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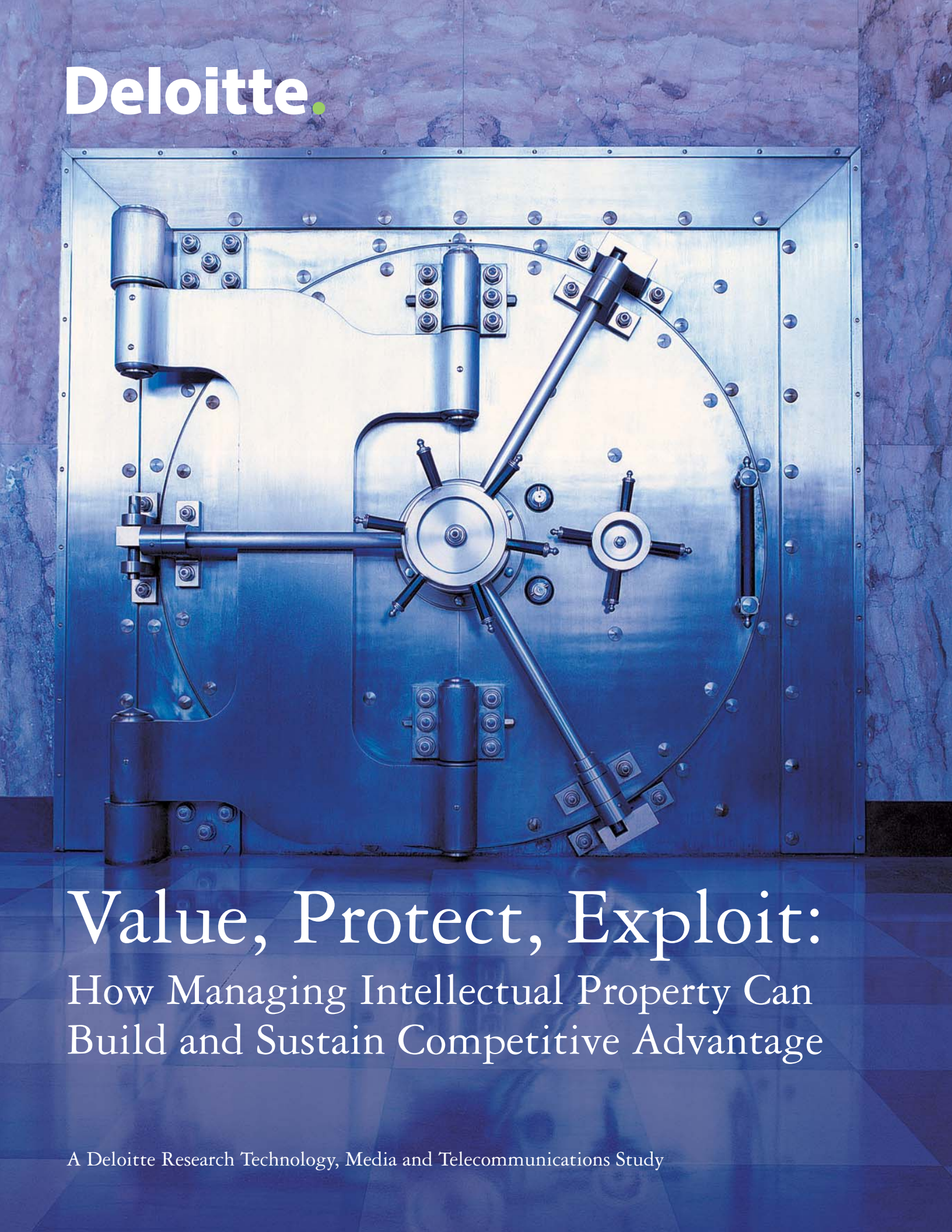

Value, Protect, Exploit:

How Managing Intellectual Property Can Build and Sustain Competitive Advantage

A Deloitte Research Technology, Media and Telecommunications Study

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Executive Summary

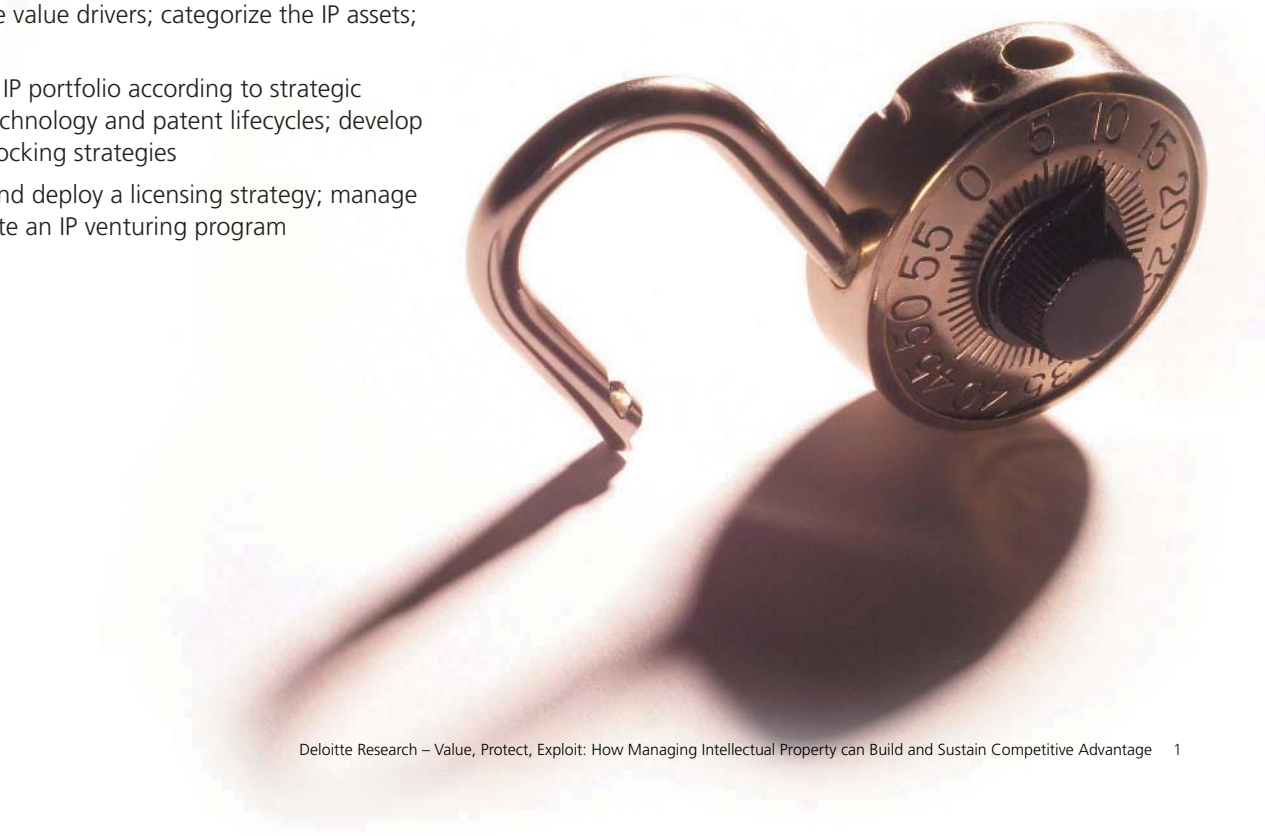
The pitfalls of poorly executed intellectual property (IP) strategies have been widely publicized in the business press. Across the technology sector in particular, multiple instances of copyright infringements and patent violations have resulted in huge penalty costs and tarnished reputations. However, navigating the patent minefield and profiting from astute exploitation of an IP portfolio need not be so perilous. Indeed, in an industry where the gales of creative destruction regularly wreak havoc on product life cycles, the opportunity to capture value from protected technologies has never been stronger.

