

# An Introduction to Intellectual Property

## 1.0 The Need to Protect Technology

**E**ngineers understand the challenges of developing cost-effective, commercially viable solutions to complex problems. Among these challenges is the time (in person-years) it takes to understand and analyze a problem, to develop, prototype and test multiple solutions and then to engineer the solution into a commercial form. A second primary challenge is the cost of innovation - even relatively simple concepts can require hundreds of thousands, or even a few million, dollars to develop in a commercially acceptable form.

For many companies, this engineering challenge is the easy part. The challenge of actually commercializing the technology is often greater.

As soon as a product is successful, and often even earlier, competitors pop up out of nowhere, ready to make similar or even identical products. These competitors don't incur the costs and delays of innovating the product. Even worse, competitors may be better positioned to actually manufacture the product more cheaply than the inventor (or to have it manufactured overseas), and may be able to offer it to the market at a lower price than the true innovators. In some cases, the competitor may be able to appropriate the entire financial benefit from the innovation, after having borne none of the risks and expenses of making it. It may come as a surprise that this sort of conduct is generally legal in almost all countries, including Canada and the United States.

## 2.0 Mechanisms for Protecting Technology

Fortunately, there are several ways to control a third party's use of your technology.

First, the technology can be kept secret. In some cases, it is possible to keep an invention entirely secret and still make commercial use of it. While this can be extremely effective, there is a risk that a third party will independently develop the same technology, possibly by looking at what you are doing, and then compete with you. Worse still, the third party might be able to get a patent and actually force you to stop using the invention.

Another mechanism is to enter into a contract with the third party - typically a confidential disclosure agreement that limits how the third party uses technology you have given to it. Contracts are enforceable only against parties that actually agree to them. Other parties can continue to appropriate your technology. Also, if your technology isn't actually confidential (i.e. it has been publicly disclosed through academic or industry papers or could be discovered by reverse engineering a product), then contract based protection may be impossible or difficult to enforce (and may actually be illegal in the U.S.). These first two mechanisms rely on the law of trade secrets or confidential information.

Typically, the most powerful mechanism for controlling a third party's use of your technology is to patent it. A patent gives its owner the right to stop others from making, using or selling articles that include the invention. The protection lasts for 20 years, and when set up properly, it can give the patentee exclusive control to commercialize or otherwise benefit from the invention. A patent is effective against third parties who develop the same technology, even if they do so independently.

## 3.0 Types of IP Rights

Trade secrets and patents are two IP rights used to protect technological innovations. Innovations may also be "protected" by publishing them for the world to see. Such a "defensive publication" prevents third parties from getting a patent for the innovation, even if they develop it independently (unless they filed for the patent before the publication).

Other IP rights include industrial designs, copyrights, trade marks, integrated circuit topography registrations and plant breeders rights. Table 1 summarizes various aspects of these rights. In future articles, we will review each type of IP right in greater detail.

## 4.0 Managing Intellectual Assets

The IP rights described may be seen as intellectual assets. They do not

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### Abstract

Engineers excel at developing new technologies. Increasingly, they are also recognizing the need to take legal control over innovations so that the inventors, and their employers, can benefit from them.

This article is the first in a series that will discuss intellectual assets, and their role in an organization's technology protection and management strategy.

### Sommaire

Les ingénieurs sont des experts dans le développement de nouvelles technologies. En outre, ils reconnaissent de plus en plus l'importance de prendre les moyens légaux pour exercer un certain contrôle sur les innovations et ainsi permettre aux inventeurs, et à leurs employeurs, d'en bénéficier.

Cet article est le premier d'une série portant sur les « capitaux intellectuels » et leur rôle au sein de la stratégie d'une organisation ayant trait à la gestion de la technologie et à sa protection.

exist in a physical form, but they embody and protect the creative and innovative concepts that their owner may use with some degree of exclusivity. A company's other intellectual assets may include the know-how retained by its employees, the relationships the company has with others, concepts and innovations for future products and a mature understanding of the company's technological and business environment.

