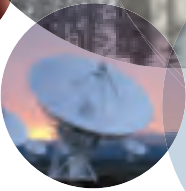
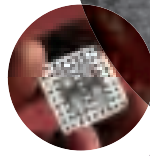


An Inventor's Guide to **Technology Transfer**

at the Massachusetts Institute of Technology



Our mission is to bring about, through technology licensing, commercial investment in the development of inventions and discoveries flowing from research at the Massachusetts Institute of Technology and Lincoln Laboratory.

It is through these investments – and the economic development and new products that follow from them – that MIT technology provides direct benefits to the public.

**Massachusetts Institute of Technology
Technology Licensing Office**

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Note: This booklet is based on the University of Michigan’s “Inventor’s Guide to Technology Transfer,” with adaptations for MIT and the MIT Technology Licensing Office. We are very grateful to Ken Nisbet, Robin Rasor, and the staff of the UM Office of Technology Transfer for their kind permission to use their excellent material and to the University of Michigan for permission to use its copyright.

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The Inventor's Guide to Tech Transfer outlines the essential elements of technology transfer at the Massachusetts Institute of Technology.

This guide is organized to answer the most common questions we typically field from our research community and is designed to provide a broad overview of the technology transfer process and services available for researchers.

For more information, visit web.mit.edu/tlo/www or call the MIT Technology Licensing Office at 617-253-6966. Formal explication of MIT policies concerning technology transfer can also be obtained on the website from the "Guide to the Ownership, Distribution and Commercial Development of MIT Technology." That policy guide supercedes any differences between it and material contained in this Inventor's Guide.

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TECH TRANSFER OVERVIEW

What is technology transfer?

Technology transfer is the movement of knowledge and discoveries to the general public. It can occur through publications, educated students entering the workforce, exchanges at conferences, and relationships with industry. For the purposes of this guide, however, technology transfer refers to the formal licensing of technology to third parties, under the guidance of professionals employed by universities, research foundations and businesses, in departments focused on these activities.

- Feeling a sense of personal fulfillment
- Achieving recognition and financial reward
- Generating additional department/center funding
- Meeting the obligations of a research contract
- Attracting research sponsors
- Creating educational opportunities for students
- Linking students to future job opportunities

What is the MIT Technology Licensing Office?

The Technology Licensing Office (TLO) is an MIT department composed of specialists in licensing, business development and legal matters, all of whom are widely experienced in transferring technologies across a broad array of fields, including the physical sciences, life sciences and information technology. We are responsible for managing inventions from MIT and Lincoln Laboratory.

Why would a researcher want to participate in the technology transfer process?

The reasons are unique to each researcher and may include:

- Making a positive impact on society

How is technology transferred?

Technology is typically transferred through an agreement in which MIT grants to a third party a license to use MIT's intellectual property rights in the defined technology, sometimes for a particular field of use and/or region of the world. Such a grant may be exclusive or non-exclusive. The licensee (the third party licensing the technology) may be an established company or a new business start-up. Licenses include terms that require the licensee to meet certain performance requirements and to make financial payments to MIT. These payments are shared with the inventors and also distributed to departments and research centers to provide support for further research, education and participation in the technology transfer process.



What is the Bayh-Dole Act?

The U.S. Bayh-Dole Act of 1980 allows universities and other non-profit institutions to have ownership rights to discoveries resulting from federally-funded research, provided certain obligations are met.

These obligations include making efforts to protect (when appropriate) and commercialize the discoveries, submitting progress reports to the funding agency, giving preference to small businesses that demonstrate sufficient capability, and sharing any resulting revenues with the inventors. The Bayh-Dole Act is credited with stimulating interest in technology transfer activities and generating increasing research, technology commercialization, educational opportunities and economic development. ■

Note: Throughout this manual, unless specifically described otherwise, the term **inventor** includes individuals listed on a patent as well as contributors who have shared in creating the value of intellectual property that is not patented.

“MIT's founding charter sets forth its purpose of ‘aiding...the advancement, development and practical application of science in connection with... commerce.’ Technology licensing is part of that mission, helping to transfer the results of our research into new products for the public and into the economic development of our community.”



—Susan Hockfield, President
Massachusetts Institute of Technology

TECH TRANSFER PROCESS

How do I work with the Technology Licensing Office?

We encourage you to contact the Technology Licensing Office during your discovery process to ensure you are aware of the options that will best leverage the commercial potential of your research. TLO staff members are trained to assist you with questions related to marketability, funding sources, commercial partners,

patenting and other protection methods, new business start-up considerations, MIT policies and procedures, and much more.

What are the typical steps in the process?

The process of technology transfer is summarized in the steps and diagram that follow. Note that these steps can vary in sequence and often occur simultaneously.

10 STEPS TO COMMERCIALIZATION

1 RESEARCH: Observations and experiments during research activities often lead to discoveries and inventions. An invention is any useful process, machine, composition of matter, or any new or useful improvement of the same. Often, multiple researchers may have contributed to the invention.