Consider this, the number of technology patents registered in the U.S. is on the rise, yet companies are leaving millions of dollars worth of unrealized value on shelves stacked high with "orphan technologies". How then can a technology firm defend, mobilize, and profit from this neglected IP? Moreover, how can it continue to safeguard and capitalize on intangibles that already fuel their growth engine? These issues form the basis of this research on managing intellectual property across the technology sector. Case studies of blue chip corporations illustrate a number of successful IP strategies and methodologies. From these findings, a new capabilities-driven approach to intellectual asset management is derived. The cornerstone of this approach is the Value-Protect-Exploit (VPE) framework that illustrates three core IP capabilities and the requisite competences integral to successful deployment:

- **Value:** Determine the value drivers; categorize the IP assets; value each asset
- **Protect:** Position the IP portfolio according to strategic objectives; analyze technology and patent lifecycles; develop and deploy patent blocking strategies
- **Exploit:** Formulate and deploy a licensing strategy; manage the IP regime; instigate an IP venturing program

Applications of the VPE approach are then demonstrated at both the strategic and operational levels of the technology firm. The need for clear, coherent strategic IP goals is seen as pivotal to success, supported by an organizational structure that will facilitate the implementation of the IP strategy. Once this structure is in place, patent portfolios can then be assessed in the context of evolving technology cycles and prevailing market conditions. With the latter, the research indicates that analysis of the technology firm's IP environment (or "regime") can further determine the boundaries of IP protection and exploitation available to technology firms and their often geographically dispersed operations.

The report concludes with a detailed discussion of the VPE capabilities. IP valuation methods and techniques are outlined that allow accurate valuation and categorization of intangibles to occur. This is shown to be a critical step in structuring an IP portfolio before developing appropriate strategies for protecting and exploiting the intellectual assets. Defensive and offensive schemas are then summarized that illustrate recent IP trends and tactics in the areas of licensing, mergers and acquisitions and tax strategies, all of which are aimed at maximizing the value captured from technology-based innovation.



A Costly Game of Cat and Mouse

It's all but impossible to leaf through the business section of the newspaper without phrases such as 'copyright infringement' or 'patent violation' making an appearance. Apple versus EMI. Verizon versus Vonage. RIM versus NPT. The headlines can depict a series of legal spider webs being wrapped around some of the world's most innovative companies. Worse, the financial damages of some of the technology sector's biggest firms are splashed across the opinion columns and airwaves of the world's news media. Reputations tarnish, innovation stalls, and market share slips. Played fast and loose, the cat and mouse game of intellectual property (IP) can indeed be costly.

But must technology development be so haphazard? Is the cost of patent infringement so catastrophic? Yes, the commercial risks of a poorly managed IP portfolio are rising and there for all to see in a transparent and dynamic global technology market. But the opportunities to exploit IP, capitalize on innovation and build revenue growth in the process are also there for the taking by IP-savvy firms.

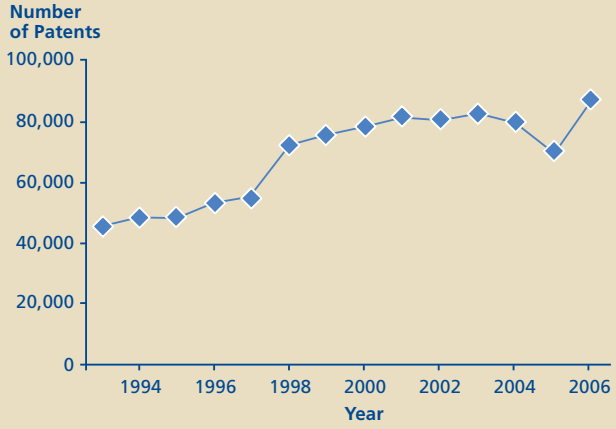
Consider the poster child of IP management, IBM. In 1990 - in an era when it was rare to use IP as a driver for profitability and growth - IBM reported a then-healthy $30 million revenue stream from technology-based patent-licensing royalties. Fast-forward to the present and both the story and the revenue numbers change dramatically. IBM is now far more active in its IP strategy. The company continues to invest approximately $6 billion in Research and Development per annum. Patent royalties amount to over $1.5 billion per annum – a staggering 3000 percent increase over 1990. To build a comparable revenue stream in today's market, the equivalent of over $20 billion worth of additional products would have to be sold annually.[1]

