Module 3: Intellectual Property Rights

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- Key Issues-Intellectual Property –
- Software Copyrights-
- Patents- Patentable Software related Products
- IPR Procedures- Patent Application
- Publication, examination, awarding

What is Intellectual Property?

- **Intellectual property** is a term used to describe works of the mind—such as art, books, films, formulas, inventions, music, and processes—that are distinct and owned or created by a single person or group.
- It is protected through **copyright, patent, and trade secret laws**.
- **Copyright law** protects authored works, such as art, books, film, and music.
- **Patent law** protects inventions.
- **Trade secret law** helps safeguard information that is critical to an organization's success**.**
- Together, **copyright, patent, and trade secret laws** form a complex body of law that addresses the **ownership of intellectual property.**

Copyrights

- Established in the U.S. Constitution
    - Article I, Section 8, Clause 8
- A **copyright** is the exclusive right to **distribute, display, perform, or reproduce an original work in copies** or to **prepare derivative works based on the work**.
- **Copyright protection** is granted to 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 author may grant this **exclusive right to others**.
- As new forms of expression develop, they can be awarded copyright protection. For example, in the **Copyright Act of 1976**, **audiovisual works** were given protection, and computer programs were assigned to the literary works category.

Copyright infringement

- **Copyright infringement** is a violation of the rights secured by the owner of a copyright.
- Infringement occurs when someone copies a substantial and material part of another's copyrighted work without permission.
- The courts have a wide range of discretion in awarding damages—from $200 for innocent infringement to $100,000 for willful infringement.

Copyright term

- Copyright law guarantees developers the rights to their works for a certain amount of time. Since 1960, the term of copyright has been extended 11 times from its original limit of 28 years.
- **The Copyright Term Extension Act**, also known as the **Sonny Bono Copyright Term Extension Act** signed into law in 1998, established the following time limits:
- For works created after January 1, 1978, copyright protection endures for the life of the author plus 70 years.
- For works created but not published or registered before January 1, 1978, the term endures for the life of the author plus 70 years, but in no case expires earlier than December 31, 2004.
- For works created before 1978 that are still in their original or renewable term of copyright, the total term was extended to 95 years from the date the copyright was originally secure.

Eligible Works

- The types of work that can be copyrighted:

architecture	art	Audio visual works	choreography
Drama	Graphics	Literature	Motion pictures
pantomimes	Pictures	Sculptures	Sound recordings

- Must fall within one of the preceding categories
- Must be original
    - Evaluating originality can cause problems

Fair use doctrine

- Allows portions of copyrighted materials to be used without permission under certain circumstances
- Maintains balance between protecting an author's rights and enabling public access to copyrighted works
- Fair use doctrine factors include:
    - Purpose and character of the use
    - Nature of the copyrighted work
    - Portion of the copyrighted work used
    - Effect of the use upon the value of the copyrighted work
    - Key concept: an idea cannot be copyrighted, but the expression of an idea can be

Software Copyright Protection

- The use of copyrights to protect computer software raises many complicated issues of interpretation.
- For example, a software manufacturer can observe the operation of a competitor's copyrighted program and then create a program that accomplishes the same result and performs in the same manner.
- To prove infringement, the copyright holder must show a striking resemblance between its software and the new software that could be explained only by copying.
- Java, developed at Sun Microsystems during the early 1990s. Today it is the most popular programming language for developing Android smartphone applications and is also used to code the software that runs many routers, switches, and other network devices.
- Google wrote its own version of Java to implement the Android OS used in smartphones

- **The Prioritizing Resources and Organization for Intellectual Property (PRO-IP) Act of 2008**
  - Increased enforcement and substantially increased penalties for infringement
- **General Agreement on Tariffs and Trade (GATT)**
  - Trade agreement between 117 countries
  - Created World Trade Organization (WTO) to enforce
  - Despite GATT, copyright protection varies greatly from country to country
- **The WTO and the WTO TRIPS Agreement (1994)**
  - Many nations recognize that intellectual property has become increasingly important in world trade
  - Established minimum levels of protection that each government must provide to the intellectual property of members
  - Covers copyright, patents, and trade secrets
- **WTO** - World Trade Organization ; **WTO TRIPS -** Agreement on Trade-Related Aspects of Intellectual Property Rights

Summary of 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 is available for any invention—whether a product or process—in all fields of technology without discrimination, subject to the normal tests of novelty, inventiveness, and industrial applicability. It is also required that patents be available and patent rights enjoyable without discrimination as to the place of invention and whether products are imported or locally produced.
Trade secret	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.