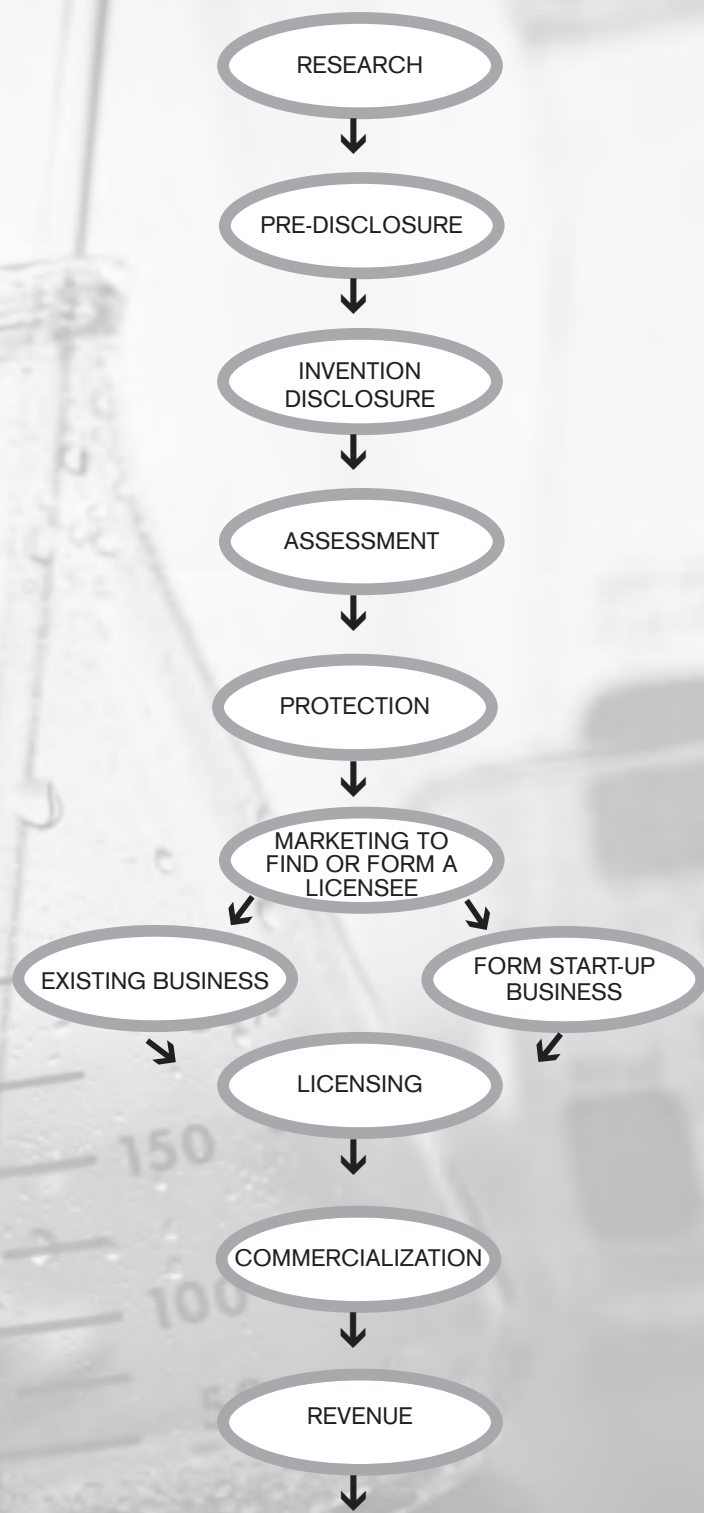
2 PRE-DISCLOSURE: An early contact with the Technology Licensing Office to discuss your invention and to provide guidance with respect to the disclosure, evaluation, and protection processes described below.

3 INVENTION DISCLOSURE (ALSO REFERRED TO AS A TECHNOLOGY DISCLOSURE): The written notice of invention to the Technology Licensing Office that begins the formal technology transfer process. An invention disclosure remains a confidential document, and should fully document your invention so that the options for commercialization can be evaluated and pursued.

4 ASSESSMENT: The period in which your Technology Licensing Officer reviews (with your input) the inven-

tion disclosure, conducts patent searches (if applicable), and analyzes the market and competitive technologies to determine the invention's commercialization potential. The evaluation process will guide our strategy on whether to focus on licensing to an existing company or creating a new business start-up.

5 PROTECTION: The process in which protection for an invention is pursued to encourage third party interest in commercialization. Patent protection, a common legal protection method, begins with the filing of a patent application with the U.S.



REINVEST IN RESEARCH AND EDUCATION

Patent Office and, when appropriate, foreign patent offices. Once a patent application has been filed, it will require several years and tens of thousands of dollars to obtain issued U.S. and foreign patents. Other protection options include copyright and trademark.

6 **MARKETING:**

With your involvement, the Technology Licensing Office staff identify candidate companies that have the expertise, resources, and business networks to bring the technology to market. This may involve partnering with an existing company or forming a start-up. Your active involvement can dramatically enhance this process.

7a **FORM A START-UP:**

If creation of a new business start-up has been chosen as the optimal commer-

cialization path, the Technology Licensing Office will work to assist the founders in planning, creating and finding funding for the start-up.

7b **EXISTING BUSINESS RELATIONSHIP:**

If the invention will best be commercialized by one or more existing companies, the technology licensing officer will seek potential licensees and work to identify mutual interests, goals and plans to fully commercialize this technology.

8 **LICENSING:**

A license agreement is a contract between MIT and a third party in which MIT's rights to a technology are licensed (without relinquishing ownership) for financial and other benefits. A license agreement is used with both a new start-up business and an established compa-

ny. An option agreement is sometimes used to enable a third party to evaluate the technology and its market potential for a limited time before licensing.

9 **COMMERCIALIZATION:**

The licensee company continues the advancement of the technology and makes other business investments to develop the product or service. This step may entail further development, regulatory approvals, sales and marketing, support, training, and other activities.

10 **REVENUE:**

Revenues received by MIT from licensees are distributed to inventors and to departments, centers and the MIT General Fund to fund additional research and education.



How long does the tech transfer process take?

The process of protecting the technology and finding the right licensing partner may take months—or even years—to complete. The amount of time will depend on the development stage of the technology, the market for the technology, competing technologies, the amount of work needed to bring a new concept to market-ready status, and the resources and willingness of the licensees and the inventors.

How can I help in this process?