Managing and leveraging these intellectual assets can be a relatively simple task, or it may be extremely complex, depending on a company's goals.

At its simplest, intellectual asset management involves obtaining IP rights for a company's important innovative technologies and then using these rights defensively. A patent portfolio may be used to define the scope of a company's technology, as a warning or threat to others. The portfolio can also be used to shield a company from litigation - if another party claims the company is infringing the other party's right, the company will have some technology to cross-license. Both parties can get access to greater rights and compete in the market rather than endure a costly and expensive battle in court. In a small organization this function may be part-time and may be filled by a technology group leader. In larger or more technology intensive companies, this function may be led by an in-house lawyer or patent agent who works with a technology management committee to identify innovations that are worth protecting and to manage the process of obtaining and maintaining IP protection.

At a highly advanced stage, intellectual asset management can become a visionary activity within a company. A company that prides itself on anticipating future trends and technological changes will stake its claim on portions of that future technology well in advance by developing related concepts and protecting them, using a combination of intellectual assets, particularly patents. The company will then work towards integrating the concepts with the company's current products or developing new products. In some cases, the new concepts may relate to products two, three or more generations removed from their current offerings. In such companies, the intellectual asset management role may be led by a senior executive such as the Chief Technology Officer.

Between these extremes, intellectual asset management includes managing the costs associated with developing and maintaining an IP

