

Significance of IP protection in developing a vibrant product development portfolio

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Introduction

Progress in Chemical Engineering is driven by innovation. It is the life blood of any growing chemical company, including startups and small companies, and can promote the growth of companies of any size. Capitalizing on innovations and development of new products based on these innovations is key. Research and development costs often constitute a significant portion of the costs associated with bringing a new product to market. Once an innovation is marketed, it may be comparatively easy for competitors to reverse engineer and manufacture competing products. To protect a company's competitive position, it is essential to identify and secure intellectual property rights, particularly patents, at an early stage of product development. Patents confer the right to exclude and may generate royalty income.

This presentation will focus on the types of intellectual property protection that are available, and an assessment of the merits of each. Patents will be discussed in detail. Patenting strategies will be discussed including the importance of securing an early filing date as a defensive measure. All companies, large and small, should implement an invention disclosure program and mandatory use of laboratory notebooks. It may be advantageous to file provisional patent applications. This will provide early protection, and may be sufficient to cover discussions with potential VCs and other funding agencies. This can then be followed by filing a regular US patent application and/or filing an international application. Monitoring the competition is also an important aspect of any comprehensive IP plan, as are strategies for managing the patent portfolio. Options include a technical evaluation committee composed of senior research and marketing managers and IP counsel to merge the patent program and the business plan. Depending on budget, marketing and patentability considerations, it may become necessary for such a committee to pursue prosecution of only some key applications while abandoning others. The innovation may not be significant to warrant spending resources to obtain a patent, but the application could be published as a defensive strategy to prevent others from obtaining patents in the same area.

Discussion

The ultimate decision in securing protection is to decide what type of protection is best suited for the innovation. Typically a business entity may secure protection of its innovations by securing a patent or by securing protection as a trade secret. In order to make an informed decision, a business entity must understand the benefits and costs of each system. Further, the business entity must understand the potential effects of a competitor's rights under a patent or trade secret. As described above, this discussion will focus on how a business entity may increase its awareness to patent protection.

There are two elements to increasing awareness to patent protection. First, the business entity should actively pursue patent protection for its innovations. Second, the business entity must recognize that competitors will also seek patent protection for their products.

An important factor in deciding whether to seek patent protection is to assess the commercial importance of the invention at its early stages of development. Early assessment is recommended, because it enables a business entity to efficiently allocate its research resources. More importantly, the clock is always ticking. Competitors may be conducting similar research and looking to assert its patents. Early assessment may enable the business entity to preemptively strike against the competitor or implement defensive strategies. Further, early assessment would enable the business entity to file for a patent at an earlier date. An earlier filing date would strengthen the patent itself, because several crucial aspects of patentability are determined based on the filing date.

The question thus becomes how one would assess the importance of the invention. The need to which a competitor must practice the invention may gauge the importance of the invention. As described above, patents confer a right to exclude others from practicing the patented invention. Like real property, the right to exclude has a higher value in situations when the area of ownership is in high demand. A competitor may want to practice the invention, but may not be able to practice the invention because of the patentee's right to exclude. On the other hand, a patent may not exclude anybody in circumstances where the invention is less important. The right to exclude has a higher value in those situations where the competitor wants to but cannot practice the invention without infringing the patent.

For example, an invention may be important when the invention is the only way (or a cost efficient way) to achieve results desired by consumers. In such cases, a patent would confer a market unto itself. This is because a competitor cannot "design around" a patent and because the consumers must purchase the invention from the patentee to achieve the desired result. A competitor may design around a patent when the competitor can market a non-infringing product that can achieve results identical or similar to that of the invention. In such cases, the consumer can buy products from the competitor to achieve the result also provided by the patented invention. In contrast, when the patented invention is the only way to achieve the results desired by consumers, the consumer must purchase the invention and the competitor must otherwise infringe the patent. As such,

the competitor has a keen desire to practice the invention but cannot do so without infringing the patent.