However, IBM's success must be viewed as somewhat atypical for a sector in which a large number of firms own technology assets that will never be exploited for commercial gain. The consequence of leaving these "orphan technologies"[2] on the shelf has been conservatively estimated at billions of dollars worth of losses and counting.[3]

Why, then, does IP management continue to be such a missed opportunity for revenue exploitation? Much of the reason may lie in the somewhat laissez-faire attitudes of large corporations who still view IP as a legal rather than strategic issue to be dealt with accordingly by the firm's lawyers and not its business leaders. This is a costly mistake. And although firms such as HP, Nokia, Qualcomm, Samsung and Hitachi have followed IBM's lead, many have let slip the chance to mobilize their intellectual assets and with it the opportunity to increase profits and sustain competitive advantage. This may seem somewhat paradoxical considering the rise in numbers of patents registered in the United States over the last decade or so.

What these numbers do indicate, however, is that tremendous opportunity awaits those firms who can implement a robust IP strategy that will **value** and utilize patents in order to **protect** and **exploit** their innovations.

Figure 1. Patent Grants to U.S. Corporations



Source: U.S. Patent and Trade Office 2007

The Key to IP: Value, Protect and Exploit

With the management of intellectual property emerging as a major strategic concern for innovative technology firms of all sizes and heritage, IP issues ought no longer to be treated as an isolated legal function. To date, the main focus of an IP strategy has been the protection and exploitation of the firm's technology patents. But, viewed in terms of a business asset of significant commercial value rather than merely a legal mechanism, patents can become a key to developing and sustaining a competitive advantage.

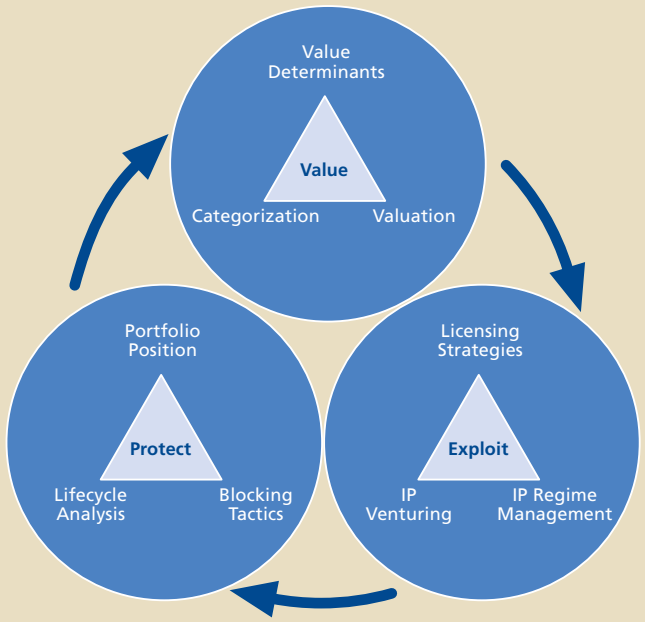
To achieve this goal, the concept of **Value, Protect, Exploit** (VPE) can be a helpful blueprint to identify IP capabilities that should be developed and deployed in order to support a firm's broader innovation goals. The figure below highlights the VPE framework and, in broad terms, describes these capabilities. Within the framework, each core IP capability houses a number of key competences that must be mastered and operationalized to achieve successful deployment of the IP capability. The core IP capabilities and their requisite competences are as follows:

Value: *Determine* the value drivers; *categorize* the assets; *value* each asset

Protect: *Position* the IP portfolio according to strategic objectives; analyze technology and patent *lifecycles*; develop and deploy patent *blocking* strategies

Exploit: Formulate and deploy a *licensing strategy*; manage the *IP regime*; instigate an *IP venturing program*

Figure 2. Value, Protect, Exploit Framework



Source: Deloitte Development

Together, these capabilities provide firm leaders with a "dashboard" view of where key IP resources need to be assembled. The question then becomes *how* are these capabilities developed and managed on a day-to-day basis? To answer this, it is perhaps best to break down the process of IP management into three main areas:

- Developing an IP strategy
- Valuation and categorization of IP assets
- Methods for protecting and exploiting assets

Analysis of each of these areas – supported by some illuminating lessons learned from those who have succeeded (and failed) in the past - can provide a good understanding of how the VPE capabilities can then be successfully deployed. But to begin with, it is perhaps useful to take a step back and understand what is meant by "intellectual property" and explore the foundations of the VPE approach.

The Building Blocks of VPE

Intellectual assets are commonly defined as legally protected intellectual property, of which patents are the most widely known. Patents are legal mechanisms which give the holder exclusive rights on tightly defined functional parameters generally associated with products or services. Other forms of legally protected intellectual assets include copyrights, trademarks and trade secrets as well as other intangibles such as general "know-how" associated with the manufacture and delivery of a firm's goods and services.[4] Know-how typically resides within the firm's boundaries held by those individuals with specialist knowledge. Protecting this form of intangible asset can be problematic and often poses significant challenges for firms operating in turbulent environments where knowledge *attrition* is always a pressing concern.[5] Only when this knowledge is codified in some way can it then be legally protected. An effective IP strategy can then be developed - one that can capture value beyond that created by using the technology in products and services. This can lead to an enhanced and sustained competitive advantage.

Broadly speaking, there are two main approaches to achieving this – protection of IP assets and exploitation of IP assets. With the former, most firms focus on creating a temporary technological lead. This is then supplemented by protecting core technologies that enable them to create a market advantage over competitors that will not be deemed anticompetitive. The well known case of the Xerox Corporation and their systematic protection and exploitation of their seminal xerography patents portfolio is a good example of this approach.[6]

As an interesting aside to this strategy, a sometimes powerful complement is the use of patents to create technological industry standards that then allow firms to dominate in areas usually deemed too complex for single enterprises alone to lead. Motorola was particularly successful in utilizing this strategy allowing them to take a lead in the early days of GSM technology in mobile telecommunications. The firm made sure they had specific areas of GSM technology patented that would become core to the fledgling GSM standard. This, combined with some strategic medium-long term investments in the technology, allowed them to quickly gain a competitive advantage.[7] Similarly, Cisco Systems has recently entered into a number of high-profile cross-licensing deals with universal standards bodies in order to establish and grow markets for its networking equipment[8].

