

Patent Value: A Business Perspective for Technology Startups

Angela de Wilton

“Opportunities multiply as they are seized.”

Attributed to Sun Tzu (6 BC)
The Art of War

In the last year, news headlines have highlighted record patent infringement settlements, multibillion dollar auctions of large corporate patent portfolios, and ongoing patent battles between key technology industry players. Despite this acknowledgment of the significant value of patents for large corporations, many small technology companies are understandably more focused on the near-term costs of obtaining a patent rather than future value. Costs may seem prohibitive to an early stage technology startup. Some software startups question whether patents are relevant to their business.

In practice, effective intellectual property (IP) strategy and management is dependent on many factors, such as technology or industry sector, size and maturity of the business, technology lifecycle, and the business and market environment. IP strategy must be aligned to business strategy from the outset. By considering IP in the broader context of the overall business plan and the competitive environment, opportunities for generating increased return on R&D investment and added business value through patents or other forms of IP can be recognized early on. This approach ensures that a decision about whether or not to patent is driven by business reasons rather than budget constraints.

This article examines the costs and benefits of patents from the perspective of early-stage technology startups and growing businesses, and it provides some general guidance on best practices for developing an IP and patent activity plan and for building a patent portfolio that appropriately supports business objectives.

Introduction

Intangible assets such as intellectual capital and intellectual property (IP) account for a significant part of the value of technology companies (Flignor and Orozco, 2006: <http://tinyurl.com/7dxd3wc>; KPMG, 2009: <http://tinyurl.com/7nc4fwj>; Ocean Tomo, 2011: <http://tinyurl.com/449uhdu>). Intangible assets include forms of intellectual property with statutory protection (e.g., trademarks, patents, designs and copyrights, trade secrets) and other forms of knowledge that have business value (e.g., proprietary information and know-how). Intangible assets also include what may be referred to as reputation (e.g., goodwill, and brand value.)

Charting an appropriate IP strategy and IP management plan, and understanding how a patent portfolio, in particular, can be valuable, depends on: i) under-

standing how IP fits within the company's business strategy and ii) understanding how IP is used in the market environment, for example by competitors, customers, partners, and suppliers. It requires bringing together relevant technology, business and law perspectives with an understanding of the competitive landscape and market environment (Figure 1).

IP is central to a technology startup, but is only one factor in ensuring business success in a competitive market environment. In practice, defining an effective IP strategy and management plan is dependent on many factors, such as the technology or industry sector, size and maturity of the business, technology lifecycle, and the business and market environment.

Firstly, considering the technology sector and the nature of a company's product or service, recent sur-

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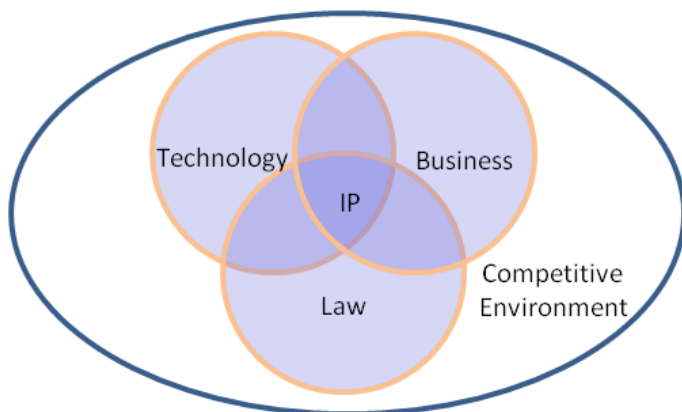


Figure 1. Factors that determine business success

veys have confirmed a marked difference in IP focus between, for example, biotech or medical device startups and software startups (Graham et al., 2009: <http://tinyurl.com/c2mtby3>; Greenberg, 2010; <http://tinyurl.com/c8cpmwy>). Biotech startups tend to consider patents as most important, whereas software startups tend to rely more on trade secrets, other forms of confidential information, and copyright. Both studies show that VC-funded startups, even in the software area, tend to file more patent applications than startups relying on other sources of funding. Clues to what form of IP is important to a particular technology sector may be found by observing what other companies are doing in the same technology sector.

