Intellectual Property Rights

What is Intellectual Property?

- Ideas

- Manifestations of ideas: books, art, catchy phrases

- Processes and Inventions

    - internal combustion engine

    - process for manufacturing integrated circuits

    - person detector

    - combination of sensors in a new and unique configuration

    - digital logic to tie it all together and implement it

- Software (only possible through computers)

    - Algorithm

    - Source code

    - Object code

    - Look & feel

Why do we have intellectual property laws? **In order to promote art and science.**

- Reward people for their innovation

- Ensure that knowlege is distributed

Four legal categories of intellectual property

- Trademark: phrase, name, logo

- Trade Secret: something you dont want to let anyone else know about

- Copyright: manifestations of ideas

- Patent: processes, inventions

Trademark

From the US Patent and Trademark Office

- A trademark is a word, phrase, symbol or design, or a combination of words, phrases, symbols or designs, that identifies and distinguishes the source of the goods of one party from those of others.

- A service mark is the same as a trademark, except that it identifies and distinguishes the source of a service rather than a product. Throughout this booklet, the terms "trademark" and "mark" refer to both trademarks and service marks.

You do not have to register a mark, and you can establish rights in a mark by using it for legitimate purposes. However, registering a trademark gives you additional rights.

- Constructive notice to the public of your exclusive claim to the mark

- The ability to bring an action in federal court regarding use of the mark

- The ability to leverage your US registration to establish a claim in other countries

- The ability to leverage US customs to prevent foreign companies from importing infringing goods

When you claim a mark, whether or not it is registered, you can use the TM or SM designation. However, you may use the registered trademark ®symbol only after the USPTO has granted your application, not before or while an application is pending.

Note that the USPTO does not enforce or restrict your ability to use a mark. It determines only that you have a right to register the mark. It is up to you to defend your mark. Defense of your mark is easier if you have a registered mark. Furthermore, the registration process ensures that no one else is currently using your mark in your particular application area.

Trade Secret

Trade secret laws allow companies to keep secrets.

A trade secret must: a) have novelty, b) represent an economic investment to the claimant, c) have involved some effort in development, and d) the company must show that it made some effort to keep the information a secret.

The most well-known industrial example is Coca-Cola. In the technical world, Industrial Light & Magic and Microsoft Windows are key examples.

Problems:

- Laws are not uniform throughout the U.S. (and definitely not beyond)

- The laws were not written with computer technology in mind

- There is a risk if you go to court in untested territory

- A court could decide that trade secret laws don't apply

The *Uniform Trade Secrets Act* has been adopted by about 40 states, and brings a measure of uniformity to trade secret law. The other piece of relevant legislation is the *Economic Espionage Act* of 1996, which makes theft or misappropriation of a trade secret a federal crime. The act applies to both providing secrets to foreign powers and to using secrets for commercial or economic purposes.

Enforcement of trade secrets is generally executed through:

- Non-disclosure agreements [NDA] between an employer and an employee, wherein the employee agrees not to disclose certain information except to specified individuals. This is a contract that is normally required as a condition of employment, and may specify financial penalties in the case of violation.

- Non-competition agreements between an employer and an employee, or between companies, where one party agrees not to use trade secrets–or hire away people who know them–as the basis for competing against the other party. There may be a time limitation on the non-competition clause.

One of the reasons shredders are big business is that they are evidence of a *quality of confidence* regarding the material being shredded. It's not unreasonable to reconstruct a shredded document, but the act of shredding is evidence of trying to keep the secret, which gives the company standing in legal proceedings.

Trade secrets are potentially useful for certain types of software

- In-house software used to develop the primary product (e.g. rendering software for feature films)

- Web sites: server-side code is not revealed to the user

Obfuscation and intentional lack of documentation are not trade secrets, but are effective tools for making it more difficult for companies to copy, link with, or understand software (e.g. Microsoft Windows).

Trade secrets do not protect you from a company designing something with identical functionality.

Trade secrets don't work so well for software

- A company must reveal the secret to sell the software

- Once the trade secret is known to the relevant public, trade secrecy laws do not apply

Copyright

Copyrights provide the following *exclusive rights* to the copyright holder (taken from Library of Congress copyright web site)

1. To reproduce the work in copies or phonorecords;

2. To prepare derivative works based upon the work;

3. To distribute copies or phonorecords of the work to the public by sale or other transfer of ownership, or by rental, lease, or lending;

4. To perform the work publicly, in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works;

5. To display the work publicly, in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work; and

6. In the case of sound recordings*, to perform the work publicly by means of a digital audio transmission.

The phrase *exclusive right* means that only the copyright holder is free to exercise the attendant rights, and others are prohibited using the work without the consent of the copyright holder.

Copyright office has been accepting computer program source code since 1964.