The First Steps: Organize Internally

When dealing with IP exploitation, the main task at hand is generally value-extraction, which relies on astute stewardship of patent portfolios. This is quite often aligned to the protection strategy surrounding the portfolio. It is worth noting that the cost to obtain and maintain a patent is currently estimated at between $50,000-$100,000 and that patents usually expire after 20 years[9]. Hence, as technologies develop and change accordingly, a value-extraction strategy needs to be in full alignment with the boundaries of the technology portfolio with regard to patent expiration dates and technology evolution cycles.

Philips Electronics offer a good example of this type of stewardship with 300 dedicated IP staff spread around the globe to extract value from its 100,000 or so technology patents. Japanese firms such as Toshiba and Hitachi have traditionally also formed groups dedicated to managing IP at both the corporate and business unit levels. Toshiba's IP group handles all the activities surrounding the filing for and enforcing of IP rights and also hosts an information center dedicated to supporting IP management.[10]

This development of internal organizational structures to support the implementation of IP strategies is also becoming more widespread in the United States. Indeed over the last few years a large majority of Fortune 1000 firms have followed the lead of Philips and Toshiba or are in the process of doing so. Hewlett Packard is one such example with its IP licensing group, which oversees a separate holding company set up by HP to hold all of the company's patent portfolios, trade marks, copyrights and trade secrets. This group will be responsible for increasing the capacity of the firm's licensing revenues.[11]

A good percentage of these internal groups have implemented value extraction programs that incorporate a rudimentary carrot-and-stick approach. That is to say, revenue can be generated from licensing IP to willing entities, or from claiming infringement royalties from those aware (or unaware) of IP infringement. These and other methods used to create and capture value above and beyond initial estimates, will be discussed in due course.

Navigate the IP "Regime"

Determining how to organize and value IP assets strategically should always precede plans and methods for extracting the asset value. As a precursor to establishing such strategies, precise assessment of the competitive landscape is necessary to understand existing competitor IP strategies. This should include analysis of the prevailing IP environment, also known as the "IP regime", present in the firm's market.

At the center of the tech sector *sturm und drang* where creative destruction is played out on a daily basis, the IP environment can be a powerful innovation kingmaker. Indeed, developing a patented technology is one thing, but capturing its full value is an entirely different matter. The capabilities for doing so have already been discussed, but one additional factor should also be highlighted: the level of control and protection that constitutes the IP environment or regime surrounding the introduction of new products.

This is often referred to as the "appropriability" regime, which can either be weak – in which it is easy to imitate IP from a technical and legal standpoint – or strong, in which case firms can rely on their legal rights being upheld and use licensing to generate value from their IP. With the former, prevalent today in countries such as China and India, protecting value capture and profiting from innovation relies on access to what University of California Berkeley Professor David Teece calls "complementary specialized assets" (or "co-specialized assets"), which can then be further developed and exploited. These assets can be thought of as key functions along the firm's value chain, such as manufacturing, sales and distribution. By investing, developing and securing access to these assets, a firm can help offset any failure to profit directly from protected technologies in weak appropriability regimes.

This is an important point, made all the more powerful when viewed through the "product strategy lens". In this context, formulating strategy then becomes contingent on the appropriability regime or IP environment. The ramifications of this are serious for those firms who choose to pursue "first-mover" strategies in weak appropriability areas such as China or India. In these markets, imitation is almost instantaneous and sometimes accompanied by a complete disregard of the IP rights[12]. In this instance, firms have to ensure development and access to their co-specialized assets (or capabilities) is tightly controlled and maintained. If not, they risk losing their leading position and will fail to sustain competitive advantage through their original innovative technology. Hence, only when the appropriability regime is strong, can firms truly expect to profit from their innovation directly via the market without having to rely on complementary capabilities or assets to support their "core" capabilities.[13]

Preparing the Road Ahead

Analysis of the IP regime should then be compared with current strategic goals, which in turn dictates the operations structure of the firm's internal IP group. At this point, a preliminary "punch list" of alignment questions can often provide transparency on the links between the strategic goals and the competitive IP environment[14]. These can include:

- How do Intellectual Property Rights (IPRs) affect the structure of the industry we operate in?
- What constitutes the "IP regime" in the marketplace?
- How do IPRs in our industry relate to incumbency advantages and entry barriers?
- Which IPRs support our current business?
- Which IPRs are core to the current business strategy?
- Which competitor IPRs could block potential technology innovation?
- Which internal IPRs can be used to block competitors' innovation efforts?
- Which internal IPRs can be used for licensing agreements?

Once this preparatory assessment has occurred, patent portfolio development and valuation can then take place.

Figure 3. Assessing the Competitive Environment "Punch List"

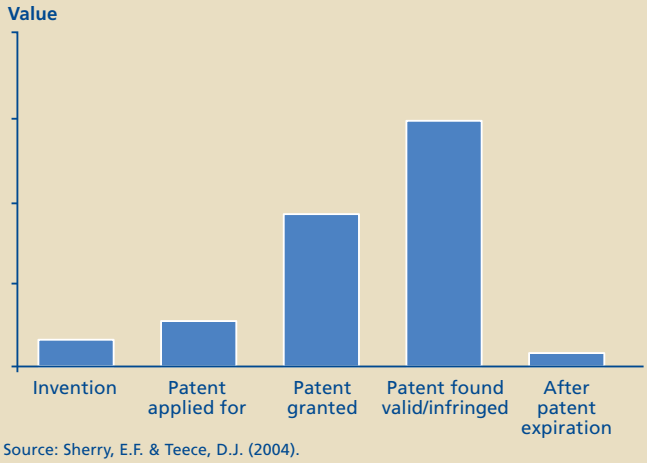
Source: Tao, J. et al. (2005), Pisano G. (2006).