- Contact the Technology Licensing Office at 617-253-6966 or the appropriate Technology Licensing Officer (found at web.mit.edu/tlo/www) when you believe you have a scientific or technical observation with potential commercial or research value.
- Complete and submit the MIT Technology Disclosure Form in sufficient time to file a patent application before publicly disclosing your technology or publishing a manuscript—preferably before submitting the manuscript for publication.
- To avoid risking your patent rights and possibly hindering the opportunity to market your invention, contact the Technology Licensing Office before holding any discussions with people outside the MIT community; if a patent application has not yet been filed, we will give you a Non-Disclosure Agreement for the party to sign before you describe your invention to them.
- On the MIT Technology Disclosure Form, include companies and contacts you believe might be interested in your intellectual property (IP) or who may have already contacted you about your invention. Studies have shown that over 70% of all licenses are executed with commercial entities known by the inventor, so your contacts can be extremely useful.
- Respond to the Technology Licensing Office and outside patent counsel requests. While some aspects of the patent and licensing process will require significant participation on your part, we will strive to make efficient use of your valuable time.
- Keep the Technology Licensing Office informed of upcoming publications or interactions with companies related to your intellectual property. ■



RESEARCH CONSIDERATIONS

AND MATERIAL TRANSFER AGREEMENTS

Will I be able to publish the results of my research and still protect the commercial value of my intellectual property?

Yes, but since patent rights are affected by these activities, it is best to submit a Technology Disclosure form (discussed in next section) well before any public communication or disclosure of the invention. There are significant differences between the U.S. and other countries as to how early publication affects a potential patent. Once publicly disclosed (published or presented in some form), an invention may have restricted or minimal potential for patent protection outside of the United States. Be sure to inform the Technology

Licensing Officer assigned to you of any imminent or prior presentation, lecture, poster, abstract, website description, research proposal submission, dissertation/masters thesis, publication, or other public presentation of the invention.

May I use material or intellectual property from others in my research?

Yes, but it is important to document carefully the date and conditions of use so that we can determine if this use may influence the commercialization potential of your subsequent research results. If you wish to obtain materials from outside collaborators, an incoming Material Transfer Agreement (MTA) should be completed. Contact the Technology Licensing Office for more information on incoming MTAs. For details, visit web.mit.edu/tlo/www or call 617-253-6966.

Will I be able to share material, research tools or intellectual property with others to further their research?

Yes. However it is imperative to document items that are to be shared with others and the conditions of use. If you wish to send materials to an outside collaborator, an outgoing Material Transfer Agreement (MTA) should be completed for this purpose. It also may be necessary to have a



Non-Disclosure Agreement completed to protect your research results or intellectual property. Contact the Technology Licensing Office to assist you in completing outgoing MTAs.

What rights does a research sponsor have to any discoveries associated with my research?

The Sponsored Research Agreement should specify the intellectual property (IP) rights of the sponsor. MIT retains ownership of the patent rights and other intellectual property resulting from sponsored research. However, the sponsor may have rights to obtain a license to the intellectual property arising from the research. Often, sponsored research contracts allow the sponsor a limited time to negotiate a license for any patent or intellectual property rights developed as the result of the research. Even so, the sponsor generally will not have contractual rights to discoveries that are clearly outside of the scope of the research (and which do not use funds from the research agreement). Therefore, it is important to define the scope of work within a research agreement.

Sponsored research agreements are handled by the Office of Sponsored Programs and OSP representatives work closely with the Technology Licensing Office on IP issues in sponsored research agreements. If you have questions about sponsored research, please visit the OSP website at web.mit.edu/osp/www/ or contact them by calling 617-253-2762.

What about consulting?

When researchers enter into consulting agreements (for work to be done without use of MIT facilities), they are deemed to be acting outside of the scope of their employment. Therefore, consulting arrangements are not negotiated by MIT nor formally reviewed by the Technology Licensing Office or OSP. Researchers who enter into consulting agreements should familiarize themselves with MIT policies relevant to consulting activities. See web.mit.edu/policies/4.0.html. The researcher is expected to ensure that the terms of the consulting arrangement are consistent with MIT policies, including those related to IP ownership, employment responsibilities and use of intellectual property. The Technology Licensing Office is available to provide informal advice on how your consulting agreement relates to MIT intellectual property you have created. ■

TECHNOLOGY DISCLOSURES

What is a Technology Disclosure?

A Technology Disclosure (also called an Invention Disclosure) is a description of your invention or development that is provided to the Technology Licensing Office. The Disclosure should also list all sponsors of the research and should include any other information necessary to begin pursuing protection and commercialization activities. It is critical that you note the date of any upcoming publication or other public disclosure describing the invention. To initiate the process, mail, email or fax the Technology Disclosure to our office. This document will be treated as “MIT Confidential.” You will usually be contacted by the assigned Technology Licensing Officer shortly after your submission of the Disclosure to discuss the invention and its potential commercial applications.

Why should I submit a Technology Disclosure?

When you disclose your invention to the Technology Licensing Office, it starts a process that could lead to the commercialization of your technology. On the part of the Technology Licensing Office, this may involve beginning the legal protection process and working to identify outside development partners. If U.S. government funds were used for your research, you are required to file a prompt disclosure, which will be reported to the sponsoring agency. Similar requirements may exist for other sponsored projects.

How do I know if my discovery is an invention? Should I be submitting a Technology Disclosure?

You are encouraged to submit a Technology Disclosure for all developments that



you feel may solve a significant problem and/or have significant value. If you are in doubt, contact the Technology Licensing Office to discuss the potential invention. We can also advise on alternatives to licensing.

When should I complete a Technology Disclosure?

You should complete a Technology Disclosure whenever you feel you have discovered something unique with possible commercial value. This should be done well before presenting the discovery through publications, poster sessions, conferences, press releases, or other communications. Once publicly disclosed (i.e., published or presented in some form to non-MIT listeners), an invention may have restricted or minimal potential for patent protection outside of the United States.

Should I disclose research tools?

Typically, research tools are materials such as antibodies, vectors, plasmids, cell lines, mice, and other materials used as “tools” in the research process. Research tools do not necessarily need to be protected by patents in order to be licensed to commercial third parties and generate revenue for your laboratory. Other research tools (such as new separation processes) may need to be patented in order that a company will invest in the engineering development to make the process broadly



useful. If you have research tools that you believe to be valuable, the Technology Licensing Office will work with you to develop the appropriate protection, licensing and distribution strategy. We will also help you in distributing research materials at zero or minimal charge to other academic collaborators while preserving the materials' commercial potential.

How do I submit a Technology Disclosure?

