

DEFINING INTELLECTUAL PROPERTY

“Intellectual property” encompasses all forms of creativity, such as, inventions, software, discoveries, creative or artistic works, know-how, processes and unique materials.

For example, intellectual property may be machines, devices, instruments, computer programs, circuits, biological materials, chemicals, books, videos, photographs, paintings, sculptures or songs.

Intellectual property is protected by law, through patent, copyright, trademark and trade secrets. Multiple forms of protection may be used on the same piece of intellectual property. For example, computer software can be protected by copyright, patent, trade secret and trademark. Intellectual property is also protected through agreements which control access and use of the intellectual property.

INTELLECTUAL PROPERTY

University Ownership

The University of Illinois owns all intellectual property (e.g. software, copyrightable works and inventions) created by any University employee in the performance of employee duties at the University, or created by anyone using any University facilities, equipment or funds, with the exception of copyrights in traditional academic works such as scholarly publications and course notes.

Copyrights in “traditional academic works,” made by faculty and students independently at their own initiative and for traditional academic purposes, are owned by the authors. Examples include manuscripts, curriculum, books, lectures and teaching materials for faculty, and class notes, reports, papers and thesis for students.

Note, however, if the University is the impetus for the creation of such work, such as when it provides dedicated funding for the creation of a specific online course, such works are not necessarily considered traditional academic works. Ownership associated with educational tools and courseware made available online has varied and often complex ownership and rights of use, depending on the circumstances of development and the use of University resources.

Copyright ownership and invention ownership may be different. While the author(s) own the copyright in a manuscript or paper describing an

invention (because it qualifies as a traditional academic work), the University owns the underlying invention or software described in that paper. The University also owns the original records of the research, including laboratory notebooks.

University Ownership Exception

An exception to University ownership may be applicable to certain student inventions resulting from selected design classes. On a class-by-class basis, the University may waive its right to own student inventions. This exception only applies when inventions arise from classroom activities when the only University facilities used were those of a traditional classroom or available to the general public, such as the library. The OTMs on both campuses would be happy to help you assess if an exception applies in a particular situation.

Inventions and Patents

An invention is “anything under the sun” made by man, as long as it is new and useful. Inventions may include many types of discoveries and technological innovations, such as processes, methods, machines, articles of manufacture, devices, chemicals and compositions of matter. Inventions are protected by patents.

The U.S. Constitution recognizes the value of innovation to the economy and provides the owner of a patent with a time-limited monopoly (20 years) to stop others from exploiting the invention. In exchange for this exclusive right, the patent document, which is published, must fully describe the invention so that others can reproduce it and learn from it. In that way, the patent monopoly provides the incentive to share advances with the public and thereby contribute to growth in the field.

INVENTORSHIP

A patent application must be filed in the names of the true inventors. The legal criterion for inventorship does not equal those used for authorship. Inventorship is defined by U.S. patent law. Broadly, an inventor is one who alone, or together with others, conceived of the ultimate working invention. Inventorship is not a reward for hard work to someone who only worked under direction. Inventorship is tied to the claims in a patent application, and is determined at the time the patent application is filed. As the claims in an application change, so may inventorship. The OTMs refer the final inventorship determination to outside patent counsel.

OWNERSHIP

Inventorship does not equal ownership. Almost always, organizations own the inventions developed by their employees; University of Illinois patents are owned by the Board of Trustees of the University of Illinois.

intellectual property

Almost all research conducted at the University can lead to inventions that may be patentable. A few examples are:

Engineering: laboratory instruments, machinery, semiconductors & chips, manufacturing techniques, process improvements, nanotechnology, circuits, sensors, lighting, filtration and micro-devices.

Agriculture: grain and food processing, germplasm and plant varieties, equipment and devices and transgenics.

Biotechnology: new genes and their function, promoters, genetic markers, gene transfer methods, expression vectors and microorganisms.

Chemistry: new compounds, new drugs, drug targets, drug design, separation methods, coatings, additives, superconductors, metals, polymers and fuel cells.

Software and Algorithms: methods and processes in computer programs, operating systems, networking, data mining and storage, security and supercomputing.