The VPE Approach – Asset Valuation

At the outset, a company's focus should be on the determination of which assets to protect and which to exploit, all done with the benefit of a candid assessment of the financial/commercial potential of the patent portfolio. This allows for greater transparency with regard to future financial performance, which can be communicated to potential investors and to the broader financial community. This can be a powerful adjunct to traditional means of enterprise valuation – a fact not lost on the investment banking community, whose analysts are now realizing the benefits of assessing a firm's patent portfolio in relation to future profitability. Indeed, as previous studies have shown, firms whose patents were often cited in the patents of their competitors and other firms have enjoyed increases on stock prices that can be higher than those firms whose patents are not so frequently referenced.[15]

This impact on the capital markets may lead to a general rethinking on how innovation is valued, with greater emphasis placed on the value of the intellectual property rights (IPRs) associated with the innovation. With this in mind, the figure below highlights the various stages in the evolution of an invention[16].

Figure 4. Value and Stages of Patent Life



Source: Sherry, E.F. & Teece, D.J. (2004).

Initial Assessment

As a first step, assessment of existing internal and external IPRs normally takes place to establish the firm's legal ability to develop and utilize its technology without infringing on any one else's IPRs. This can be done by following the IP assessment "punch list" questionnaire above. From this, a comprehensive inventory of existing IPRs can be documented and categorized on a functional competence basis. This in turn aids in identifying any capability gaps surrounding the nascent technology development. Following this assessment and categorization, a valuation process can then begin.

Patent Value Determinants

Before starting the valuation process, a series of *non-financial value determinants* are applied to further categorize patents before financial valuation takes place[17]. These include:

1. **Lifecycle Analysis:** Returns on patents will not be constant instead fluctuating in alignment with market-based technology cycles.
2. **Level of Novelty:** Describes the technological distance between the patented technology and the prior art.
3. **Breadth of a Patent/Exclusion Rights:** The degree of protection afforded to the patent holder in the form of exclusivity.
4. **Difficulty of Inventing Around:** The ability of the patent to block the research of competitors.
5. **Disclosure:** Judgment on the extent to which a competitor will profit from patent disclosure and the technical knowledge therein. This may be of sufficient concern that pursuing secrecy is preferred to patenting.
6. **Portfolio Position:** Does the patent serve as a basis for further patents? If so, how many?[18]
7. **Bargaining Potential:** Patents can be used to enter cross-licensing agreements in sectors where survival is thought to rest on the cumulative development of complex technologies.[19]

Use of these determinants can help strengthen the foundations for the financial valuation that follows. Analysis of these factors can also aid the decision-making process that surrounds the renewal and maintenance of the patents.

Valuation & Categorization

A number of different approaches exist for IPR valuation, some straightforward and some slightly more complex. Financial estimates are not always accurate and more often than not subject to debate. At the most basic level, companies can analyze their existing patents on a "High-Medium-Low" value basis[20]. Some studies suggest that IPR portfolios can usually be segmented into three distinct regions of value with the high value usually accountable for 5-10 percent of a firm's IPR portfolio, the medium value region accounting for 30-50 percent and the remainder consisting of low value patents. With this approach, each patent is assessed on a "context" basis that associates potential value estimates with how much they contribute to the commercial value of a product or business. This is according to specific market and competitive circumstances at any particular moment. Those thought to be of high value are those patents used in core business applications that align with the firm's strategic goals at that time. Their monetary worth is often estimated by comparing similar IPRs already on the market or by cost-based analyses.

Those patents in the medium value range are generally used to protect incremental technology changes to a wide range of existing products. When clustered together, the value of these patents can rise if used as the basis for cross-licensing deals with other firms. Valuation can then be based on licensing rates or on royalties accrued. Patents in both the "high" and "medium" categories are those that essentially allow the firm to freely develop technology without being impeded by any other company or organization.

Finally, those patents categorized as low value are considered of least appeal commercially at a particular time and context. However, this category often houses the patents with highest *potential* value in the future if and when the market-based context of the initial valuation changes. Very often some of the most innovative thinking of the firm can be found lying untapped within the patents grouped under "low" value. Therefore, it is important to realize that this level of analysis is very time and context dependent and as such reflects a firm's changing competitive environment in alignment with the pace of technological change.

More complex techniques for valuation incorporate a wider range of factors to reduce the risk of inaccurate estimates. Widely known approaches such as the Black-Scholes Options Pricing Model[21] and Binomial Model-based methods[22] are used throughout the technology sector to varying degrees of success. Each technique has its own discriminate operating rubric and data requirements.

Alternative Valuation Methods

Some companies seek to reduce the risks surrounding individual patent valuation accuracy and instead look to broader approximation techniques as a viable alternative. Such approaches usually consist of attributing portions of the firm's market capitalization as a proxy for the value of their intellectual property.[23] A common technique within this method is to then subtract the book value of the firm from its market value. The remaining sum is considered to represent the value of the firm's intangible assets. However, this approach is susceptible once again to changing market conditions and daily stock market fluctuations. Hence, the value of the intangible assets can also fluctuate in a way that is not representative of the real value.

Similar approaches to this approximation technique include analyzing the company's tangible and financial assets earnings and subtracting the total from the annual company earnings. The remainder is considered the amount of earnings generated by intangible assets and when divided by a sector's knowledge capital discount rate, the value of the IP assets can be discerned.[24]

Getting Tactical – VPE Defensive and Offensive Schemas

Having carried out an internal and external analysis of the IPR landscape, categorized internal patents, applied valuation techniques, and developed a patent portfolio in alignment with broader strategic company goals, the final stage in the strategic management of IPR is to implement tactics designed to protect and exploit patents. In colloquial terms, this is where the rubber hits the road. Careful planning has led the IP-savvy firm to the point where it can start to command competitive advantage through a number of astute defensive and offensive tactics.

