

Intellectual Property Management for Emerging Technologies

Emerging technologies are those technologies that are on the horizon – not yet mainstream and are oftentimes referred to as either “cutting” or “bleeding” edge. These technologies will (or are attempting to) push the boundaries behind how we accomplish a certain task, fix a particular problem or create better processes in the future. Intellectual property is the most critical piece of any emerging technology-based product because it is the underlying value behind an enterprise’s competitive advantage. Creating and defining a best practice strategy for managing that intellectual property should play a key role for the corporate team at the forefront of development—right down to the scraps of paper that draft the beginning stages of the idea. Intellectual property usually cannot be defined or identified by physical parameters, however, for it to be managed, it is necessary to be expressed in some discernible way. For the enterprise, it’s proprietary knowledge.

In this white paper, the following will be discussed:

- 1 The Emerging Technologies Industry**
- 2 Intellectual Property Management in Today’s Enterprises**
- 3 Intellectual Property Protection for Emerging Technologies**
- 4 Technology Escrow as a Best Practice Strategy**

The Emerging Technologies Industry

At the heart of every emerging technology based product is an idea (a creator's intellectual property) that crafted its way from thought to paper all the way to manufacturing and distribution. Today, emerging technologies encompass any and all technologies that promote something new and desirable that fulfills (or improves on) a business or society want and need. Anne-Marie Roussel of Gartner, a leading research advisory firm indicates "a strong 'vision' is necessary because much of business strategy itself depends on imagining future demands, and the products, solutions or processes that might one day be needed. This requires commonsense, a generalist attitude and strong insights into many different trends in business, technology and society and the possible interactions between them."ⁱ

Many large, well-known and successful companies engage in just such a strategy. Microsoft, for example, employs a staff of researchers whose core responsibility is to come up with ideas to identify trends in the marketplace and define future directions in technology. These same technologies that will, someday, lay the groundwork for widespread adoption.

Consider some emerging technologies that have amassed common acceptance within the past decade: email, cell phones, CD-ROMs, the Internet, instant messaging, and video conferencing. At one point in their lifecycle, all were considered interesting ideas, and perhaps near impossible to produce...but today they are standard crutches in our everyday lives. Can you imagine conducting business without using email or cell phones to communicate?

Emerging technologies are what differentiate one successful enterprise from another. Primarily, you can sustain or achieve competitive advantage by going to market first, thereby, increasing your competitive domi-

Emerging Technology Example Nanotechnology

Nanotechnology is the science and technology of building electronic circuits and devices from single atoms and molecules.¹ Nanosys, a small startup located in Palo Alto, CA can be seen as an example of a leading startup in this emerging technology arena. Their technology is based on "nanocrystals" or tiny semiconductor particles. Nanosys researchers believe that the composition, size and shape of these nanocrystals can be manipulated in such a way that they can make a wide range of nano-based devices optimized to conduct electricity, sense chemical reactions, or convert energy from one form to another. With this belief, Nanosys is in the production stages of designing unique products, which include very inexpensive solar cells intended for construction materials; faster, lighter and more efficient computer displays; and nanoscale lasers, sensors, and computer chips that could have widespread applications in electronics.²

nance in the marketplace. The benefits of developing an emerging technology include allowing an enterprise to improve operational efficiency, offer new product or service lines, improve current product or service lines, increase client service levels and stake incredible gains with their partners, distributors and customers.

Businesses must be very careful when strategizing which emerging technologies they will develop and which technologies are considerations for future implementation. Enterprises need to establish a strategic

technology planning evaluation function to stay competitive. Once requirements are evaluated, enterprises should implement technologies that provide the greatest competitive advantage to gain first-mover advantages. Second-mover strategies can delay adoption until the technology is mature and has effectively proven its operational value and a return on investment.

There is something to be said about placing first—you control the speed, pace, and the direction while maintaining the advantage over your competitors. By being the leader, you define the rules of the game versus abiding by someone else's; however, if the blueprint behind the emerging technology you developed is left exposed, you also become an open target for possible intellectual property infringement.