In 1980, congress amended the copyright law to explicitly include programs under the category of literary works that are automatically covered without special effort on the part of the author.

Definition: "a set of statements or instructions used directly or indirectly in a computer in order to bring about a certain result."

Copyrights are a weak form of protection, especially for commercially valuable items like software

- Only protects the expression of the idea

- Can write the algorithm in another language

- Can develop the code independently (not copying, but independent development)

- Burden of proof is on the copyright holder to show the intellectual property in question was used as the basis for developing the copy

    - Have to show access to the copyrighted work during development

    - Have to show that the infringing party copied the material

Does copyright extend to the look and feel of a program?

- The structure, sequence, and organization of a program falls under copyright protection

- However, external forces may require similar structure among programs

- *Is the look and feel of a program the idea, and the source and object code the expression?*
  If so, look and feel could not be copyrighted (Apple v. Microsoft)

DMCA

Recent changes in copyright law affect digital transmission and encoding of information. The law is called the Digital Millennium Copyright Act

- You can now be prosecuted for building devices to break encryptions designed to maintain copyrights.
- Certain encryption & digital technologies allowed under the new laws threaten fair use
- Pay per use encryption methods mean libraries have to charge for each use by a borrower
- You have to pay a price if you wanted to let your friend borrow a document (think DRM music)

Some copyright stakeholders have lobbied/are lobbying for copyright to databases that just contain facts (like NBA statistics). Current law is a database is not copyrightable unless it is the result of a creative process.

Fair Use

Copying of copyrighted materials is permitted under certain restricted situations. For example:

- Archival copy of software
- Copying for personal scholarly use (but not for the design of commercial products)
- Copying for classroom use in certain situations (only the first time in many cases)

Whether a use is fair use depends upon four factors

1. The purpose and character of the use, including whether such use is of a commerical nature or is for nonprofit educational purposes
2. The nature of the copyrighted work - highly personal works get more protection
3. The amount and substantiality of the portion used in relation to the copyrighted work as a whole
4. The effect of the use upon the potential market for or value of the copyrighted work

In fair use cases, the four criteria are supposed to be weighted equally. In practice, factors #1 and #4 have received the most attention since it is usually commercial ventures that sue, and they can throw up numbers in support of their case.

Copyright term

- Works created after 1977 receive copyright protection for the life of the author plus 70 years
- Works created for hire receive protection for 95 years from publication or 120 years from creation, whichever is shorter
- Works created before 1978 receive a total duration of protection of 95 years

Protection for copyrighted works prior to 1978 used to be 75 years, but in 1998, Congress extended the life of these copyrighted items by 20 years under pressure from publishers, the recording industry and Disney.

Copyrighted works since 1923 (birth of movie industry) are not in the public domain

In 2002 the Supreme Court heard a case on the 1998 extension that it was unconstitutional because it was no longer a limited copyright as specified in the constitution. It was argued by a Stanford professor, Lawrence Lessig, but lost 7-2.

In Lessig's opinion, the five conservative judges who had applied the concept of enumeration of powers in other cases–where they struck down liberal regulations–ignored the enumeration of powers argument that they themselves put forward in the early 80's. The enumeration of powers argument is that there are limits to the power of each of the three branches of the federal government, and that these limits are specified implicitly or explicitly by the Constitution. In the case of copyright, the Constitution says:

> "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries;"

Patents

A patent is the strongest form of protection for intellectual property because it gives the developer a monopoly over the use of that idea for a period of 14 or 20 years.

Main purpose of a patent?

- To encourage the advancement of useful arts and sciences
- Foster invention
- Promote disclosure of inventions
- To ensure the idea is in the public domain

What can be patented?

- Process
- Machine
- Article of manufature
- Composition of matter
- Improvement of any of the above
- Ornamental design of an article of manufacture
- Asexually reproduced plant varieties by design and plant patents
- Gene sequences and chemical compounds that have specific utility
- Software with a specific, limited utility
- Not atomic weapons (Atomic Energy Act of 1954)

What cannot be patented?

- abstract ideas,
- laws of nature,
- physical phenomena,
- literaray, dramatic, musucal and artistic works
- inventions which are not useful or offensive to public morality

The justification is that to give someone the right to these things would inhibit scientific thought and advancement (or be morally incorrect).

A patent claim must:

- fall within the category of permissible subject matter
- have utility
- have novelty
- must be nonobvious

- be adequately described or enabled (for one of ordinary skill in the art to make and use the invention)

- claimed by the inventor in clear and definite terms

What types of patents are there?

- Utility patents may be granted to anyone who invents or discovers any new, useful, and nonobvious process, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof. These are the most common.

- Design patents may be granted to anyone who invents a new, original, and ornamental design for an article of manufacture.