Defensive Tactics

Blocking to Create Short-Term Advantage

Patent thickets, patent walls and patent bracketing are all terms used to describe various defensive blocking tactics that provide freedom to operate without obstruction[25]. These often allow technological advantage for a short-term period before patents expire or technology life cycles decrease. These tactics are fairly self-explanatory and have in the past been used to great effect by companies such as Nokia and Polaroid. For example, Nokia have often built "patent walls" (also known as "thickets") around key assets such as the unique user interface design for their cellular phone range. Here, the company analyzed the patent potential for each of the interface design attributes and took out patents on its key features. The result: a patent wall around the design, with the patents interlinking across the various interface features. The outcome is an interface that competitors find impossible to duplicate.

Polaroid also had great success with this strategy during fierce competition with its great rival Eastman Kodak at the dawn of instant photography. During the height of the technology wars in this area, Kodak discounted the patent thicket that Polaroid had assembled around key design attributes of its then fast-growing instant camera business. Subsequently, Kodak launched its own line of instant cameras in the mid-1970s which Polaroid believed impinged on their patented technology. The historic court case that followed finally reached closure in 1990 with the judgment that Kodak had indeed violated Polaroid's patent wall. The costs to Kodak were severe. Ordered to pay Polaroid $925 million in damages, the firm had to shut down its $1.5 billion manufacturing facility and buy back the 16 million instant cameras it had sold to consumers from 1976 to 1985. Legal fees amounted to $100 million. The significant damage inflicted by infringing upon a tightly assembled patent thicket (in which many key patents were successfully "hidden") effectively meant Kodak wrote off an entire decade's worth of research and development.[26]

More recently, high-profile patent infringement lawsuits have troubled firms such as handheld device manufacturer Palm Inc.[27] and internet phone provider Vonage. In the latter's case, Vonage were recently ordered to pay $58 million to Verizon Communications for infringing on three Verizon voice-over-internet protocol technology patents. Perhaps more worrying still is the threat of the firm's service being shut down whilst a suitable licensing agreement with Verizon is worked out.[28]

Whilst the risks of infringement are never completely removed, the technique of *patent bracketing* can be used to stymie competitors who have patented a new technology that is dependent on other 3rd party technologies to be effective. Perceptive analysis can lead to a competitor firm patenting the surrounding technology and processes, quickly hemming in the original technology patent and rendering its market application almost useless[29].

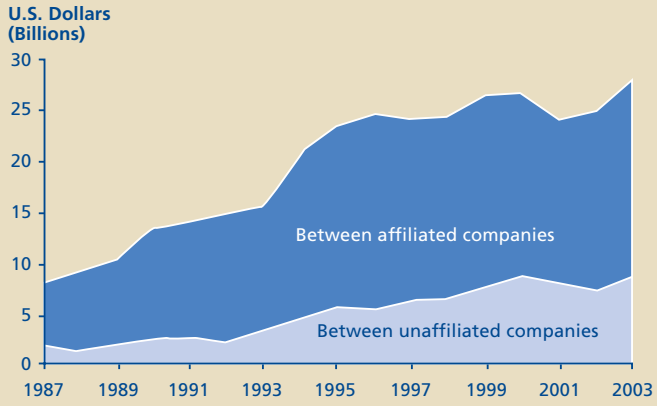
A final tactic that can often be used defensively is that of conveying IP information strategically. In this instance, technology firms can deliberately disclose information on patents that have been registered to confuse competitors about potential research and development being pursued. These red herrings can often serve to cloud the linkages between technology patents and the technology products that are then launched onto the market.

Offensive Tactics

In recent years, the exploitation of IPRs has become an increasingly effective and lucrative revenue-generation strategy for innovative technology firms.

Most methods of exploitation revolve around licensing strategies for firms holding valuable patent rights to technologies in demand by the market. Typically, this consists of out-licensing particular technology patents and accruing royalties from their subsequent use. Alternatively, cross-licensing patents with other firms, in collaboration deals structured to ensure mutually-beneficial outcomes, is particularly prevalent in sectors where co-development of technology standards is the norm.

Figure 5. U.S. Trade Balance Royalties and Fees Paid for IP: 1987-2003



Source: National Science Foundation - Leading Indicators for 2006.

In conjunction with these approaches, firms can also generate revenue through strategic patent donations that invoke tax deductions (and may also provide opportunities for innovation partnerships with the patent recipient) and by actively promoting development of "non-core" patents via "spin-outs" and new venture developments into potential areas of new business growth.

Finally, no discourse on exploitation tactics would be complete without highlighting the trend of mergers and acquisitions instigated by IP-aware companies eager to target and acquire underutilized patents held by other firms. In this arena, the role of the "patent shark" has become widespread and a considerable threat to all technology firms dependent on patent protection for future growth.

Out-Licensing Technology Patents

Revenue generation from licensing technology-based patents can yield significant returns, both financial and otherwise. Current data suggests that collective domestic U.S. revenues from patent royalties are approximately $50 billion and set to continue to rise.[30] Furthermore, out-licensing can lull licensees into following a path of research and development that is dictated and controlled by the licensor. This can be a powerful means of pre-empting the licensee gaining the capability to design around the patents. Moreover, this can then dictate to some degree the licensee's learning ability[31].