Intellectual Property Management in Today's Enterprises

Intellectual property has developed into a primary economic mechanism; confidential or proprietary information that, if revealed, could cost an organization its competitive edge. While proprietary information assets are often the most valuable information resources that an organization has, these assets are consistently the most poorly managed within a company. According to Alan Greenspan, "There's been an industrial shift in the organizational value being defined mainly by its physical property to its intellectual property – and this calls for a shift in protection considerations and strategies."¹ When a company's most important assets are tangible, someone is put in charge of finding the best locks for the doors, the loudest and most sensitive security system, etc. You would never heavily invest in important office items such as laptops, computers, etc., and leave them exposed and unsecured, in the parking lot free for the taking. However, some organizations do just that with their intellectual property. An enterprise will invest

heavily during the development phase of an emerging technology that's going to change the way business is conducted or, at least, change what they have to offer their own customers – and yet, the slips of paper outlining "how" it's going to work, or the lines of code or business plans or other documents are left lying around the office or in an unlocked filing cabinet at high risk.

Developing emerging technologies is risky business. Besides the uncertainty in evolving a viable technology and getting it out to market on time, there are also legal possibilities to consider. The damage caused by infringement could completely destroy the value built into an emerging technology's intellectual property.

A **patent** is a declaration from a government that an invention or process is new or innovative enough to be granted the exclusive ability to manufacture or otherwise use the invention for a set period of time. A patent may be issued for a broad variety of purposes such as new drugs, a new technology for producing a certain item, a methodology for software or a new distinctive product.

A **copyright** provides its holder the right to restrict unauthorized copying and reproduction of an original expression. Copyright stands in contrast to other forms of intellectual property, such as patents, which grant a monopoly right to the use of an invention, because it is not a monopoly right to do something, merely a right to prevent others doing it.

A **trade secret** is a formula, process, or device used in a business that is not published or divulged and that thereby gives an advantage over competitors.

¹ As defined on www.dictionary.com

² "Nanotech First Block Busters." By Chuck Lenatti, p.46-52, MIT's *Magazine of Innovation Technology Review*, March 2004

“OVER THE PAST HALF-CENTURY, THE INCREASE IN THE VALUE OF RAW MATERIALS HAS ACCOUNTED FOR ONLY A FRACTION OF THE OVERALL GROWTH OF THE U.S. GROSS DOMESTIC PRODUCT (GDP). THE REST OF THAT GROWTH REFLECTS THE EMBODIMENT OF IDEAS IN PRODUCTS AND SERVICES THAT CONSUMERS VALUE.”

— ALAN GREENSPAN, “*INTELLECTUAL PROPERTY RIGHTS: AT THE STANFORD INSTITUTE FOR ECONOMIC POLICY RESEARCH ECONOMIC SUMMIT*”, STANFORD, CALIFORNIA, FEBRUARY 27, 2004

So, how does an emerging technology company avoid risk and ensure that its intellectual property is properly managed?

Intellectual Property Management for Emerging Technologies

Over the past few years, technological developments, such as electronic distribution, have had a fundamental impact on how intellectual property-based products are created, exploited and traded. Pressure has been placed on existing intellectual property protection systems to adapt in order to accommodate these changes. Businesses reliant on the exploitation of intellectual property assets must, to remain competitive, ensure that they employ all available options in order to manage their intellectual property in this evolving environment.ⁱⁱⁱ

The type of intellectual property protection chosen can depend on how fast the technology is evolving, as well as on the degree of market competition. Andreas Panagopoulos, from the University of Bristol has found that markets where either technology progresses quickly, or market conditions are such that the innovator feels secure, allow for a small degree of intellectual property protection, in contrast to competitive markets (or markets where technological progress is slow). Overall, the innovator’s choice of intellectual property protection must be a balanced act accounting for how well the competitors perform and how much they threaten the innovator’s market power.^{iv}

Patent, copyright and trade secret laws are the most commonly known methods for protecting the technology of an emerging technology-based product. However, some intellectual property holders are exploring new

business models and ways of exploiting intellectual property. Many leading organizations are being called upon to standardize their management and protection strategies to ensure market value and shareholder value preservation. To guarantee total management and protection, many leading organizations are placing their intellectual property assets and investments into a technology escrow account with a trusted, neutral third party to protect itself from undue risk.