Aspects of Patent Value

Initially, patenting costs may be a significant expense relative to costs of R&D and product commercialization. However, these costs must be evaluated relative to the potential commercial value of products or services embodying the invention, such as potential product revenues that a future patent may protect or incremental value that may be created by owning a patent or group of patents. One important near-term consideration, for many startups in particular, is the ability to attract investment.

Table 1 summarizes four aspects of patent value: defensive value, offensive value, strategic/business value and technology leadership. These are not mutually exclusive. Each can contribute to maintaining a competitive advantage, or more generally, “freedom to operate”.

Offensive vs. defensive value

It may take several years from filing of a patent application until a patent is issued and becomes enforceable, meaning that it provides the patent owner with the right to exclude others from making, using, selling, or importing the claimed invention. Since most major patent offices have a significant backlog of applications, it is unlikely that an early stage-company will already have issued patents to enforce.

Exercising the right to exclude others entirely from the market may seem like the ultimate power of patents. In practice, in today’s networked business environment, particularly in technology areas where any particular product may depend on technology acquired from many sources, more creative solutions may be required. Certainly, there may be an opportunity to license out patents and technology to third parties in exchange for a lump sum, periodic payments, or ongoing royalties. Licensing out may be desirable if a company chooses not to, or cannot, supply the entire market, or if it lacks market channels in particular countries. Considering that business relationships can be part of quite complex networks, a competitor in one respect may be a customer, supplier, potential partner for marketing, for example, in other respects. Therefore, before contemplating offensive tactics such as suing a potential infringer or barring importation, it is important to consider what type of ongoing business relationship may be needed and consider whether patents can assist in opening doors to a different and valuable type of arrangement, such as cross-licensing technology or partnering in some aspect of business development.

In fact, the defensive value of a strong patent portfolio may allow the ultimate “freedom to operate”, for example by deterring potential competitors from either copying or imitating a product or forestalling third parties from asserting their own patents because of perceived competitive advantage (i.e., perceived quality and strength of the portfolio), thereby reducing the opponent’s chance of success. To paraphrase further words of wisdom from Sun Tzu: “the ultimate victory is not to win 100 battles, but to succeed in not fighting at all” (<http://tinyurl.com/7gtllvj>).

Technology leadership and strategic business value

If partnering is needed to access third-party technology, a patent portfolio may assist in demonstrating credibility, technology leadership, and ownership, and

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Table 1. Aspects of patent value: patents as corporate assets and commercial tools

Aspect	Value
Offensive	<ul style="list-style-type: none"> • generate patent license revenues • increase market reach • support technology licensing • establish monopoly • litigation and enforcement • protect market share
Defensive	<ul style="list-style-type: none"> • deter others from copying • discourage potential infringers • improve balance of patent power • forestall third-party lawsuits
Strategic	<ul style="list-style-type: none"> • acquire venture capital • improve chances of securing other investment • improve negotiating position • licensing/cross-licensing of third-party technology • license for other business value • improve quality of liquidity • assist in initial public offering or other exit event, such as merger or acquisition
Leadership	<ul style="list-style-type: none"> • enhance product/quality image • underscore innovation culture • demonstrate technology leadership • establish technology ownership

it thus provides strategic value, such as a stronger negotiation position or more favourable terms for contracts, licensing-in, cross-licensing, and collaborative activities.

In the near term, one of the most important aspects of strategic value for technology startups is gaining access to funding. The above-mentioned surveys confirm that companies that are funded with venture capital are more likely to have larger patent portfolios and place more importance on patenting. Whether this is a cause or effect is not clear. However, these studies also indicate that a patent portfolio is influential in securing financial support from other sources, including commercial banks, angel investors, and even “family and friends”.