To date, licensing strategies are in evidence all over the technology sector. Companies such as Qualcomm with their licensed CDMA wireless network technology and Microsoft, with a range of new technologies in the biometrics sector, are able to recoup significant royalties from a diverse portfolio[32]. Part of their success has stemmed from their willingness to be in alignment with the licensee's business strategy in order to structure long-term licensing programs. This foresight has enabled an increase in value from royalties to be obtained. In these instances, the simple understanding is that success in sustaining patent revenues goes hand-in-hand with success in the marketplace from those utilizing the license. A fair and equal royalty rate from a firm able to transform the patented technology into a market success is much more valuable over the long-term. Hence, firms using out-licensing strategies should be wary of the lure of more substantial royalty rates that may generate bigger revenues in the short-term. This "fast-buck" strategy could be prone to risk due to the licensee's poor strategic positioning over the long-term. A fair balance between the business goals of both the licensor and licensee is therefore crucial for long-term success. Only then can factors such as fields of use, exclusivity and periods of restraint be leveraged to ensure a continuation of market applications are achieved, thereby maximizing value through multiple licenses.[33]

Cross-Licensing

"Why do we cross-license? Speed. One of the reasons this industry moves so quickly—compared to almost any industry—is that companies in this industry cross-license their intellectual property to each other. Certainly for a fee to some, depending on who has more value, but the willingness to cross-license enables everyone in the business to continue to leapfrog technology. We started that way back in the '50s and it has helped get our industry on a path where competitors recognize value in licensing intellectual property."

– Jerry Rosenthal, IBM[34]

Another form of licensing, which is common throughout the technology sector, is cross-licensing. Although this is not always used to establish competitive advantage and market share per se, cross-licensing has proven to be extremely effective in keeping firms at the leading edge of development. Furthermore, in sectors where the day-to-day operations costs are so high that any form of patent infringement can be calamitous to the offending firm, cross-licensing patents can help mitigate risks of business closure. A good example of this type of licensing approach occurs in the semiconductor industry where the objectives for patenting are very much driven by a collaborative, knowledge-sharing environment. In this instance, knowledge exchange between competitor firms is used to reduce the risks of patent infringement and thereby stoppages in manufacture etc. Patented technology, which is highly complementary across the industry, is exchanged openly and enters the products of many of the sector's firms. Companies can then hold patents that are also used by competitors. The patents are then, in effect, a counterweight and deterrent to any threat of closure caused by infringement and as such have a somewhat ambiguous value.[35]

Other successful examples of cross-licensing deals are found in the PC sector where Dell used its business model patents (covering all aspects of its value chain) to structure a $16 billion cross-licensing deal with IBM to secure cheaper PC components. This in turn freed Dell from having to pay IBM substantial royalty fees. Similarly, IBM has in the past secured a strategic foothold in the routers and networks market by structuring a cross-licensing deal with Cisco Systems. In this instance, IBM patents were offered to Cisco in exchange for a $2 billion pact securing the sale of IBM components to Cisco giving the firm an entry point into an otherwise closed market[36].

More recently, Microsoft has entered into deals with Toshiba in an attempt to gain a strong position in the Japanese market, an important target for the Redmond firm. This follows their similar software patent deals with companies such as SAP and Autodesk.[37] Cross-licensing technology patents in such a way can therefore act as an entry point into new markets or indeed act as a proxy for otherwise cost-prohibitive product research and development.

Patent Donations

One other frequently used tactic for generating a form of IP revenue is patent donation to third party, not-for-profit organizations such as universities. Such strategies often have a dual-objective; immediate tax deductions in the year of the donation combined with the development of new non-core business opportunities. Firms choosing to donate patent portfolios in such a manner, rather than developing a commercial licensing strategy, often cite the advantage of almost instantly generating a return on the patent. This return is a combination of tax deductions and operating cost reductions in the form of comparable time and effort required in developing a royalty stream from out-licensing.

Another advantage with patent donations that meet U.S. Internal Revenue Service guidelines is the ease of valuation compared to those used in commercial license agreements. This can be an important factor to consider when carrying out routine portfolio audits (and also in other areas of tax IP-related opportunities such as transfer pricing and royalty incomes[38]). In many instances, companies have trimmed their IP portfolios by donating "non-core" patents to not-for-profit organizations, thereby generating significant savings through tax write-offs and maintenance fees.[39]

However, it would be incorrect to view donations as merely a tax benefit revenue stream. The corollary to giving away "non-core" IP portfolios to universities and other institutions is often the emergence of new business opportunities through the recipient's further development and commercialization of the patented technology.

Nothing Ventured, Nothing Gained…

Companies can also exploit non-core patented technologies (including "orphan technologies") through collaboration with venture capitalists (VCs) and technology start-up firms. In this instance, the firm holding the patent on the technology often can forgo the usual license-based royalties and instead take an equity stake in the licensee, which can develop the value of the intellectual asset to levels beyond the capabilities (and motivation) of the licensor. The patent holders can then become part-owners of new businesses developed by VC firms or start-up firms, which exploit new technologies on the back of the original IP. This route can be used effectively when the technology is deemed disruptive to the current market and may require several years of careful development and investment before a suitable return can be expected.[40]

Larger technology corporations can also facilitate this process themselves by developing internal venture capital funds to instigate "intrapreneurship". Here, a venture pipeline can then be structured to spin out fledgling companies, formed to exploit non-core patents. Siemens' technology incubators are a good example of this: the firm has successfully diversified into several non-core areas through spin-off based patent exploitation.[41]

Another recent example is Microsoft and their Intellectual Property (IP) Ventures program that works with the international VC and tech start-up community to develop new products with non-core Microsoft IP. Since its inception in 2005, this program has released patented technologies in the areas of biometric security and data visualization to firms willing to guide the development of new products in these sectors. More IP is being targeted for release into other product sectors Microsoft is interested in but still considers "off the radar" in terms of core strategic objectives. In each instance, the firm will look to receive equity stakes in the companies that take on the IP rather than seeking royalties or up-front license payments. The IP Ventures group will cover all four of the company's research laboratories in Redmond, San Francisco, Beijing and Cambridge (UK). Deals can then be brokered with local VC and start-up firms close to the labs.[42]

Shark Attack!

Recently, the use of mergers and acquisitions (M&A) to obtain underutilized IP languishing in other firms' patent portfolios has become somewhat commonplace. Technology firms often find themselves as takeover targets based on their underused patents, which are then repositioned to aggressively generate royalty-based revenues.