A patent covering an important invention may lead to higher damages, a better bargaining position in license negotiations, or venture capital. If a competitor actually practices the invention without the permission of the patentee, such an act is infringement and could lead to monetary damages. The patent laws guarantee that the patentee will receive *at least* a “reasonable royalty” for unlicensed practice of his invention. The amount of a “reasonable royalty” is defined as that royalty which two parties would arrive at in an arm’s length negotiation. The amount can also be correlated with how important the invention is. For example, when a competitor needs to practice the invention, it is usually because the competitor is responding to consumer demand. It follows that infringement of an important invention typically leads to a larger volume of sales which the competitor was otherwise excluded to complete under the patent. The larger the sales volume, the more reasonable it seems that the patentee receive a larger royalty for such an act of infringement. While one may argue that the larger royalty is a result of a larger injury, the patentee need not actually practice the invention to receive the “reasonable royalty.” Put another way, even if the patentee has no product in the market, the patentee still receives at least a reasonable royalty for the act of infringement. Notable damage amounts or settlement amounts in the past include \$909 million in Polaroid Corporation v. Eastman Kodak Company, \$171 million in Exxon Corporation v. Mobil Oil Corporation, and a \$300 million settlement in University of Minnesota v. GlaxoSmithKline.

Another consideration is that in addition to damages for patent infringement, the court may also enjoin further practice of the invention by the infringer. This is part of the right to exclude.

Instead of infringing, the competitor may request a license to preclude the patent. A license gives the competitor a right to practice the invention usually in exchange for a royalty. As in most license negotiations, the patentee is in the better position to set the terms of licensing the patent to the competitor. The competitor wants what the patentee owns. As such, the patentee may set terms more favorable to its position and thus generate a better royalty income. A famous licensing strategy is the strategy adopted by Texas Instruments. For years, licensing revenue represented the only profitable activity for Texas Instrument.¹

Lastly, a patent covering an important invention may make it easier to obtain venture capital because the patent may confer a competitive advantage. With all things equal, an inventor is most likely the first to enter a market with its invention. Even without patent protection, the inventor should have a significant time advantage because its competitors still need to develop the technology on its own or reverse engineer the product. A patent may increase this time advantage to about 20 years, since a patent grants the right to exclude for 20 years beginning from the date on which the patentee

¹ See, e.g., Edmund L. Andrews, There's Cash in Mining the Courts, N.Y. Times, Nov. 9, 1992, at D2.

files the patent application with the United States Patent and Trademark Office (“USPTO”). Such an advantage typically makes the patentee’s business more lucrative for venture capitalists. In contrast, a patent covering an unimportant invention may not increase the attractiveness of the patentee’s business, because a 20 year head start in a market in which nobody would enter is no head start at all.

In order to achieve such benefits, however, all business entities, whether large or small, should implement an invention disclosure program and mandatory use of laboratory notebooks. Under an invention disclosure program, the business entity can assess the importance of an invention at an earlier stage. Given that the assessment of “importance” is a prospective analysis, guessing work is always involved. An invention disclosure program fosters discussion among colleagues and a more accurate assessment of the importance of an invention. Further, the use of laboratory notebooks is important, because the research activity of an inventor can come into question with respect to infringement, licensing, or obtaining venture capital. A witnessed notebook lends credibility to one’s position, and can also fix an early invention date.

Balanced against such benefits are the costs of using the patent system. Such costs include disclosing the invention to the public and expenses in procuring and maintaining a patent.

It is a quid pro quo of the patent system that the patent confers the right to exclude in exchange for a disclosure of how to make and use the invention. This disclosure requirement is what separates the patent system from trade protection. While the patent system forces one to disclose the details of the invention, a trade secret enables one to keep the details of an invention a secret. However, as the name suggests, a trade secret does not confer the right to exclude.

The ability to reverse engineer the invention is an important consideration in determining whether to use the patent system or to maintain the invention as a trade secret. If the business entity introduces the invention into the market and the invention cannot be reverse engineered, it may be more advantageous to protect the invention as a trade secret. The inability to reverse engineer the product means that the holder of the trade secret may protect its secret forever. The most famous example of a successful trade secret is the formula for Coca-Cola. On the other hand, if the product can be reverse engineered, the better strategy is typically to secure patent protection. Unlike a trade secret, a patent bars the competitor from practicing the invention.