The value (i.e., scope and quality) of a patent portfolio is also likely to be under considerably scrutiny in an exit

event involving a merger or acquisition. For example, the acquirer may be looking to fill a technology gap, accelerate a competitive entry to a new market segment, enter a new growth market, or broaden its portfolio offering (Carbone, 2011; <http://timreview.ca/article/490>). In a worst-case scenario, where a business ceases operation, patents may potentially be auctioned for residual value. More optimistically, a favourable patent position may have positive influence for an initial public offering.

Third-party patents

Patent searching can supplement a search of the scientific and technical literature for useful technology. Expired patents can be a source of technical information that is already freely available in the public domain.

While third-party rights must be respected, active patents may provide insight into alternative solutions or problems to be addressed. Patents with narrow claims

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may provide opportunities for solutions that work around or improve on existing patent claims. In some cases, “leapfrogging” or taking advantage of earlier developments, or licensing-in patented technology that has not yet been successfully developed or commercialized by others, may be more cost effective than starting from scratch or developing a work-around.

Joint development and open innovation

In industries where open innovation and open source software prevail, a culture of sharing may lead to a philosophical decision not to pursue patent protection or a misperception that, for example software-implemented inventions are not patentable. Companies that do pursue patenting of software-implemented inventions may fall into the trap of inadvertently licensing their proprietary software by building on an open source software platform, without appropriate partitioning of patentable or proprietary technology. Joint R&D programs or open-innovation partnerships require careful management of IP to mitigate complex issues of joint ownership in exploiting jointly owned IP and to provide for a division of assets if the partnership does not work out (Cronin and Shore, 2008; <http://tinyurl.com/c3ka83o>).

Other factors to consider are the size and maturity of the business and the technology lifecycle. Where technology results from substantial R&D investment over an extended time period and there is potential for significant product revenue, particularly if the product can readily be copied or imitated, investing a few percent of R&D costs in patenting can potentially provide opportunities for establishing a monopoly position, licensing others to increase market reach, or otherwise generating business value.

Examples of Patent Value

Records were set this year for patent auctions of the Nortel portfolio to the Rockstar Consortium: US \$4.5B for 6000 patents and applications, or an average of \$750K per patent/application (Frizzell, 2011; <http://tinyurl.com/6mfokpx>). This auction was followed soon after by the purchase by Google of the Motorola Mobility business for \$12.5B with 17,000 patents. If, as reported, half that value was associated with the patents, it equates to an average of about \$400K per patent/application (Lohr, 2011; <http://tinyurl.com/3ebmltp>). These values are said to be multiples of average auction prices for patents in recent years. Some now consider patents as a distinct financial asset class (Wilhelm and Finnegan, 2005; <http://tinyurl.com/7ngtt8w>).

Of course, these large patent portfolios result from multibillion dollar R&D investments by each of these companies over the many years that it has taken to build these portfolios. Moreover, it is well established that issued patents that are a) directed to established technology (i.e., tried and tested in existing products), b) proven through litigation or licensing, or c) have been demonstrated to be standards essential or standards relevant, will command significantly higher value than pending applications or patents directed to speculative or emerging technologies or products that have not yet been commercialized.

A small company patent success story

For startups working on software solutions, a recent decision of the United States Supreme Court will be of interest. A relatively small Canadian company, Infrastructures for Information Inc. (i4i), prevailed in a patent infringement suit against Microsoft Corporation. The i4i patent application entitled, “Method and system for manipulating the architecture and the content of a document separately from each other”, which relates to structured XML, was filed in 1994 and the US patent issued in 1998. When Microsoft implemented this feature in its Word software, i4i sued for infringement. Microsoft challenged the validity of the patent. In the end, after a four-year battle, the validity of the i4i patent was upheld, and damages of \$300M were awarded in 2011. For further details, see Hartley (2011; <http://tinyurl.com/c3srpd4>).