Inventions that are not patentable include laws of nature, theories, scientific principles, pure algorithms and perpetual motion machines.

PATENTS AS PROPERTY

A patent is property like a house or car that may be sold, leased or rented to others for “royalties.” Patent rights are often transferred to others for commercialization through licensing (see *licensing section*), rather than outright sale. The patent owner can decide how to allow others to use his property and can divide up rights in the property in different ways: for example, exclusively or non-exclusively, by field of use, or by geographical region.

PATENTS AND FREEDOM TO OPERATE

Having a patent doesn’t necessarily mean you have the right to practice your invention and make products covered by it. Commercializing a technology can involve many processes, methods and materials that may not be covered under your patents, but that may be covered under patents owned by others. The owners of these other patents may have the right to stop you from commercializing your own invention, unless you obtain their permission to also practice under their patents. Obtaining rights to all the intellectual property that is needed to commercialize a technology without infringing the intellectual property rights of others is called “freedom to operate.”

THE STANDARD TESTS OF PATENTABILITY

For an invention to be patentable, it must meet the following three tests for patentability:

New or novel. The invention must be different from all known inventions, products and published ideas. This does not mean that every aspect of an invention must be entirely new or novel. You can selectively patent only the new aspects if they also meet the other two tests.

Non-obvious. The invention cannot be an obvious or a logical extension of known ideas or invention. It cannot be readily apparent to a person skilled in the field of the invention.

Useful. The invention must work and have a practical application or utility, not just scientific curiosity.

It is also possible to patent an improvement to existing inventions, if the improvement meets the above criteria. Further, the patent application must fully enable someone to make and practice your invention. This is called “enablement.”

PUBLICATION AND PUBLIC DISCLOSURE

Publication and other public disclosure of an invention by anyone, including the inventor, if it occurs before a patent application is filed, may prevent the ability to obtain a patent. What constitutes a public disclosure?

A public disclosure for international patent purposes is any oral or written communication to others outside the University that is not confidential and either teaches the invention completely or provides enough information to make development of the invention obvious. In the U.S., a public disclosure is any written document accessible by others, such as manuscripts, abstracts, Websites, meeting notes or presentations. Simply telling a colleague that you have made an invention, but not telling how to make it, is usually not considered a disclosure that could prevent you from obtaining a patent.

TIMING BARS TO PATENTING

In the U.S., there is a one year grace period after a public disclosure in which to file a patent application and thereby stake a claim to an invention. In most countries, there is no such grace period. The international laws of most foreign countries preclude staking a claim to an invention after publically disclosing it. One must file a patent application prior to the first public disclosure. A broad guideline is to avoid “divulging to others who are not under a confidentiality obligation.” For questions regarding a specific set of circumstances, contact the Office of Technology Management on your campus.

BEING FIRST

Not infrequently, two entirely different groups invent the same or very similar inventions. What happens then? In the U.S. it is the inventor who can document he/she was the first to invent (conceive) and was diligent in putting his/her invention into practical form and filing a patent application. This is where signed, dated and preferably witnessed written records become critical. Without thorough documentation, it is possible the first inventor may lose. Records can win or lose patents. In the rest of the world, the first inventor to file a patent application is entitled to the patent.

u.s. patents

WHY SHOULD I KEEP A NOTEBOOK?

The inventor’s notebook is one of the best ways to establish intellectual property ownership. Since the United States grants the patent to the first to invent, not necessarily the first to file, it is important to establish the date of conception and progress toward reducing the idea to practice.

WHAT SHOULD BE IN THE NOTEBOOK?

The notebook should be a written record of all experiments, results — even if the significance is unclear — conversations including who you talked to and what topics you talked about, thoughts and future directions of investigations.

HOW DO I CERTIFY A NOTEBOOK?

A credible witness should be chosen for his/her knowledge and ability to read and understand the concepts and principles in the notebook. They should not be co-inventors or family members or a notary public.

INVENTOR’S NOTEBOOK

Laboratory notebooks documenting one’s research are almost always kept to support publications. In the case of applying for a patent, it is recommended to keep the notebooks in a more structured way so they can be relied upon as evidence to support being entitled to the invention.

