - Build **stockpiles of patents** as **defense** mechanism
 - Software patents used as **legal weapons**

Key Differences between Software Copyrights and Software Patents

	Software Copyright	Software Patent
What is protected?	Object Program, screen displays	Software process with practical utility
Is getting protection expensive?	No	Yes
Is getting protection time consuming?	No	Yes
Is reverse engineering allowed?	Yes	No

Smartphone Patent Wars (1 of 2)

- Nokia sues Apple, alleging Apple violated 10 of its patents (2009)
- Apple countersues Nokia for violating 13 of its patents
- Apple sues several Android smartphone makers
 - Accuses **تتهم Samsung** of copying “look and fee” of Apple iPhones and iPads, including rounded corners, tapered edges, use of a home button, and bounce-back affect when user over scrolls

Smartphone Patent Wars (2 of 2)

- Samsung countersues Apple
- Escalates until more than 100 lawsuits filed by various manufacturers globally; billions of dollars in legal fees
- Smartphone makers agree to cross-license each other's patents (2014)

4.9 Open-Source Software

Criticisms of Proprietary ملكيه Software

- Increasingly harsh measures being taken to enforce copyrights
- Copyrights are not serving their purpose of promoting progress
- It is wrong to allow someone to “own” a piece of intellectual property

Open-Source Definition

- **No restrictions** preventing others from **selling or giving away software**
- Source code included in distribution
- **No restrictions** preventing others from **modifying source code**
- **No restrictions** regarding **how people can use software**
- Same rights apply to everyone receiving redistributions of the software (copy left)

Beneficial Consequences of Open-Source Software

- Gives everyone opportunity to improve program
- New versions of programs appear more frequently
- Eliminates tension between obeying law and helping others
- Programs belong to entire community
- Shifts focus from manufacturing to service

Examples of Open-Source Software

- BIND
- Apache
- Sendmail
- Android operating system for smartphones
- Chrome and Firefox
- OpenOffice.org
- Perl, Python, Ruby, TCL/TK, PHP, Zope
- GNU compilers: C, C++, Objective-C, Fortran, Java, Ada

GNU Project and Linux

- GNU Project
 - Begun by Richard Stallman in 1984
 - Goal: [Develop open-source](#), [Unix-like](#) operating system
 - Most components developed in [late 1980s](#)
- Linux
 - Linus Torvalds wrote [Unix-like kernel in 1991](#)
 - [Combined with GNU components](#) to make an O.S.
 - Commonly called [Linux](#)

Impact of Open-Source Software

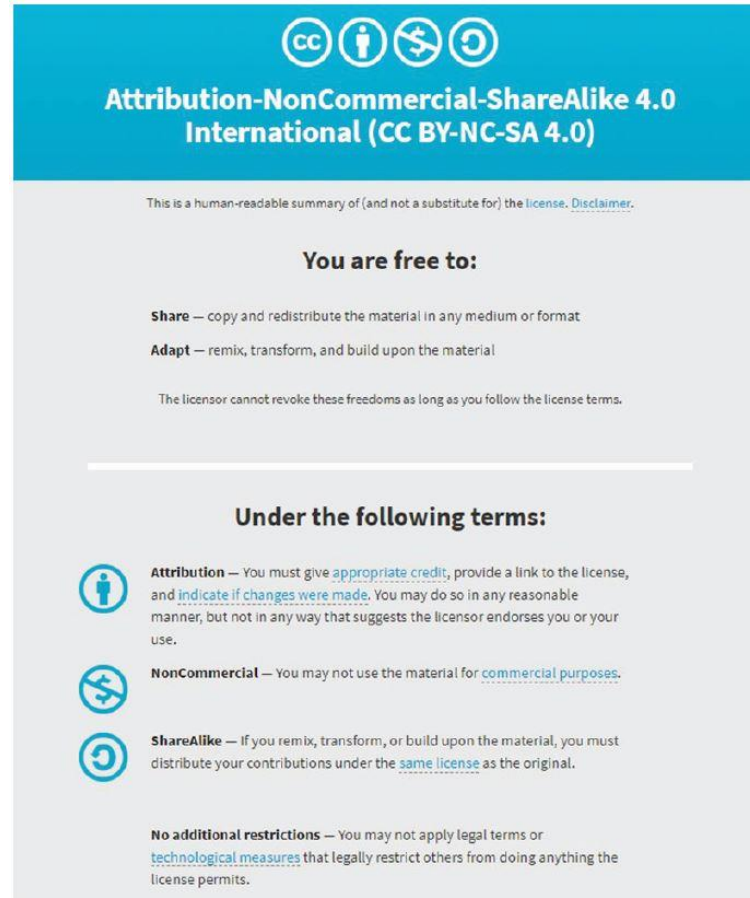
- Linux an alternative to **proprietary** versions of Unix
- Linux operating system on **97% of the world's 500 fastest supercomputers** (as of June 2014)

4.10 Creative Commons

Streamlining Creative Re-use

- Under current copyright law, eligible works are copyrighted the moment they are created
 1. No copyright notice does not mean it's okay to copy
 2. Must contact people before using work
 3. That slows down creative re-use
- **Free Creative Commons license indicates**
 1. Which kinds of copying are okay
 2. Which rights are being retained
- **Flickr** has more than 250 million photos available under Creative Commons licenses

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