STMicroelectronics provides a good example of this strategy in operation. This Swiss-based semiconductors manufacturer (when previously known as SGS-Thomson) acquired Mostek, a chip manufacturer owned by United Technologies for $71 million in 1985. Seven years later this acquisition provided the firm with more than $450 million in patent licensing revenues.[43] Also entering into the folk-lore of M&A in IP circles was the acquisition of Amati Communications by Texas Instruments to obtain seminal DSL patents, a leading technology for next generation modems for high speed internet communications. Subsequently, the deal has allowed TI to control and dictate the DSL market through this patent-based acquisition.[44]

M&A activity triggered by such patent acquisition strategies continues to be a common channel for IP exploitation. However, a worrying trend in this area has been the emergence of "patent shark" firms who exist only to acquire IP in order to feed off patent violations by R&D intensive companies[45]. Also known as "patent trolls", these firms (or individuals) tend to be small enterprises that are set up specifically to trap unwitting tech firms into patent infringements and thereby reap the resultant damage awards for illegitimate use of their protected technology. Such a firm poses an increasing threat to R&D-based multinationals that often risk overlooking small inventor patents.

With the shark or troll firm purely out to seek royalties or damages rather than practicing with, or collaborating on the development of the technology patent, any patent monitoring negligence by the large corporation can be punished severely. Recent examples include the widely publicized court cases brought against Research In Motion (RIM), maker of the Blackberry handheld device, for patent infringements. In 2003, RIM was sued by Luxembourg-based InPro Licensing, which the English High Court eventually ruled as invalid.

However, in 2002 an even more prominent legal battle ensued between RIM and NTP, a U.S.-based patent holding company many perceive to be a patent troll, which threatened to shut down RIM's operations in the US. Eventually a settlement was reached in 2006, with RIM agreeing to pay NTP $612.5 million.[46] Other recent examples of this practice include the German firm Teles AG that appears to have a *modus operand*i similar to NTP. Since 2002, Teles has continued to sue prominent firms such as Cisco, Nokia and Deutsche Telecom for infringement of telecommunications technology patents.[47]

It is not surprising then that with such a practice both profitable and perfectly legal, these types of firms continue to operate successfully throughout the technology sector. But what can be done to avoid being targeted by the shark or troll firm that will often hide patent-protected technology in confusing "thickets" in order to profit from infringements?

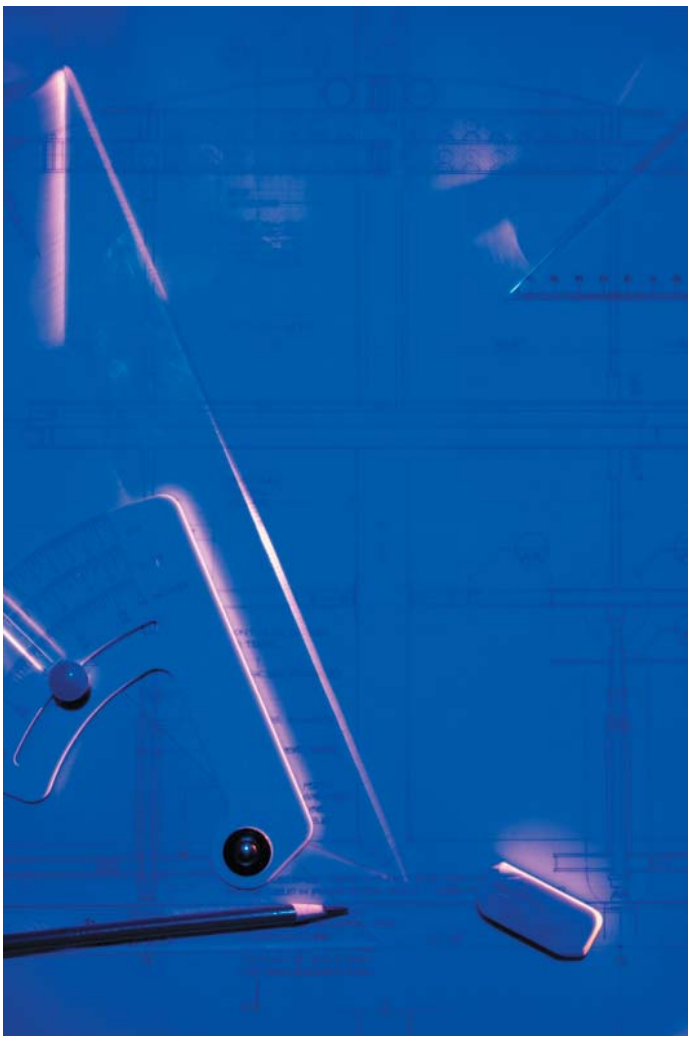
To begin with, an increase in technology monitoring may help identify where the dangers are lurking. But this is no guarantee. Indeed, an increasing threat is that of the dedicated investment fund now buying the patent portfolios of bankrupt firms with the sole intention of trapping potential infringers. Hence, the patent landscape is becoming increasingly opaque for the large technology corporation and the effectiveness of monitoring is being reduced.

With this in mind, innovative technology companies should perhaps look to create independence from core technology portfolios. The development of non-core alternatives that can be used as substitutes would seem to be a logical step. Recently, this has begun to occur with firms looking to open-source technology as the standard for development efforts. This in turn prevents patent infringement occurring (once again, IBM and others such as the Open Invention Network are leading the way with new open standards business models[48].) Declaring a technology development as open source transforms it into prior art, meaning no patents can be granted on the development.[49] However, the threat of firms pursuing infringement as their de facto innovation exploitation strategy continues to plague the sector's multinational firms with many settlements remaining undisclosed.

A Final Word

This report has detailed the shift taking place today in managing technology-based intellectual property to build and sustain competitive advantage. We have outlined a Value, Protect and Exploit IP framework that can assist senior technology leaders in assessing their existing IP strategy and serve as a blueprint for developing and deploying new VPE capabilities.

With an emphasis on accurate assessment of the competitive IP landscape before mobilizing IP assets, the VPE approach can then help position IP asset portfolios to achieve strategic innovation goals. Then, and only then, can firms *capture* the value they have strived so diligently to create.



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