A lost opportunity

In a blog post entitled “Avoiding patent pitfalls: our billion-dollar lesson” (<http://tinyurl.com/d4f5k3k>), Steve Lamb, the current CEO of Nevex Inc., relates how in a previous venture, Border Network Technologies Inc. (another Canadian company) developed a feature called Network Address Translation (NAT). At the time, this feature was seen as a necessity rather than an industry changing idea and patenting was low on the priority list. It was only with hindsight that it was realized this technology has since been widely adopted in almost every router, and investing in patenting could potentially have been a very worthwhile decision.

Patenting Costs

Based on my experience, patenting costs amount to US \$25K to \$35K per patent, per country, over the 20-year life of a patent. In practice, costs vary considerably by country or region, and are dependent on numerous factors, including the complexity of the technology. Recent surveys indicate costs may be in the region of \$30K or more per

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country (Graham et al., 2010: <http://tinyurl.com/d4vsbfa>; Jaiya and Kalanje, 2006; <http://tinyurl.com/73utj9f>).

Initial costs for preparing a patent application may be quoted from a few thousand dollars for a very simple “widget” to significantly more than \$20K for a complex system with multiple embodiments (instantiations) or multiple “aspects”. Aspects of an invention relating to a communications system may include, for example, a network architecture; a system; devices, apparatus, or system elements; methods or software products, and perhaps elements of a user interface.

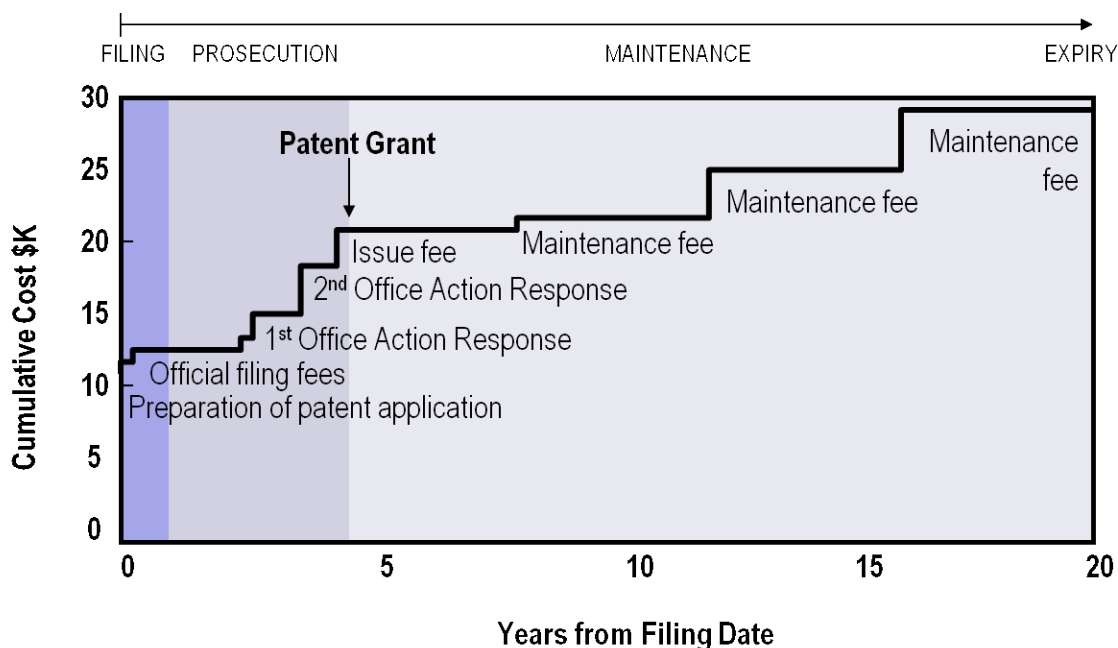
Patenting is a substantial multi-year investment and must be planned and budgeted accordingly. As an example, Figure 2 illustrates a timeline for typical costs of obtaining a US patent. Initial costs include, in large part, the professional costs of a patent agent or attorney for preparing (drafting) the initial application. This example assumes a drafting cost of \$10K. There are also official patent office fees for filing the application and associated documentation, for example recording a patent assignment. After filing, there are further professional time costs and official fees relating to examination, prosecution (i.e., providing arguments or amending the application to overcome objections) and, if successful, for issue of a patent. Subsequent annuities, or maintenance fees, are required to keep the patent in force, for a term of up to 20 years from filing.