**Table 1: Basic Facts about IP Rights**

IP Right	Subject Matter	Registration / Ownership Requirements	Protection	Filing Requirements	Term
<b>Patent</b> Patent Act	Invention: New and useful art, process, machine, manufacture or composition of matter or any new and useful improvement in an art, process, machine, manufacture or composition of matter.	Invention must be new, non-obvious and useful.	Exclusive right to make, construct, use & sell the invention, or articles made using the invention.	Registration is mandatory. In Canada & US, an application must be filed within 1 year of invention disclosure. In other countries, filing requirements vary, but in general, application must be filed prior to invention disclosure. After a first application is filed, many countries allow a 1 year period during which subsequent applications can be filed.	Term begins on date of registration & ends 20 years after the filing date, subject to payment of maintenance fees. Registration can be challenged by third parties on the basis that the registration requirements were not met.
<b>Trade Secret</b> Common Law	Information that is not generally known to the public.	Information must actually be secret vis-à-vis third parties and the general public.	Right to remedies for breach of confidence. Prevent or delay third parties from using information until they discover it themselves.	None.	Trade secret protection lasts until the secret is publicly disclosed.
<b>Integrated Circuit (IC) Topographies</b> Integrated Circuit Topographies Act	There are 2 definitions of a topography: 1. Design for interconnections, if any, & the elements for making an IC. 2. Elements, if any, & interconnections for making a customized layer to be added to an IC in an intermediate form. For the purposes of this Act, an IC is defined as either an intermediate or final electronic product that (i) has at least one active element and (ii) in the elements and at least some of the interconnections are integrally formed on or in a piece of material.	Topography must be original. The topography may not be copied from another topography or part of another topography. The topography must be the result of an intellectual effort and may not be commonplace among creators of topographies or manufacturers of integrated circuits. A topography that is a combination of commonplace elements or interconnections may be considered original if the combination meets the requirement set out above.	Exclusive right to: 1. Reproduce the topography or any substantial part of it. 2. Make an IC containing the topography or any substantial part of it. 3. Import or commercially exploit the topography or a substantial part of it, or an IC that incorporates the topography or a substantial part of it. A third party that independently creates the topography can freely use their topography without infringing these rights. The Act specifically excludes any idea, concept, process, system, technique or information embodied in a topography from this protection.	Must file an application for registration within two years of first commercial exploitation of the topography. There is no substantive examination of the application, although the Registrar may refuse if it appears that one of the registration requirements are not met.	Term begins on the date of filing the application for registration and ends at end of the 10th calendar year following the earlier of (i) the year in which the topography was first commercially exploited or (ii) the year in which the application was filed.
<b>Industrial Design</b> Industrial Designs Act	Design: A feature of shape, configuration, pattern or ornament that, in a finished article, appeals to and judged solely by the eye.	Design must be novel in comparison to publicly known designs as of the filing date of the application. Solely functional aspects of a design are not protected.	Can stop others from using the design or similar designs.	Registration is mandatory. In Canada & US, application must be filed within 1 year of public disclosure of the design. In other countries, the filing requirements vary, but in general, application must be filed prior to public disclosure of the design. After a first application is filed, many countries allow a 6 month period during which subsequent applications can be filed.	Canada: Ten years from date of registration, subject to payment of a maintenance fee after five years. U.S.: Fourteen years
<b>Trade Mark (Registered)</b> Trade-marks Act	Trade Mark: A word, phrase, slogan, symbol or other indicia that is used to identify the source of goods and/or services.	Registered trade mark must be capable of distinguishing the wares or services of the owner.	Exclusive right to use trade mark anywhere in Canada in association with wares and services for which it is registered. Right to stop others from using confusingly similar marks with similar wares and services.	May file at any time.	Fifteen years - renewable indefinitely. Registration can be challenged by third parties on the basis that the mark is not in use or is not distinctive of the owner.
<b>Trade Mark (Common Law)</b> Common Law codified at a basic level in s. 7 of the Trade-marks Act	Trade Mark: a word, phrase, slogan, symbol or other indicia that is used to identify the source of goods and/or services.	Ownership arises through use and creation of goodwill in the common law trade mark.	Exclusive right to use trade mark in area where it has become distinctive, in association with wares/services with which it is distinctive.	None.	Until the mark is no longer in use or there is no goodwill in the mark.
<b>Copyright</b> Copyright Act	Literary, dramatic, artistic, musical or other work that is expressed in reproducible form. Copyright can be used to protect many different forms of expression. For example, a compilation of existing works is copyrightable to the extent that the compilation itself is original. The compilation could be a set of literary works, a web page, etc.	Work (or the part or aspect of it that is to be protected) must be created by the author. Author is generally the first owner of copyright, except where the work is created in the course of employment.	Owner can stop others from reproducing or publicly exhibiting work or a substantial portion of it as well as many other rights depending on nature of work. Only the expression is protected - not the ideas expressed - copyright is effectively protection against plagiarism. Moral rights allow author to protect his/her reputation.	Registration is optional. Registration raises statutory presumption that the information registered (e.g. authorship) is true. In the U.S. registration is necessary to claim statutory damages.	Generally, copyright arises automatically on creation of a work and expires at the end of the 50th year after death of the author. The term may be different depending on the nature of the work and the owner of the copyright. Outside of Canada the term differs from country to country.

portfolio, developing and implementing strategies for profiting from an IP portfolio, monitoring the intellectual assets of competitors, and integrating the intellectual asset management function with other activities within the company.

Different companies require each of these management activities at different levels. A startup will typically obtain patent protection for the core ideas underlying its anticipated products. In general, however, a startup is not in a position to undertake a visionary intellectual asset program. Even a mature company may not need to be at the visionary level, depending on how quickly the relevant technology changes and the company's role in that technological space.

### 5.0 Summary and Future Articles

In this article, we have very briefly introduced the need for intellectual property protection, identified some characteristics of different IP rights, introduced the concept of intellectual assets and highlighted a few aspects of intellectual asset management.

In our next article, we will review the various IP rights in greater detail, with a focus on patents, trade secrets and other mechanisms for protecting technological innovation. In a third article, we will discuss intellectual asset management in greater detail. We will also discuss strategies for developing a commercially valuable, but still cost-effective IP portfolio, with a focus on the role of an intellectual asset manager in different organizations to implement these strategies and the roles of outside advisors such as patent attorneys.

This article is intended to provide general information regarding intellectual property and is not intended as legal advice.

Readers wishing to propose topics for further articles to this series may directly contact the authors.

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