You can download a disclosure form and simple instructions from web.mit.edu/tlo/www/community/inv_disc.html. Technology Disclosures are assigned weekly to a Technology Licensing Officer. If you have any questions, call the Technology Licensing Office at 617-253-6966 or email us at tlo@mit.edu. ■

FOR MORE INFORMATION:

http://web.mit.edu/tlo/www/community/inv_disc.html

OWNERSHIP

OF INTELLECTUAL PROPERTY



OWNERSHIP

What is “intellectual property”?

Intellectual property is inventions and/or material that may be protected under the patent, trademark and/or copyright laws.

Who owns what I create?

Ownership depends upon the employment status of the creators of the invention and their use of MIT facilities.

Considerations include:

- What is the source of the funds or resources used to produce the invention?
- What was the employment status of the creators at the time the intellectual property was made?

- What are the terms of any agreement related to the creation of the intellectual property?

As a general rule, MIT owns inventions made by its employees while working under a grant or contract to MIT or using MIT resources. When in doubt, it is best to contact the Technology Licensing Office for advice.

Where can I find MIT’s policy on ownership of inventions?

The policy is stated in the Guide to the Ownership, Distribution and Commercial Development of MIT Technology which can be located on our website at web.mit.edu/tlo/www/community/guide.2.html.

Who owns rights to discoveries made while I am consulting?

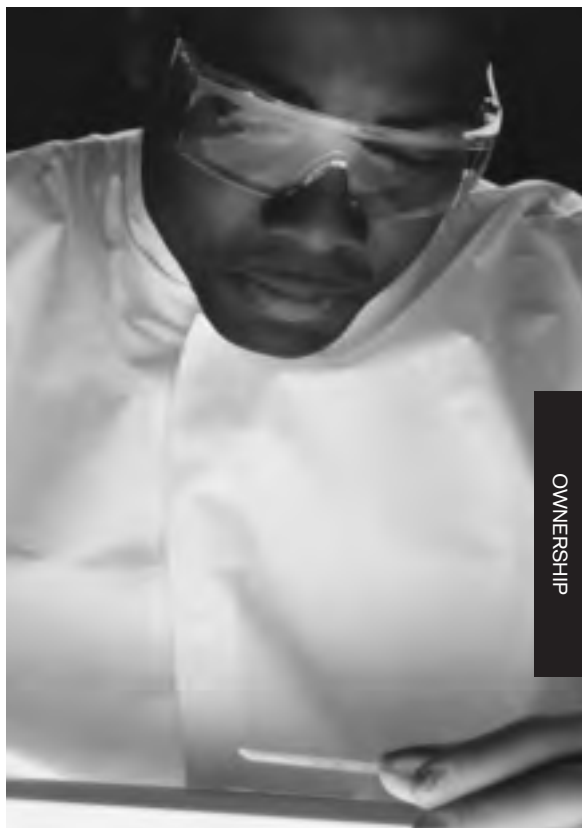
The ownership of inventions made while consulting for an outside company depends on the terms of your consulting contract with the company. It is important to clearly define the scope of work within consulting contracts to minimize any issues with inventions from MIT research. If you have questions, the Technology Licensing Office is available for informal advice.

Should I list visiting scientists on my Technology Disclosure?

All contributors to the ideas leading to a discovery should be mentioned in your disclosure, even if they are not MIT employees. The Technology Licensing Office, along with legal counsel, will determine the rights of such persons and institutions. It is prudent to discuss with the Technology Licensing Office all working relationships (preferably before they begin) to understand the implications for any subsequent inventions.

Can a student contribute to an invention?

Yes, a student can even be the sole contributor or inventor. The policy for ownership of an invention developed with or by a student is the same as for any other member of MIT. It depends on 1) whether the invention was created by a student in a capacity as an MIT employee, 2) whether the invention was created using MIT resources, and 3) whether the invention was created under a contract or grant to MIT. ■



The mission of MIT is to advance knowledge and educate students in science, technology, and other areas of scholarship that will best serve the nation and the world in the 21st century. The Institute is committed to generating, disseminating, and preserving knowledge, and to working with others to bring this knowledge to bear on the world's great challenges.

ASSESSMENT

OF AN INVENTION DISCLOSURE

How does the TLO assess

Technology Disclosures?

Technology Licensing Officers, often with the help of inventors and/or a literature search specialist examine each invention disclosure to review the novelty of the invention, competing technologies, protectability and marketability of potential products or services, relationship to related intellectual property, size and growth potential of the relevant market, amount of time and money required for further development, pre-existing rights associated with the intellectual property (IP), and potential competition from other products/technologies. This assessment may also include consideration of whether the IP can be the basis for a new business start-up.

If my conviction is that all IP should be licensed non-exclusively to all potential users for the public good, will MIT honor my request?

The Technology Licensing Office will work with you to develop the appropriate commercialization strategy for your invention. Some technologies lend

themselves to non-exclusive licensing (licensing to multiple third parties), while others will only reach the commercial marketplace, and therefore the public, if they are licensed on an exclusive basis. We will try to accommodate inventors' commercialization wishes consistent

with the objectives of co-inventors and consistent with obligations to sponsors or other third parties.

“...professional competence is best fostered by coupling teaching and research and by focusing attention on real-world problems.”

William Barton Rogers

How do we decide whether to commercialize with a traditional or an “open source” license for software?

Generally, the Technology Licensing Office supports those MIT software developers who choose to essentially give their programs away through open source mechanisms, provided MIT retains the right to distribute the program freely and that “open sourcing” is consistent with obligations to third parties, such as sponsors. However, since there are many different varieties of “open sourcing,” it is recommended that you contact the Technology Licensing Office to obtain advice on appropriate notices to put on your open-sourced software.



Is an invention ever reassigned to an Inventor?