The negative effects in disclosing one’s invention include spurning competitors to design around the invention and informing competitors as to the research the patentee is conducting. Given that the patentee has described the details to its invention, competitors have a good basis to design around the patent. Further, the disclosure informs competitors as to the direction of a patentee’s research because the disclosure is open for anybody to read. As such, the competitor is better informed and therefore able to construct a responsive strategy

The expense in obtaining and maintaining the patent is also another consideration. Even though the USPTO provides a discount to small entities, patent prosecution and maintenance costs must be budgeted. As of October 1, 2004, the basic filing fee is \$790.00 for a large entity and \$395.00 for a small entity. The issue fee is \$1,370.00 for a large entity for a large entity and \$685.00 for a small entity. Full maintenance fees cost \$6410.00 for a large entity and \$3205.00 for a small entity. The legal costs in arguing patentability before the PTO can also be expensive.

The expense analysis should play a significant role in any patent strategy, because the patent applicant must conduct some guess work to assess the importance of the invention at the early stages of filing an application with the USPTO. However, there are various strategies which diffuse the risk and expense of obtaining a patent. A patent applicant may delay the most expensive aspects of patent prosecution, so as to first assess the importance of the invention with little cost and to secure early protection. The most expensive aspects of patent prosecution or maintenance begin when the USPTO considers the patentability of an invention (i.e., examination).

The patent applicant may file a provisional application. As the name suggests, a provisional application temporarily secures for one year, the filing date for the applicant's invention. As such, the provisional application affords the patent applicant one year to conduct experiments, without compromising the filing date of a full application with the USPTO. The applicant can conduct experiments on the commercial effectiveness or marketability of the invention. If the experiments reveal that the invention is likely to be important, then the applicant may proceed to file a full (regular) application. The earlier filing date affords protection because it gives various benefits to the applicant at the USPTO. Most notably, it creates the presumption that the applicant completed the invention on that day, and makes it more difficult for competitors to attack the validity of any patent issuing from that application. The USPTO fee for filing a provisional application is \$160.00 for a large entity or \$80.00 for a small entity.

For those business entities seeking protection in foreign countries, the applicant may file an international application under the Patent Cooperation Treaty which can delay the most expensive aspects of patent prosecution for an additional 18 months (total of 30 months from the provisional filing date) at a minimum price of about \$3,000.00. While \$3,000.00 may seem expensive, it must be weighed against the amount of investment which a business must commit for patent protection in the United States and various foreign countries.

Another strategy is to promote the invention to investors at an early stage. Typically, investors desire some assurance that the business entity is committed to marketing a new innovation. A provisional application may reinforce that assurance to the VC or funding agency with relatively little expense. As such, the business entity may receive the inflow of capital without making the investment of a full patent application.

While the above discusses strategies which allow a business entity to increase its own IP portfolio, the business entity also should be aware of its competitors' increased

awareness of IP protection. The competitors' increased awareness can be generally inferred from the increase in patent applications filed with the USPTO and the increase in patents issued by the USPTO. The number of issued patents in the past ten years (from 1993 to 2003) has increased by 77% (from 96,676 to 171,500). The number of applications in the past ten years (from 1993 to 2003) has increased by 91% (from 173,619 to 331,729).

The business entity should use the characteristics of the patent system discussed above to its own advantage. For example, a business entity should take advantage of publication and the disclosure requirement to monitor the types of experiments which a competitor may be conducting or the potential and actual intellectual property which the competitor may have. First, the competitor's patent portfolio provides information on the competitor's potential products, which may eventually preempt the business entity's entrance into the market. As such, the disclosure requirement informs a business entity about its chances of being preempted from entering a market at an earlier stage. In such situations, the business entity may take countermeasures by obtaining patent rights over a competitor's product or improvements, even before the competitor actually introduces the product into the market. Once the business entity obtains patent rights over the competitor's potential product or improvements, both the business entity and the competitor are at a stalemate and can negotiate a cross-license of patent rights. While such involves guess work on the competitor's potential product, a patent covering the competitor's potential product may save enormous amounts of money. It has been reported that patent licensing fees for a new entrant may run \$100-\$200 million in the microprocessor field.²

Second, information on a competitor's patent portfolio may also enable the business entity to strategically design around a competitor's patent at an earlier stage. Such activity allows the business entity to more efficiently allocate its research resources. If the business entity learns about its potential infringement at the last stages of its research, the business entity would most likely have to backtrack in research efforts it previously conducted.