Costs can be substantially higher if there is an excess number of claims or if complex issues arise (e.g., close prior art necessitating substantial amendments or arguments, an appeal process, or opposition proceedings). Translation costs may be a significant factor for foreign applications. Annuities in some countries increase substantially each year as the patent matures.

Maintenance of a patent for the full term of 20 years is not unusual for biotechnology and pharmaceutical inventions. In other high-tech sectors, where technology lifecycles are shorter, if the invention becomes obsolete or is superseded, a patent may be allowed to expire earlier.

Patents are territorial rights. A patent application must be filed in each region or country where protection is required. While discussion of a foreign filing plan is beyond the scope of this article, most startup companies with limited funding must focus resources on a limited number of countries, for example five key countries where they focus on their core technology or “crown jewels”. Instead of filing multiple patent applications in different countries or regions at the outset, a US provisional patent application, or a PCT international patent application may be used to keep options open and defer some of the initial costs, for a limited time.

Figure 2. Cost timeline for obtaining and maintaining a sample U.S. Patent over its 20-year lifetime



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Establishing an IP/Patent Plan

Focusing on prototyping and commercialization of a product is critical to business success. However, patenting takes time and effort. It will not be completed on time unless it is budgeted and scheduled as a deliverable in R&D activities. Ideally, a member of the management team should be designated to coordinate IP activities and act as a primary interface with external resources (e.g., to facilitate meetings or communications between a patent agent and inventors).

A patent plan will help to focus resources on features of core technology that differentiate the company's offering from the competition and provide market advantage. Patenting ideas that are peripheral to, or outside, the plan is likely to stretch resources too thinly. Inventive solutions with commercial value typically arise from focusing on a problem to be solved or market need to be addressed, rather than purely academic research. Key patents should relate to distinctive and valuable improvements or features that represent significant competitive advantage.

Quality, Timing, and Content

A well-written patent application with a carefully constructed set of claims and adequate description will stand up to scrutiny, but takes time and effort to prepare, and it costs more. A patent based on a low-cost, or imprecisely drafted, application may not withstand the test of time. Generally, narrow claims that are easily worked around, because there are many alternative solutions, or claims that are insufficiently supported by the description, may have limited value. On the other hand, an incremental improvement and narrower claims to a specific invention may nevertheless have high value in some instances, for example, if the improvement has significant commercial value, solves a longstanding problem, relates to a standards-essential feature, or has wide user appeal relative to other known solutions.

Thus, a valuable patent application requires a careful analysis of the inventive features, problems to be solved or needs to be addressed, how the invention provides advantages, who will make or use the invention, and its potential value to the company and to competitors. Preferably, a tree of claims is constructed, ranging from a high-level, broad claim for key elements of the invention, to more specific narrower claims covering various features of alternative implementations or embodi-

ments that provide advantages over prior solutions, providing a fallback position in case an unexpected prior art reference knocks out one of the broader claims. By considering potential alternatives to the preferred embodiments, claims can be drafted to make it more difficult for a competitor to work around and avoid the claimed invention.

An experienced patent agent will assist in finding a balance between timing and content, in other words, establishing an early priority date in a first-to-file patenting system versus disclosing sufficient information to allow the issued patent to withstand future challenges to validity.

Manage Confidential Information to Avoid Unintentional Loss of IP Rights

One of the most important ways to protect IP, for little or no cost, is to avoid inadvertent or unplanned public disclosure. Release into the public domain, whether by publication, presentation, posting on a website, blogging, discussion with potential customers or suppliers, for example, before a patent application has been filed, can result in a statutory bar (i.e., a total loss of the right to obtain a patent).