If the Technology Licensing Office decides not to pursue patent protection and/or chooses not to actively market the invention, MIT may, upon request by the inventor(s), reassign (transfer ownership) to the inventor(s). Reassignment of inventions funded from U.S. government sources requires the government's prior approval. Among the key factors in MIT deciding to reassign are whether additional MIT resources or private resources could best improve marketability and whether all inventors agree with the reassignment plan. Upon reassignment, the inventor(s) are responsible for payment of prior patent costs and all further development, patenting and marketing expenses. MIT may also require you to share with



MIT some of any revenue you derive from the commercialization of the invention. If additional MIT resources are used to further develop the invention, MIT may reassert ownership interest in the invention. ■

PATENTS

AND OTHER LEGAL PROTECTION

What is a patent?

A patent gives the holder the right to exclude others from making, using, selling, offering to sell, and importing any patented invention. Note, however, that a patent does not provide the holder any affirmative right to practice a technology, since it may fall under a broader patent owned by others; instead, your patent only provides the right to exclude others from practicing it. Patent claims are the legal definition of an inventor's protectable invention.

What type of subject matter can be patented?

Patentable subject matter includes processes, machines, compositions of matter, articles, some computer programs, and methods (including methods of making compositions, methods of making articles, and even methods of performing business).

Can someone patent a naturally occurring substance?

Not in its natural state. However, a natural substance that has never before been isolated or known may be patentable in some instances, but only in its isolated form (since the isolated form had never been known before). A variation of a naturally occurring substance may be patentable if an inventor is able to demonstrate substantial non-obvious modifications that offer significant advantages in using the variant.

What is the United States Patent and Trademark Office (PTO)?

The PTO is the federal agency, organized under the Department of Commerce, that administers patents on behalf of the government. The PTO employs patent examiners skilled in all technical fields in order to appraise patent applications. The PTO also issues federal trademark registrations.

What is the definition of an inventor on a patent and who determines this?

Under U.S. law, an inventor is a person who takes part in the conception of the ideas in the patent claims of a patent application. Thus, inventorship of a patent application may change as the patent claims are changed during prosecution of the application. An employer or person who furnishes money to build or practice an invention is not an inventor. Inventorship may require an intricate legal determination by the patent attorney prosecuting the application.

Who is responsible for patenting?

The Technology Licensing Office contracts with outside patent counsel for patent protection, thus assuring access to patent specialists in diverse technology areas. Inventors work with the patent counsel in drafting the patent applications and responses to patent offices in the countries in which patents are filed.



What is the patenting process?

Patent applications are generally drafted by a patent attorney or a patent agent (a non-attorney with a science education licensed to practice by the PTO). The patent attorney generally will ask you to review an application before it is filed and will also ask you questions about inventorship of the application claims. At the time an application is filed, the patent attorney will ask the inventor(s) to sign an Inventor's Declaration and an Assignment under which the inventor(s) assigns his or her rights in the patent to MIT.

In about one year, depending on the technology, the patent attorney will receive written notice from the PTO as to whether the application and its claims have been accepted as patentable in the form as filed. More often than not, the PTO rejects the application because either certain formalities need to be cleared up, or the claims are not patentable over the "prior art" (anything

that workers in the field have made or publicly disclosed in the past). The letter sent by the PTO is referred to as an Office Action or Official Action. If the application is rejected, the patent attorney must file a written response, usually within three to six months. Generally the attorney may amend the claims and/or point out why the PTO's position is incorrect. This procedure is referred to as patent prosecution. Often it will take two PTO Official Actions and two responses by the patent attorney—and sometimes more—before the application is resolved. The resolution can take the form of a PTO notice that the application is allowable; in other words, the PTO agrees to issue a patent. During the prosecution process, input from the inventor(s) is often needed to confirm the patent attorney's understanding of the technical aspects of the invention and/or the prior art cited against the application. The PTO holds patent applications confidential until published by the PTO, 18 months after initial

filing. The time between the initial filing of the patent application and the issuance of the patent is the “patent pending” period.

Is there such a thing as a provisional patent?

No. However, there is a provisional patent application, which is described below.

What is the difference between a provisional patent application and a regular (or “utility”) patent application?

In certain circumstances, U.S. provisional patent applications can provide a tool for preserving patent rights while temporarily reducing costs and perhaps providing extra time to prepare a regular application. This occurs because the application is not examined during the year in which it is pending and claims are not required. A regular U.S. application and related foreign applications must be filed within one year of the provisional filing in order to receive the benefit of the provisional application’s early filing date. However, since an applicant only receives the benefit of the

earlier filing date for material that is adequately described and enabled in the provisional application, we may still need you to work with a patent attorney even when an application is filed as a provisional.

What’s different about foreign patent protection?

Foreign patent protection is subject to the laws of each individual country, although in a general sense the process works much the same as it does in the United States. In most foreign countries, however, an inventor will lose any patent rights if he or she publicly discloses the invention prior to filing of the first (or “priority”) application in one country. In contrast, the United States has a one-year grace period after publication in which a patent may be filed.

Is there such a thing as an international patent?

Although an international patent does not exist, an international agreement known as the Patent Cooperation Treaty (PCT)



provides a streamlined filing procedure for most industrialized nations. For U.S. applicants, a PCT application is generally filed one year after the corresponding U.S. application (either provisional or regular) has been submitted. The PCT application must later be filed in the national patent office of any country in which the applicant wishes to seek patent protection, generally within 30 months of the earliest claimed filing date.

What is gained by filing an application under the PCT?

The PCT application provides two advantages. First, it delays the need to file costly foreign applications until the 30-month date, often after an applicant has the opportunity to further develop, evaluate and/or market the invention for licensing. Second, the international preliminary examination often allows an applicant to simplify the patent prosecution process by having a single examiner speak to the patentability of the claims, which can save significant costs in prosecuting foreign patent applications. Another important international treaty called the Paris Convention permits a patent application filed in a second country (or a PCT application) to claim the benefit of the filing date of an application filed in a first country, provided that a so-called “convention applications” is filed in foreign countries (or as a PCT) within one year of the first filing date of the U.S. application.

What is the timeline of the patenting process and resulting protection?

Currently, the average U.S. utility patent application is pending for about three years, though inventors in the biotech and

computer fields should plan on a longer waiting period. Once a patent is issued, it is enforceable for 20 years from the initial filing of the application that resulted in the patent, assuming that PTO-mandated maintenance fees are paid.