- **World Intellectual Property Organization (WIPO)**
  - Agency of the United Nations
  - Advocates for the interests of intellectual property owners
  - WIPO Copyright Treaty provides additional copyright protections for electronic media
- **The Digital Millennium Copyright Act (1998)**
  - The DMCA (Public Law 105-304) was signed into law in 1998 and implements two 1996 WIPO treaties: the **WIPO Copyright Treaty** and the **WIPO Performances and Phonograms Treaty**. The act is divided into the following five sections:
  - Title I (WIPO Copyright and Performances and Phonograms Treaties Implementation Act of 1998)
  - Title II (Online Copyright Infringement Liability Limitation Act)
  - Title III(Computer Maintenance Competition Assurance Act)
  - Title IV (Miscellaneous provisions)
  - Title V (Vessel Hull Design Protection Act)

Digital Millennium Copyright Act

- Civil and criminal penalties included
- Governs distribution of tools and software that can be used to circumvent technological measures used to protect copyrighted works
- Provides safe harbors for ISPs whose customers/subscribers may be breaking copyright laws
    - ISP must comply with “notice and takedown procedures” that grant copyright holders a process to halt access to alleged infringing content

Patents

- A **patent** is a **grant of a property right** issued by the United States Patent and Trademark Office (USPTO) to **an inventor**.
- A patent permits its owner to deny the public from making, using, or selling a protected invention, and it allows for legal action against violators.
- Unlike a copyright, a patent prevents **independent creation** as well as **copying**.
- Even if someone else invents the same item independently and with no prior knowledge of the patent holder's invention, the second inventor is excluded from using the patented device without permission of the original patent holder.
- The **rights of the patent** are valid only in the United States and its territories and possessions.

- Applicant must file with the USPTO
  - USPTO searches prior art
  - Takes an average of 35.3 months from filing an application until application is issued as a patent or abandoned
- Prior art
  - Existing body of knowledge
  - Available to a person of ordinary skill in the art
- There are six types of patents, with the two of main concern to information technology firms being the **utility patent and the design patent.**
- An **utility patent** is "**issued for the invention of a new and useful process, machine, manufacture, or composition of matter, or a new and useful improvement** thereof, it generally **permits its owner to exclude others from making, using, or selling the invention for a period of up to twenty years from the date of patent application filing**, subject to the payment of maintenance fees."
- A **design patent**, which is "**issued for a new, original, and ornamental design embodied** in or applied to an article of manufacture," **permits its owner to exclude others from making, using, or selling the design in question.**

Patent infringement

- **Patent infringement**, or the **violation of the rights** secured by the owner of a patent, occurs when someone makes unauthorized use of another's patent.
- Unlike copyright infringement, there is no specified limit to the monetary penalty if patent infringement is found.
- In fact, if a court determines that the infringement is intentional, it can award up to three times the amount of the damages claimed by the patent holder.
- The most **common defense** against patent infringement is a **counterattack on the claim of infringement** and the **validity of the patent** itself.
- Even if the patent is valid, the plaintiff must still prove that every element of a claim was infringed and that the infringement caused some sort of damage.

Leahy-Smith America Invents Act (2011)

- passed in 2011, the **Leahy-Smith America Invents Act**, which amends Title 35 of the U.S. Code, represented a major change in the U.S. patent law.
- An invention must pass the following **4 tests to be eligible for a patent**:
  - It must fall into one of the **5 statutory classes of items** that can be patented:

    (1) processes

    (2) machines

    (3) manufactures (objects made by humans or machines)

    (4) compositions of matter (chemical compounds)

    (5) new uses in any of the previous 4 classes
  - It must be **useful**
  - It must be **novel**
  - It must **not be obvious to a person having ordinary skill** in the same field.
- Under this law, the U.S. patent system changed from a "**first-to- invent**" to a "**first-inventor-to-file**" system effective from March 16, 2013.
- That means if two people file for a patent application on the same invention at approximately the same time, the first person to file with the USPTO will receive the patent, not necessarily the person who actually invented the item first.
- The America Invents Act also expanded the definition of prior art used to determine the novelty of an invention and whether it can be patented.

Software Patents

- A **software patent** claims as its invention some feature or process embodied in instructions executed by a computer.
- The **courts and the USPTO** have changed their attitudes and opinions on the patenting of software over the years.
- A **foreign exchange transaction** is a type of transaction that involves conversion of currency of one country into that of another.
- Before obtaining a software patent, do a **patent search**.
- **Software Patent Institute** is building a database of information.
- **Software cross-licensing agreements**
    - Large software companies agree not to sue each other over patent infringements
    - Small businesses have no choice but to license patents if they use them
- Average patent lawsuit costs $3 - $10 million

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

Patent troll

- A firm that acquires patents with no intention of manufacturing anything; instead, licensing the patents to others.
- NTP is a patent holding company that filed patent infringement lawsuits against Research in Motion, Apple, Google, HTC, LG, Microsoft, Motorola…
- NTP is an example of patent troll.

Submarine patents & Patent farming

- **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
- **Submarine patent**
  - Patented process/invention hidden within a standard
  - Does not surface until standard is broadly adopted
- **Patent farming:**
  - Influencing a standards organization to make use of a patented item without revealing the existence of the patent
  - Demanding royalties from all parties that use the standard

Trade Secrets

- 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
- Information is only considered a trade secret if the company takes steps to protect it

Trade Secrets (cont'd.)