A limited grace period for prior disclosure is available in only a few countries (notably Canada and U.S.). However, once potential competitors learn about new technology, they can potentially leapfrog with their own legitimate improvements on the original invention. Non-disclosure agreements (NDAs) may be used to maintain confidentiality and protect rights if disclosure to third parties is necessary for good business reasons.

Care must also be taken in communications under an NDA with respect to *receiving* confidential information from the other party. Any use of such information must respect existing agreements or IP rights.

Ownership Matters

Last, but not least, patent rights can be asserted only by the rightful owner(s) of the patent. It is critical to ensure that assignments of rights to inventions and subsequent patent applications are properly executed. For example, inventors may initially apply for patents and transfer ownership through an assignment to the company. Investors in a startup company will almost certainly require that the company has clear ownership of

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any patent applications or patents in the portfolio. Just as a real estate lawyer will conduct a title search for purchase of a home or other real property, a prospective investor or licensee will conduct a search and analysis, known as “due diligence”, to check that there is a proper chain of title from the inventors to the current owners through one or more assignment documents. These assignments must be consistent with agreements, such as employee/employer agreements, contractor agreements, and joint R&D agreements.

When a new company is founded by a group of inventors, formal employee or contractor agreements with assignment of IP rights may not exist. Sometimes these issues are overlooked or agreements to assign IP to the company may not be formalized in writing until later. Oral agreements may be difficult to enforce if there is a parting of ways, a founder-inventor leaves, or memories fade in less favourable circumstances. Joint ownership can also significantly dilute potential value. Any of these scenarios can lead to ownership issues that are difficult to correct retroactively and/or can significantly jeopardize rights to exploit the invention or enforce patents (Ball, 2008; <http://tinyurl.com/7ez9bf6>).

It is not uncommon for inventors from different countries or organizations to collaborate. However, there may be significant differences in the laws of other countries relating to employer/employee rights in inventions and rights of joint owners of inventions. These differences must be taken into account when applying for a patent, in assignment of ownership, and eventually, in enforcing rights.

Writing clear agreements on IP ownership and promptly executing assignments for each patent application are important first steps in protecting and enforcing patent rights.

Conclusion

For most technology startups, with a few exceptions, patents represent a key corporate asset and commercial tool. By considering patents and IP strategy at the outset, in the context of the overall business plan, the focus for decision making shifts from cost constraints to value opportunities. A patent activity plan helps to provide focus for protecting core technology, effective management of long-term patenting costs, protection of confidential information, and matters of ownership and assignments. A well-timed plan enables value or revenue generating opportunities to be recognized at the appropriate moment.

Recommended Reading

World Intellectual Property Organization (WIPO)

www.wipo.org

- e.g. Resources for SMEs: <http://tinyurl.com/ozuobd>

Canadian Intellectual Property Organization (CIPO)

www.cipo.gc.ca

- e.g. A guide to patents: <http://tinyurl.com/dk9cpf>

United States Patent and Trademark Office (USPTO)

www.uspto.gov

- e.g. Patent process: <http://tinyurl.com/34ealwm>

Licensing Executives Society (USA and Canada)

www.lesusacanada.org

- e.g. The Basics of Licensing: <http://tinyurl.com/6nmbg7r>

About the Author

Angela de Wilton holds a B.Sc. Honours (Chemical Physics) from the University of Bristol, England, and a Ph.D. from Carleton University in Ottawa, Canada. She is registered as a Patent Agent by the United States Patent and Trademark Office and the Canadian Intellectual Property Office, is a Fellow of the Intellectual Property Institute of Canada, and is a member of the American Intellectual Property Law Association and the Licensing Executives Society. Angela is a founder of de Wilton IP Inc., which assists small to medium-sized technology companies in developing an IP strategy and building and managing a cost-effective patent portfolio. Angela draws on past experience in the Nortel IP Law department developing IP Strategy, and as Director of Intellectual Property, where she was responsible for a global patent program and supported patent licensing and litigation programs. Angela has also been involved in patent agent training, management development programs and has prior postdoctoral industrial R&D experience.

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