Technology Escrow as a Best Practice Strategy

Technology escrow helps safeguard technology ownership and *enhances* existing legal protection under copyright, patent and trade secret laws. This lends itself as a best practice; it works in conjunction with current laws and adds credence to intellectual property claims. It provides evidence of when and how an emerging technology was developed. This can significantly strengthen a company’s position in any legal dispute concerning intellectual property rights and is commonly used to administer the documentation of the development of a company’s technology.

When developing an emerging technology, it is necessary to craft a due diligence process in order to safeguard your intellectual property on all fronts: from development to possible joint ventures and through an actual sale of the company. Unfortunately, the true value of technology escrow is not fully realized until it is necessary. It is recommended for an organization to be proactive and recognize circumstances where development should be documented and set the stage for controlling its future.

The following represents considerations for all emerging technology development companies:

A. Prove the Ownership of Your Idea with Documentation

Intellectual property is the backbone of your emerging technology firm. Establishing a clear audit trail of the technology's development is critical, especially for trade secret and patent protection.

Intellectual property legal experts say that in the area of patents, what is often litigated is the issue of *when* an idea is conceptualized. This means that a person whose patent is challenged may have to show when his or her idea was conceived, and, in some cases, when it was put into use, and that requires documentation. The ability to establish and provide evidence a company or person is the "originator" of an idea or work in progress can be critical in the dispute with anyone claiming to be the first to invent—and therefore entitled to—a particular patent. Various submissions, such as documents, working prototypes, computer programs, drawings, email communication and any other materials that can corroborate first conceptualization are critical in collecting evidence that supports an organization's or individual's claim. By escrowing any of the aforementioned material, the inventor can substantiate proof of conception or an actual working sample of the invention. Without adequate corroboration, patent rights can be lost to another person or company who may be a competitor or who may license the patent rights to a competitor.

B. In Joint Ventures:

When two or more parties wish to enter negotiations in order to engage in proprietary information exchange (technology and know-how), all organizations involved may want to first consider an escrow arrangement which documents which organization is

Emerging Technology Example Radio Frequency Identification (RFID)

Radio frequency identification (RFID) is a generic term for technologies that use radio waves to automatically identify individual items. RFID tags are identifiers that consist of silicon chips and an antenna that transmits data to a wireless receiver. Unlike UPC (or bar codes), which need to be scanned manually and read individually (you have to actually see a bar code in order to read it), RFID tags do not require line-of-sight for reading. Within the field of a wireless reading device, it is possible to automatically read hundreds of tags per second.³

RFID enables users to find items anywhere in the supply chain at any time, which allows for providing better quality customer service. For example, a smart-shelf would be able to distinguish if a carton of milk or a box of medicine has expired, alerting a store to restock in real time. This type of system could prevent out-of-stock merchandise and reduce obsolete or out-of-date products.³

entitled to which proprietary information should anything occur that would affect the working relationship of either organization. It is common for these types of arrangements to stall or fall apart after sensitive information is disclosed; however, how can you claim what was a trade secret when the other party says it was in the public domain and uses it to further their case?

An escrow agreement can produce legal documentation that establishes the basis upon which organiza-

³ Radio ID Tags: Beyond Bar Codes, *Wired News*, May 20, 2002, by Kendraaj Mayfield

⁴ Information directly taken from *IT Network Newsletter*, April 2004, published by Pittsburgh Technology Council

“WITH INTELLECTUAL OUTPUT PLAYING SUCH A CRITICAL ROLE IN OUR ECONOMY, SOCIETY AND GLOBAL COMPETITIVENESS, [WE ARE] PURSUING A HIGH TECH AGENDA THAT SEEKS TO MAXIMIZE THE CREATION, PROTECTION AND COMMERCIALIZATION OF INTELLECTUAL PROPERTY. SPECIFICALLY, OUR POLICIES PROMOTE INNOVATION, SUPPORT ENTREPRENEURSHIP, IMPROVE INFRA-STRUCTURE AND EMPOWER PEOPLE.”