U.S. AND FOREIGN PATENT APPLICATION TIMELINE

TIME 0

First U.S. application

1 YEAR

International-file coverage under PCT (Patent Cooperation Treaty)

18 MONTHS

U.S.-patent application typically published
International-international search report indicates related patents + publications

12-36 MONTHS

U.S. Prosecution-first office action from USPTO, generating OTM responses and amendments to the claims

2-3 YEARS

U.S.-patent may issue (avg. time 18-36 months)
International - PCT examiner indicates patentability

30 MONTHS

International- individual applications and translations filed in specific countries and regions when the case warrants.

4-10 YEARS

International- individual foreign patents may issue

Patent Application Process

Obtaining a U.S. Patent starts with the filing of a “regular” patent application that includes a “specification” that describes how to make and use the invention and one or more “claims” that define the scope of what is new about the invention. The claims are what are used by courts to determine if someone is using or infringing your invention.

This application is filed in the United States Patent and Trademark Office (USPTO) and is assigned to a patent examiner who specializes in the particular technology area. The examiner considers the scope or breadth of the claims against prior patents and publications and issues an “office action” accepting (rarely) or rejecting (typically) the claims as not distinguishing over what is already known. In the case of claim rejections, the patent attorney, with the assistance of the inventor, rebuts the examiners’ arguments and/or responds with modifications (amendments) to the claims. One or more iterations are typically required to obtain allowance of the patent application. Once issued, the patent has a life of 20 years from the filing of the regular patent application. In the U.S., maintenance fees are required at four, eight, and 12 years to keep the patent in force.

A shorter, and often less expensive, “**provisional**” application can be filed in the U.S. before the **regular** application, to stake a claim to an invention. This type of application does not have to have claims, does not get examined, and becomes abandoned within one year of filing unless it is converted to either a regular U.S. application or a **PCT** (Patent Cooperation Treaty)

application within one year of filing. It is often used to extend patent life for an additional year.

A **PCT** application is an international “place holder” application filed in the home country of the inventor that reserves the right to file in the U.S. and many foreign countries at a later time. Just like provisional applications, PCT applications will never issue as a patent and will become abandoned if they are not timely converted to “regular” applications in the U.S. and each foreign country.

The first U.S. application can be filed in the USPTO either as a provisional, regular or PCT application.

Patent Decisions

Patent decisions are made by the Offices of Technology Management. Patent filings are business decisions based on market considerations, necessity of protection and probability of success in licensing and recovery of expenses. There is an expectation that all patents filed are potentially commercially valuable enough to recoup at least the patent expenses.

U.S. PATENT DECISIONS

The Offices pursue U.S. patents on a variety of innovations. University technologies are often disclosed well in advance of the development of the markets they will serve, making it difficult for the OTMs to accurately predict which patents will lead to significant revenue generation and/or significant market and societal impact. The OTMs' process removes from the portfolio those technologies that are not patentable, cannot provide an exclusionary position, are in a technology area that has been unsuccessfully pursued before or are in such a small market area that investment cannot be justified.

INTERNATIONAL AND PCT APPLICATION DECISIONS

International patents involve escalating expenses and, as a consequence, the OTMs are much more selective in decisions to file international applications than U.S. applications.

Generally, the Offices pursue PCT applications only when there are significant potential markets in foreign countries or not pursuing international protection would make the technology much more difficult to license or if the technology has been licensed and the licensee pays for it.

FOREIGN COUNTRY AND REGION SPECIFIC PATENT DECISIONS

Converting the PCT application into specific foreign country or regional applications (or filing in those countries directly without having filed a PCT application) has much greater cost implications than the decision to file in the U.S. This is primarily because of the combination of the country-by-country amplification effect and the necessity for translations and additional attorneys (foreign associates). Further, because the laws in foreign countries vary with respect to the value patent protection affords the owner; the value of foreign protection may be less than the corresponding value in the U.S.

The Offices usually pursue foreign/regional applications when a technology has been licensed, the licensee requests the application and is paying for the cost or there is a compelling case otherwise.