Third, information on a competitor's patent portfolio may simply aid the business entity to avoid infringing a competitor's patent, and thereby avoid diversion of resources to defend a patent infringement suit and ultimately patent damages.

Lastly, in response to the competitor's increased awareness to intellectual property, a business entity may want to publish its invention to prevent competitors from obtaining a patent on that technology. A publication which describes or suggests the competitor's invention will destroy the patentability of the invention. The business entity may choose to file a patent application to publish its invention and prevent the competitor from obtaining a patent over the invention. The patent laws afford all patent applicants the opportunity to publish their invention, whether or not the invention is patentable.

² Mark A. Lemley, Reconceiving Patents in the Age of Venture Capital, 4 J. Small & Emerging Bus. L. 137, 141 (2000).

Even better yet, such defensive publication is available as prior art against others, as of the U.S. filing date of the application (as opposed to its publication date).

In sum, the potential consequences of intellectual property protection are significant. The best course of action for a business seeking intellectual property rights, the best course for the business entity typically depends on the circumstances. Trade secret protection may be preferable for those inventions which the competitor cannot reverse engineer. In contrast, a patent would preclude a competitor from practicing the invention, even if the competitor can reverse engineer the invention. A patent may lead to infringement damages, license fees, or venture capital. Further, as a business seeking defenses to a competitor's intellectual property rights, a business entity may monitor the intellectual property activity of its competitors (e.g., by monitoring its competitors' published applications), to make better informed decisions. In the end, the business entity must make important decisions about what to do about one's own intellectual property and the intellectual property of others. The next section suggests that a business entity form a technical evaluation committee.

A business entity may create a technical evaluation committee for the purposes of merging an intellectual property program with the business plan. Given that there are significant costs involved in an active intellectual property strategy, the purpose of the technical evaluation committee is to assure that the intellectual property and business plans efficiently complement each other. We suggest that this technical evaluation committee at least involve senior researchers, marketing managers, and intellectual property counsel.

As described above, the importance of an invention typically determines whether it is worth the cost of protection. The technical evaluation committee may accurately gauge the importance of an invention. The senior researchers can determine whether the invention represents an advance in the art, and can also participate in evaluating whether a competitor can design around an invention, i.e., evaluate whether the patent can create a market on its own. Further, senior researchers can make a determinative as to whether a competitor is capable of reverse engineering an invention. The marketing manager may evaluate the marketability of invention. As a result, the marketing manager can also determine whether a competitor may want to practice the invention and evaluate the actual value of the patent's right to exclude or the value of trade secret protection. Lastly, the intellectual property counsel should be involved in the decision making to determine the practicality or probability of being able to secure IP protection and the extent of that protection. Intellectual property law is complex; mistakes may lead to significant consequences. The intellectual property counsel may limit those mistakes.

Thus, the technical evaluation committee may determine the importance of an invention, and determine whether the costs are worth the benefits. Decisions by the technical evaluation committee may determine whether to pursue prosecution of a patent application, abandon certain applications, seek a defensive publication or maintain the patent rights. Further, it can determine how to exercise one's intellectual property rights.

The technical evaluation committee should also be involved in implementing or administering the defensive mechanisms to a competitor's intellectual property rights. The senior research can determine whether the business entity can design around a competitor's patent. The marketing manager may evaluate the monetary consequences relating to a competitor's intellectual property rights. The intellectual property counsel also plays an important role in these circumstances, because it may reduce or altogether eliminate the risk in infringing a competitor's intellectual property rights. In any event, it is most important that the business have a strategy in place before a competitor pursues damages for patent infringement. It certainly seems reasonable that the business spend a reasonable amount of time, money, and energy on implementing certain mechanisms, rather than facing a patent infringement suit which may tax and divert a company's resources towards defending against the suit as opposed to carrying on with its business.

Conclusion

Increased awareness in intellectual property rights is important, because it may lead to significant gains or loss in income. One should be aware of its own or another's patent or trade secrets. In using patents, the business entity can capitalize on the patent system for offensive and defensive purposes. In order to efficiently capitalize on the patent system, a business should set certain strategies and implement mechanisms to carry out those strategies.