— BRUCE MEHLMAN, ASSISTANT SECRETARY FOR TECHNOLOGY POLICY, UNITED STATES DEPARTMENT OF COMMERCE, LICENSING EXECUTIVES SOCIETY SPRING MEETING, WASHINGTON, DC, MAY 3, 2002

tion’s proprietary information may be disclosed to which other party, such as written descriptions, drawings, samples, compositions, visual demonstrations, oral disclosures and other data or information. The availability of the proprietary technology is critical to both parties and both parties may need access to the proprietary technology under certain limited and pre-established circumstances. An escrow agreement can help to preserve each organization’s rights with respect to any proprietary data disclosed and to protect the proprietary features. The document outlines what each organization is entitled to and what was agreed upon prior to the execution of proprietary information exchange.

On a similar note, an escrow account can solidify an emerging technology developer’s position in merger or acquisition negotiations. When an emerging technology’s owner seeks to sell its company, its greatest asset will be its intellectual property, and an escrow account will serve to authenticate the ownership of the emerging technology development. An audit trail will strengthen the owner’s posture during negotiations.

C. Safeguard Your Technology Development Through Copyright

In regards to software technology, to ensure your technology development is protected via registration, copyright documentation comes into play with regard to the U.S. Copyright Office, which requires that the first and last 25 pages of source code be filed with

them. Prudent legal counsel, though, will advise their clients to deposit the entire source code of the registered version in escrow. Such a deposit removes any doubt of the content of the copyrighted works.

By date and time-stamping all technology escrow deposits and keeping those deposited materials

Emerging Technology Example VoIP

VoIP (voice over IP - that is, voice delivered using the Internet Protocol) is a term used in IP telephony that means to send voice information in digital form in discrete packets rather than in the traditional circuit-committed protocols of the public switched telephone network (PSTN). A major advantage of VoIP and Internet telephony is that it avoids the tolls charged by ordinary telephone service.

VoIP is an organized effort to standardize IP telephony. IP telephony is an important part of the convergence of computers, telephones, and television into a single integrated information environment.

separate, the integrity of older versions already in escrow is maintained. Replacing the material in deposit or returning them is not an option: Taking either action jeopardizes the independent audit trail

of historical development. The audit trail is the cornerstone to establishing the date and time of creation of ideas or know-how. Allowing replacements or returning material will lend question to the impartiality and authenticity to the materials. This way, a genealogy of the product is kept on record with an independent third party, who can then testify to its legitimacy.

D. Reinforce the Confidential Status of Your Proprietary Business Information

For organizations where the proof of ownership, or employee confidentiality of its technology or any facet of its business operations is a concern, the best practice is to establish limited access to proprietary technology and business information and escrow all sensitive work documents. Economic espionage is big business through which the main source of vulnerability is from disgruntled or recently discharged employees who try to sell trade secrets for profit or simply want to retaliate against their former employer by exposing its secrets. Business plans, customer lists, pricing data, investors' names, marketing and sales strategies, and just about anything deemed valuable but not necessarily covered under standard copyright or patent laws may be considered proprietary or a trade secret.

By copying all project documents and associated materials and establishing an escrow account, an organization reinforces the confidential status of the information and provides an audit trail that will strengthen its position as owner and proprietary rights holder. Not only does it reinforce the confiden-

tial status of the information but that same information can also be used as undeniable physical evidence in the court of law.

Summary

The impact of innovation and technology on our civilization is unmistakable and emerging technologies will continue to grow, prosper and penetrate our existence. They will create better technology, newer processes and increase demand for it by improving it further.

Emerging technology developers need to protect what is theirs: their idea, their process, their end result. Technology escrow is not the only solution for managing intellectual property assets, it's just one method, but it is part in parcel to the whole solution recommendation and it is usually not fully realized until it is necessary.

About Iron Mountain

Iron Mountain is the leading global service provider of intellectual property management services specializing in technology escrow and domain name records management. As the founder of the industry, Iron Mountain has the integrity, reputation, resources, and experience to ensure intellectual property is properly managed and protected. Iron Mountain's Intellectual Property Management services set the industry standard by providing quality customer service and unmatched solutions to three-fourths of the Fortune 500. Since 1951, Iron Mountain has provided service to over 200,000 customer accounts worldwide. For more information, visit the Company's Web site at www.ironmountain.com/ipm.

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