- Plant patents may be granted to anyone who invents or discovers AND asexually reproduces any distinct and new variety of plant.

Provisional v. Non-provisonal patents

The **non-provisional** application establishes the filing date AND initiates the examination process.

The **provisional** application only establishes the filing date and automatically becomes abandoned after one year.

You may file a provisional application when you are not ready to enter your application into the regular examination process. A provisional application establishes a filing date at a lower cost for a first patent application filing in the United States and allows the term "Patent Pending" to be applied to the invention. Claims are not required in a provisional application. The PTO does not examine a provisional application and such an application cannot become a patent. You must submit the non-provisional application within one year of submitting your provisional application in order to possibly receive the benefit of the provisional application's filing date. You do not have to file a provisional application before filing a non-provisional application.

Since U.S. patent law uses the rule of **first discovery**, establishing a discovery date is essential in order to protect your patent. One way to establish such a discovery date is by filing a provisional patent.

Patent Process

1. Generate a great idea, process, or invention: not particularly easy, often occurs in the shower

2. Figure out if your idea is patentable: most engineering ideas probably are patentable

3. Figure out if it infringes on any other patents and whether the idea is novel: execute a reasonable literature search and a search of the online patent database

4. Start the process with a provisonal application (or not, this step is optional)

5. Develop your non-provisional application, usually with a patent lawyer

   - Title

   - Background of the invention, showing utility

   - Description of the prior art, showing novelty

   - Summary of the invention, giving an overview of inputs, outputs, and the process

   - Brief description of drawings in the application, like a list of figures

   - Detailed description of the invention, which is somewhere between a recipe and a technical paper; the text is often focused around describing the processes outlined in the figures.

   - Claim(s)

     Claims define the invention and are what are legally enforceable. Therefore, they are extremely important. Whether a patent will be granted is determined, in large measure, by the wording of the claims. Claims continue to be important once a patent is granted, because questions of validity and infringement are judged by the courts on the basis of the claims.

   - Abstract

   - Oath or declaration that the ideas are yours and you think they're novel

6. Go through the **challenge** process with a patent examiner

7. You try to make the claims as broad as possible.

8. The patent examiner verifies the utility, novelty, and patentability of your claims

9. If you patent is granted, then you can claim a patent on your invention

   - You now have the right to license or sell your patent

   - You now have the right to sue someone for infringement

   - You have to pay a small initial fee to apply for and receive the patent. Then you have to pay maintainance fees at 3.5, 7.5, and 11.5 years. The fees go up each time, but they are pretty small ($ 830, $ 1900, and $ 2910 for large organizations, half that for small).

   - In today's global commerce, obtaining a patent in the U.S. is not enough in most cases. You may also want to obtain a patent in the EU, Japan, or other nations, each of which requires an additional filing fee.

   - Over $25,000 for a quality patent is not unexpected

Software Patents

Computer software faces its greatest challenge with patent requirement number 1. For the purpose of a patent, software is generally considered a process. In the summary of the invention, for example, a patent application for software processes will use phrasing such as:

> In a fourth exemplary embodiment of the present invention, a computer system is provided. The computer system comprises a CPU and a memory storing an image file. Pursuant to a feature of the present invention, the CPU is arranged and configured to execute a routine to...

The phrasing makes clear that the software is part of the configuration of the computer to execute a process, which is patentable.

70's and 80's: the argument was software could be duplicated by a mental process, which is inappropriate subject matter, so software patents were rarely granted.

In 1981 the Supreme Court found, in Diamond v. Diehr (1981), that ""an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection."

In three ensuing cases, the Court of Customs and Patent Appeals set up a test to differentiate patentable from unpatentable subject matter.

Freeman-Walter-Abele test: mathematical algorithms are abstract ideas and unpatentable unless there is a practical application of the algorithm. In previous cases a practical application of an algorithm consisted of data being transformed through mathematical calculations to produce a smooth waveform display on a mointor. According to the test, a practical application required physical elements or steps.

90's : new cases focused on how computer algorithms are different from mathematical algorithms, and how abstract a computer algorithm could be and still receive a patent.

Present Law: In State Street Bank & Trust Col v. Signature Financial Group (1998), Inc., the Court of Customs and Patent Appeals held that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces a useful, concrete and tangible result - a final share price.

- The court removed any physical element aspect of patentable software

- The requirement is now that a computer program, method, or process must produce a useful, concrete, and tangible result. If it involves a mathematical algorithm, that's ok so long as it is the practical application of the algorithm that is patented.

The concern now is that there are too many software patents

- Before you sell a piece of software you have to do a patent search

- The organization of software by the patent office is poor, but better than it was

- There arent enough people at the USPTO to really know whats going on in software

- This makes software development a risky business, and creates barriers to entry