Why does MIT protect some intellectual property through patenting?

Potential commercialization partners (licensees) often require patent protection to protect the commercial partner’s often sizable investment required to bring the technology to market. Due to their expense, patent applications are not possible for all MIT intellectual property. We carefully review the commercial potential for an invention before investing in the patent process. However, because the need for commencing a patent filing usually precedes finding a licensee, we look for creative and cost-effective ways to seek early protection for as many promising inventions as possible.

Who decides what gets protected?

The Technology Licensing Office and the inventor(s) together discuss relevant factors in deciding whether to file a patent application. Ultimately, the Technology Licensing Office makes the final decision as to whether to file.

What does it cost to file for and obtain a patent?

Filing a regular U.S. patent application may cost between \$10,000 and \$20,000. To obtain an issued patent may require an additional similar amount for patent prosecution. Filing and obtaining issued patents in other countries may cost \$20,000 or more per country. Also, once a

patent is issued in the U.S or in foreign countries, certain maintenance fees are required to keep the patent alive.

What if I created the invention with someone from another institution or company?

Generally, the invention will be jointly owned between MIT and the other institution or company. Each inventor will assign his or her rights to their employer. The TLO will work with the other institution to decide on management of the invention. Usually, if the other institution is a university or research institution, we will make an “inter-institutional” agreement that provides for one of the institutions to take the lead in protecting and licensing the invention, sharing of expenses associated with the patenting process and allocating any licensing revenues.

Will MIT initiate or continue patenting activity without an identified licensee?

Often MIT accepts the risk of filing a patent application before a licensee has been identified. After MIT’s rights have been licensed to a licensee, the licensee generally assumes the patenting expenses. At times we must decline further patent prosecution after a reasonable period (usually a number of years) of attempting to identify a licensee.

What is a copyright and how is it useful?

Copyright is a form of protection provided by the laws of the United States and other countries to the authors of “original works of authorship.” This includes literary, dramatic, musical, artistic, and certain other intellectual works as well as computer software. This protection is available to both published and unpublished works. The Copyright Act generally gives the owner of copyright the exclusive right to conduct and authorize various acts,



including reproduction, public performance and making derivative works. Copyright protection is automatically secured when a work is fixed into a tangible medium such as a book, software code, video, etc. In some instances, MIT registers copyrights, but generally not until a commercial product is ready for manufacture.

How do I represent a proper MIT copyright notice?

Although copy-rightable works do not require a copyright notice, we do recommend that you use one. For works owned by MIT, use the following notice:
"© 201X Massachusetts Institute of Technology. All rights reserved."

How can I learn more about MIT copyright policies?

We recommend that you begin by reviewing material at:
web.mit.edu/tlo/www/community/guide2.html. If you have additional questions, please contact the TLO.

What is a trademark or service mark and how is it useful?

A trademark includes any word, name, symbol, device, or combination, that is used in commerce to identify and distinguish the goods of one manufacturer or seller from those manufactured or sold by others, and also to indicate the source of the goods. In short, a trademark is a brand name. A service mark is any word, name,

symbol, device, or combination that is used, or intended to be used, in commerce to identify and distinguish the services of one provider from those of others, and to indicate the source of the services.

What is trademark registration?

Trademark registration is a procedure in which the United States Patent and Trademark Office provides a determination of rights based upon legitimate use of the mark.

However, it is not necessary to register a trademark or service mark to prevent others from infringing upon the trademark. Trademarks generally become protected as soon as they are adopted by an organization and used in commerce, even before registration. With a federal trademark registration, the registrant is presumed to be entitled to use the trademark throughout the United States for the goods or services for which the trademark is registered. ■

Teaching and research
—with relevance to
the practical world as
a guiding principle—
continue to be our
primary purpose.

CONSIDERATIONS FOR A START-UP COMPANY



The Technology Licensing Office can help evaluate these and other factors.

Who decides whether to form a start-up?

The choice to establish a new company for commercializing intellectual property is a joint decision made by the Technology Licensing Office and the inventors. If a new business start-up is

chosen as the preferred commercialization path, the Technology Licensing Officer can assist you and the other founders in meeting investors, consultants, and entrepreneurs and accessing other resources for advice at MIT to help you in founding the company. Then, the TLO will negotiate with a representative of the company (who should not be an employee of MIT, to avoid conflict of interest), to grant a license to the new company. Also, it is wise for inventors to have agreements regarding their roles with the start-up reviewed by their own counsel to ensure that all personal ramifications—including taxation and liabilities—are clearly understood. ■

What is a start-up and why choose to create one?

A start-up is a new business entity formed to commercialize one or more related intellectual properties. Forming a start-up business is an alternative to licensing the IP to an established business. A few key factors when considering a start-up company are:

- development risk (often large companies in established industries are unwilling to take the risk for unproven technology)
- development costs versus investment return (Can the investors in the startup obtain their needed rates of return?)
- potential for multiple products or services from the same technology (few companies survive on one product alone)
- sufficiently large competitive advantage and target market
- potential revenues sufficient to sustain and grow a company

MARKETING

TO FIND A LICENSEE



How does the Technology Licensing Office market my inventions?

Technology Licensing Officers use many sources and strategies to identify potential licensees and market inventions. Sometimes existing relationships of the inventors, the Technology Licensing Office, and other researchers are useful in marketing an invention. Market research can also assist in identifying prospective licensees. In addition, we also examine other complementary technologies and agreements to assist our efforts. Faculty publications and presentations are often excellent marketing tools as well.

How are most licensees found?

Studies have shown that 70% of licensees were known to the inventors. Thus research and consulting relationships are often a valuable source for licensees. Licensees are also identified through existing relationships of the TLO staff. We attempt to broaden these relationships through contacts obtained from personal networking and from website inquiries, market research, industry events and the cultivation of existing licensing relationships.



How long does it take to find a potential licensee?