- 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
- Trade secret law varies greatly from country to country

Trade Secret Laws

- Uniform Trade Secrets Act (UTSA)
  - Established uniformity across the states in area of trade secret law
  - Computer hardware and software can qualify for trade secret protection
- The Economic Espionage Act (EEA) of 1996
  - Penalties of up to $10 million and 15 years in prison for the theft of trade secrets

Employees and Trade Secrets

- Employees are the greatest threat to trade secrets
- Unauthorized use of an employer's customer list
  - Customer list is not automatically considered a trade secret
  - Educate workers about the confidentiality of lists
- Nondisclosure clauses in employee's contract
  - Enforcement can be difficult
  - Confidentiality issues are reviewed at the exit interview

Employees and Trade Secrets (cont'd.)

- 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
  - Wide range of treatment on noncompete agreements among the various states

Key Issues for Intellectual Property

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

Plagiarism

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

Name of service	Web site	Provider
iThenticate	www.ithenticate.com	iParadigms
Turnitin	www.turnitin.com	iParadigms
SafeAssign	www.safeassign.com	Blackboard
Glatt Plagiarism Services	www.plagiarism.com	Glatt Plagiarism Services
EVE Plagiarism Detection	www.canexus.com/eve	CaNexus

- Steps to combat student plagiarism
  - Help students understand what constitutes plagiarism and why they need to cite sources
  - Show students how to document Web pages and materials from online databases.
  - Schedule major writing assignments in portions due over the course of the term
  - Tell students that instructors are aware of Internet paper mills and plagiarism detection services
  - Incorporate detection software & services into an antiplagiarism program

Reverse Engineering

- The process of taking something apart in order to **understand** it, **build a copy** of it and **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 issues involve tools:

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

- Courts have ruled in favor of reverse engineering:
  - To enable interoperability
- Software license agreements forbid reverse engineering
- Ethics of using reverse engineering are debated
  - Fair use if it provides useful function/interoperability
  - Can uncover designs that someone else has developed at great cost and taken care to protect

Open Source Code

- Any program where the source code is made available for use or modification, as users or other developers see fit.
- Basic premise
  - Many programmers can read, redistribute and modify a program's code, the software improves.
  - Can be adapted to meet new needs
  - Bugs are rapidly identified and fixed
  - High reliability
- A common use of open source software is to move data from one application to another and to extract, transform, and load business data into large databases.
- Two frequently cited reasons for using open source software are that it provides **a better solution** to a specific business problem and that it **costs less**.
- Open source software is used in applications developed for smartphones and other mobile devices, such as Apple's iPhone, Palm's Treo, and Research In Motion's BlackBerry.
- GNU General Public License (GPL) was a precursor to the Open Source Initiative (OSI)

Commonly used open source software

Open source software	Purpose
7-Zip	File compression
Ares Galaxy	Peer-to-peer file sharing
Audacity	Sound editing & special effects
Azureus	Peer-to-peer file sharing
Blender 3D	3D modeling and animation
eMule	Peer-to-peer file sharing
Eraser	Erasing data completely
Firefox	Internet browsing
OpenOffice	Word processing, spreadsheets, presentations, graphics, and databases
Video Dub	Video editing

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 the same as industrial espionage, which uses illegal means to obtain business information not available to the general public
- Without proper management safeguards, it can cross over to industrial espionage

Question	Yes	No
Has the competitive intelligence organization developed a mission statement, objectives, goals, and a code of ethics?		
Has the company's legal department approved the mission statement, objectives, goals, and code of ethics?		
Do analysts understand the need to abide by their organization's code of ethics and corporate policies?		
Is there a rigorous training and certification process for analysts?		
Do analysts understand all applicable laws—domestic and international—including the Uniform Trade Secrets Act and the Economic Espionage Act, and do they understand the critical importance of abiding by them?		
Do analysts disclose their true identity as well as the name of their organization prior to any interviews?		

Question	Yes	No
Do analysts understand that everything their firm learns about the competition must be obtained legally?		
Do analysts respect all requests for anonymity and confidentiality of information?		
Has the company's legal department approved the processes for gathering data?		
Do analysts provide honest recommendations and conclusions?		
Is the use of third parties to gather competitive intelligence carefully reviewed and managed?		

Trademark Infringement

- Trademark is logo, package design, phrase, sound, or word that enables consumer to differentiate one company's product from another's.
- Trademark owner can prevent others from using the same mark or a confusingly similar mark on a product's label.
- Organizations frequently sue one another over the use of a trademark in a Web site or domain name.
- Nominative fair use is defense often employed by defendant in trademark infringement case.

Cybersquatting

- Cybersquatters
  - Register domain names for famous trademarks or company names
  - Hope the trademark's owner will buy the domain name for a large sum of money
- To curb cybersquatting, register all possible domain names
  - .org, .com, .info
- Internet Corporation for Assigned Names and Numbers (ICANN)
  - Several top-level domains (.com, .edu, edu., .gov, .int, .mil, .net, .org, aero, .biz, .coop, .info, .museum, .name, .pro, .asis, .cat, .mobi, .tel, and .travel)
  - Current trademark holders are given time to assert their rights in the new top-level domains before registrations are opened to the general public
  - Anticybersquatting Consumer Protection Act allows trademark owners to challenge foreign cybersquatters.