TIMING

The average pendency of a patent application in the U.S. is at least three years and getting longer, and inventors in the biotech and computer fields should expect a longer waiting period.

COST

Filing and obtaining U.S. patents costs between \$20,000 and \$30,000. Filing and obtaining patents in other countries may cost \$30,000 or more per country. Maintenance fees are also required.

WHAT IS COPYRIGHTABLE?

Literary works: books, poems

Computer software: object code, source code

Music: notes, words, sound recordings

Plays: dances, pantomimes

Art: paintings, graphics, sculptures

Motion pictures

WHAT IS NOT COPYRIGHTABLE?

- Ideas or concepts
- Factual information
- Listings without originality (phonebook)
- Titles or short phrases
- Type styles
- Public domain information
- Slogans

Copyright

Copyright is the form of intellectual property that protects the expression of a creative idea that is fixed in a tangible form. It is like an acknowledgement of who created the work.

For example, in *The Wizard of Oz*, copyright protects the order of the words in the story and the layout of pictures, color and words on the page. The ideas, the plot or the characters are not protected. Each adaptation of this classic tale (book, screenplay, movie, music) generates independent copyrighted works.

For scientific writings, copyright does not protect the procedures, systems, processes, concepts, formulae, discoveries or devices described in the work.

“Copyright” is literally the right to copy, which includes the right to copy (display, perform), distribute copies and make changes to the original copyrighted work (known as derivative works). Copyright provides the owner with the right to determine how the work is copied and distributed to others, such as through traditional or online publication, through open access, through sale, lease, or lending and whether you want to make it available without a fee or to charge royalties.

COPYRIGHT APPLIES AUTOMATICALLY

Unlike patentable inventions, copyrighted works are automatically protected under U.S. copyright laws, without having to undergo a formal registration process. However, it is still important to affix an appropriate copyright notice to make others aware that they are not free to utilize the work without permission. Works owned by the University should bear the following copyright notice: © 20XX *The Board of Trustees of the University of Illinois*. All rights reserved. There is also a formal registration process to document copyright in the Library of Congress.

Copyright lasts a long time. Author owned copyrights last for 70 years. Employer owned copyrights lasts for 100 years from creation or 95 years from publication.

Please note:

Inventors are creators of patentable inventions. Authors are the creators of copyrighted works. In this document, for simplicity, the term inventor is used to refer to both.

Trademarks and Service Marks

Trademarks and service marks are distinctive words or symbols used to identify the brand or origin of the goods or services provided. The trademark is not the name of a specific product but distinguishes the product from others and identifies quality. It can be suggestive, descriptive and arbitrary, but not generic. To qualify for a trademark, the mark must be used consistently on products in the marketplace. If the mark is used so often that it become generic, it loses the ability to identify the source of the products and is no longer entitled to trademark protection.

A mark that is registered is valid for 10 years, and is renewable as long as it continues to be used commercially.

The OTMs may file trademarks on marks associated with intellectual property when such marks have already become well-known and their association with the University's research enhances the value of the intellectual property. When units want trademarks associated with academic and research activities, University legal counsel (not OTM) helps advise and file on trademarks associated with the academic and research activities on campus. The Division of Intercollegiate Athletics handles trademarks associated with the University's athletic logos.

For more information on patents, copyrights and trademarks, go to the United States Patent and Trademark Office Website at:

www.uspto.gov

TRADEMARK EXAMPLES

Ever wonder why you are asked whether you want Pepsi or Coca Cola? It is so the trademark does not become generic. Several of the trademarks below have become generic and are no longer enforceable.

Logos: Apple, Shell, Blue Cross/Blue Shield

Names: Xerox, Kleenex, Coca Cola®
Ivory Soap, Aspirin, Kodak, Crock Pot, Hoola Hoop

Color/Sound: Pink –Corning insulation, NBC chimes

Slogans: Have you driven a Ford?®, Don't leave home without it

Examples of current and former University of Illinois trademarks:
Eudora, Mosaic, Mobius, NCSA, Virtual Director