It can take months and sometimes years to locate a potential licensee, depending on the attractiveness of the invention and the size and stage of development of the market. Most MIT inventions tend to be in the early stage in the development cycle and thus require substantial commercialization investment, making it difficult to attract a licensee.

How can I assist in marketing my invention?

Your active involvement can dramatically improve the chances of matching an invention to an outside company. Your research and consulting relationships are often helpful in both identifying potential licensees and technology champions within companies. Once interested

companies are identified, the inventor is the best person to describe the details of the invention and its technical advantages. The most successful technology transfer results are obtained when the inventor and the licensing professional work together as a team to market and promote use of the technology.

Can there be more than one licensee?

Yes, an invention can be licensed to multiple licensees, either non-exclusively to several companies or exclusively to several companies, each only for a unique field-of-use (application) or geography. ■

LICENSE AGREEMENTS

What is a license?

A license is permission granted by the owner of intellectual property that allows another party to act under all or some of the owner's rights, usually under a written license agreement.

What is a license agreement?

License agreements are typically in writing and describe the rights and responsibilities related to the use and exploitation of intellectual property. MIT license agreements usually stipulate that the licensee must diligently seek to bring the MIT intellectual property into commercial use for the public good. The agreement also seeks to provide a reasonable return to MIT.

How is a business chosen to be a licensee?

A licensee is chosen based on its ability to commercialize the technology for the

benefit of the general public. Sometimes an established business with experience in similar technologies and markets is the best choice. In other cases, the focus and intensity of a start-up company is a better option. Typically, MIT does not have multiple potential licensees bidding on an invention.

What can I expect to gain if my IP is licensed?

Per MIT policy, a share of any financial return from a license is provided to the inventor(s). For more information, see web.mit.edu/tlo/www/community/guide4.html. In addition, inventors enjoy the satisfaction of knowing their inventions are being deployed for the benefit of the general public. New and enhanced relationships with businesses are another outcome that can augment one's teaching, research and consulting.



What is the relationship between an inventor and a licensee, and how much of my time will it require?

Most licensees need some active assistance by the inventor to facilitate their commercialization efforts. This can range from infrequent, informal contacts to a more formal consulting relationship. Working with a new business start-up can require substantially more time, depending on your role in or with the company and your continuing role within MIT. Your participation with a start-up is governed by MIT conflict of interest policies.

What other types of agreements and considerations apply to tech transfer?

- Non-Disclosure Agreements (NDAs) are often used to protect the confidentiality of an invention during evaluation by potential licensees. NDAs also protect proprietary information of third parties that MIT researchers need to review in order to conduct research or evaluate research opportunities. The Technology Licensing Office enters into NDAs for MIT proprietary information shared with someone outside of MIT.
- Material Transfer Agreements (MTAs), used for incoming and outgoing materials at MIT, are administered by the Technology Licensing Office. These agreements describe the terms under which MIT researchers and outside researchers may share materials, typically for research or evaluation purposes. Intellectual property rights can be endangered if materials are used without a proper MTA.

- Inter-Institutional Agreements describe the terms under which two or more institutions (e.g., two universities) will collaborate to assess, protect, market, license, and share in the revenues received from licensing jointly-owned intellectual property.
- Option Agreements, or Option Clauses within research agreements, describe the conditions under which MIT preserves the opportunity for a third party to negotiate a license for intellectual property. Option clauses are often provided in a Sponsored Research Agreement to corporate research sponsors at MIT; option agreements are entered into with potential licensees wishing to evaluate the technology prior to entering into a full license agreement.
- Research Agreements describe the terms under which sponsors provide research support to MIT. These are negotiated by the Office of Sponsored Programs. ■

COMMERCIALIZATION

What activities occur during commercialization?

Most licensees continue to develop an invention to enhance the technology, reduce risk, prove reliability, and satisfy the market requirements for adoption by customers. This can involve additional testing, prototyping for manufacturability, durability and integrity, and further development to improve performance and other characteristics. Documentation for training, installation and marketing is often created during this phase. Benchmarking tests are often required to demonstrate the product/service advantages and to position the product in the market.

What is my role during commercialization?

Your role can vary depending on your interest and involvement, the interest of the licensee in utilizing your services for various assignments, and any sponsored research related to the license or any personal agreements.

What revenues are generated for MIT if commercialization is successful?

Most licenses have licensing fees that can be very modest (for start-ups or situations in which the value of the license is deemed to warrant a modest license fee) or can reach hundreds of thousands of dollars. Royalties on the eventual sales of

the licensed products can generate similar or greater revenues, although this can take years to occur. Equity, if included in a license, can yield similar returns, but only if a successful equity liquidation event (public equity offering or a sale of the company) occurs. Most licenses do not yield substantial revenues. A recent study of licenses at U.S. universities demonstrated that only 1% of all licenses yield over \$1 million. However, the rewards of an invention reaching the market are often more significant than the financial considerations alone.

What will happen to my invention if the start-up company or licensee is unsuccessful? Can the invention be licensed to another entity?

Licenses typically include performance milestones that, if unmet, can result in termination. This allows for subsequent licensing to another business. However, time delays and other considerations can hinder this re-licensing. ■

NAVIGATING CONFLICT OF INTEREST



How does MIT define a conflict of interest?

A conflict of interest can occur when a MIT employee, through a relationship with an outside organization, is in a position to: 1) influence MIT's business, research or other areas that may lead to direct or indirect financial gain, 2) adversely impact or influence his or her research or teaching responsibilities, or 3) provide improper advantage to others, to the disadvantage of MIT.

When should I seek guidance on conflict of interest?

Whenever a question or uncertainty arises, you should seek guidance from the

Office of Sponsored Programs (OSP) and/or your the Technology Licensing Officer for license-related issues. There are two times in particular when guidance is required: when research proposals are submitted to external sponsors (OSP) and when a license, option or MTA is being considered for a company in which the faculty member has an equity or management interest (the Technology Licensing Office). Certain government contracts and grants have conflict of interest reporting requirements; OSP can provide you with guidance in these instances.

What kinds of issues concern conflict of interest reviewers?

Examples include the appropriate and objective use of research, the treatment

and roles of students, supervision of individuals working at both MIT and a licensee company, and conflict of commitment (i.e., your ability to meet your MIT obligations).

What are examples of a conflict of commitment?

A conflict of commitment may exist if duties, assignments or responsibilities associated with a technology license or outside business arrangement have a negative impact on your ability to meet commitments associated with your MIT employment or exceed the amount of time available to you for these activities. The best approach is to fully disclose your situation to your department head and discuss the implications for your job responsibilities.

How does MIT manage conflicts of interest?

The Technology Licensing Office can advise you on conflict of interest issues related to IP issues, and OSP can advise on conflicts related to research. It is the responsibility of the researcher or faculty member to disclose and document any outside arrangements that constitute disclosable situations or interests as described in MIT conflict of interest policies. See web.mit.edu/policies/4.0.html. ■

REVENUE DISTRIBUTIONS

How are license revenues distributed?

The Technology Licensing Office is responsible for managing the expenses and revenues associated with technology agreements. Per MIT Policy, revenues from license fees, royalties and equity—minus any unreimbursed patenting expenses—are shared with the inventors. See Section 4.7 of the “Guide to the Ownership, Distribution and Commercial Development of MIT Technology” which can be found at web.mit.edu/tlo/www. For purposes of revenue distribution, “inventors” are defined as named inventors on patents or authors of copyrighted materials.

What if I receive equity from a company?

If an inventor has received or will receive equity directly from a licensee of technology, MIT policy states that the inventor will not receive any of the equity received by MIT in connection with that license. Equity includes stock and/or stock option or stock warrants.

What are the tax implications of any revenues I receive from MIT?

License revenues paid to inventors are generally taxable and are reported as Form 1099 income. Consult a tax advisor for specific advice.

How are inventor revenues distributed if there are multiple inventors and/or multiple inventions in a license?

The “inventors’ share” of royalties is divided equally among all inventors unless all inventors agree in writing to another distribution formula of their collective choice.

How is equity from a license distributed?

The equity that MIT receives under a license agreement is distributed to inventors that are not receiving equity directly from the licensee, in accordance with the same policy that governs the distribution of cash royalties. The prescribed shares are issued by the company to these inventors in the inventors’ names. ■

REINVESTMENTS & RELATIONSHIPS

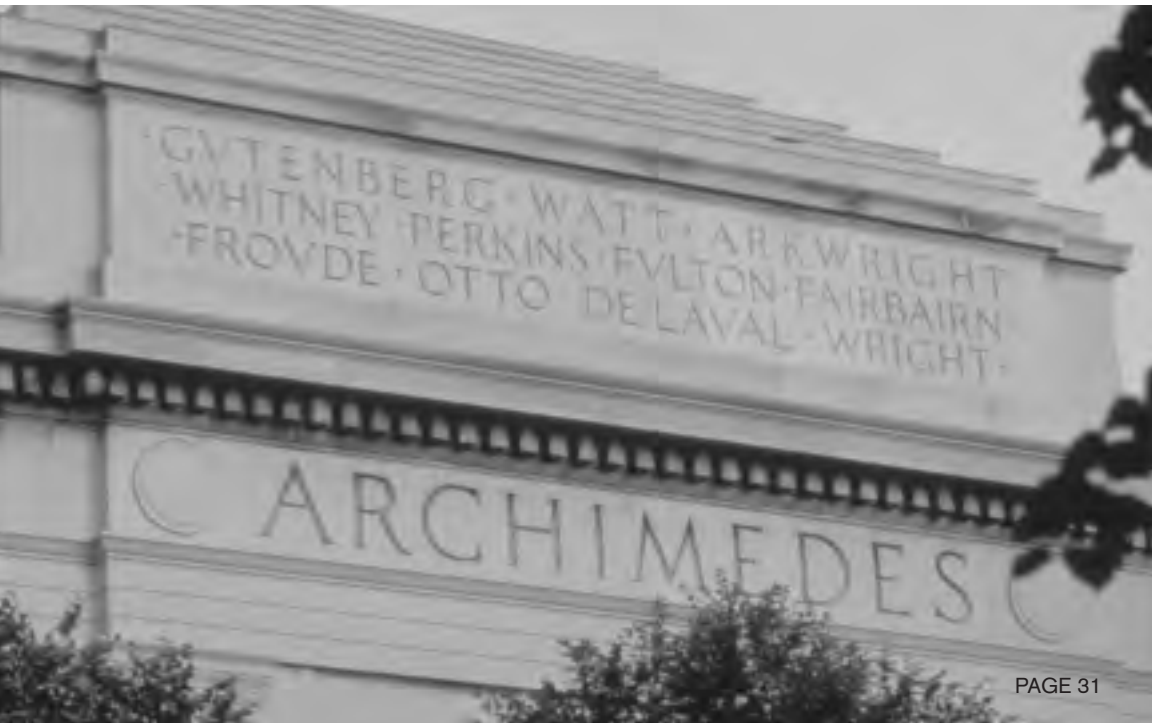
Every year, the Technology Licensing Office, working with our MIT inventors and licensees:

- Receives over 500 invention disclosures
- Negotiates approximately 100 new option and license agreements
- Assists in forming 15-25 start-ups

The revenues received are shared with inventors and among MIT departments, centers, Lincoln Laboratory and the MIT General Fund. Revenues going to MIT entities are reinvested in additional research and education, thus fostering the creation of the next generation of research, researchers and entrepreneurs.

Our new technology transferred to industry enhances industrial competitiveness, brings new products and therapies to the public, and further creates economic development and new jobs through our start-up companies.

In addition, the creation and deepening of company relationships through these activities support MIT's missions. They result in additional research projects, broader educational opportunities and collaborative investments, and an enhanced ability to create, retain and share valuable resources that contribute to our mission. ■



Notes

MIT photos by Stuart Darsch, photos of Susan Hockfield, page 3, and robot, page 12, by Donna Covey, other photos from Getty Images.



<http://web.mit.edu/tlo/www>



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