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Navigating uncertainty: a framework for understanding patent values

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In October 2007, MCI/Verizon agreed to a settlement with a patent owner that had alleged infringement of two of its patents. Another defendant in the suit, AT&T Corp., refused to settle and pleaded its case during a two-week trial, following which the jury awarded the patent owner $156 million in damages against AT&T for willfully infringing the patents. Subsequently, the federal judge presiding over the case overturned the jury's verdict. What can we conclude from these various outcomes and rulings? They point to the one clear-cut fact about patent values: They are fraught with uncertainty.

In general terms, a patent derives its value through one or a combination of the following sources: (1) using the patented technology to increase sales of the patent owner's products or to increase the profit margin on these sales, or both; (2) licensing the patented technology to generate cash from the use of that technology by others; (3) strategically restricting competitors from using the technology, or preserving an option value derived from the right to use a technology in the future that today has little or no value; or (4) using a variety of generic sources including an active enforcement program that generates royalties with the aid of the legal system.

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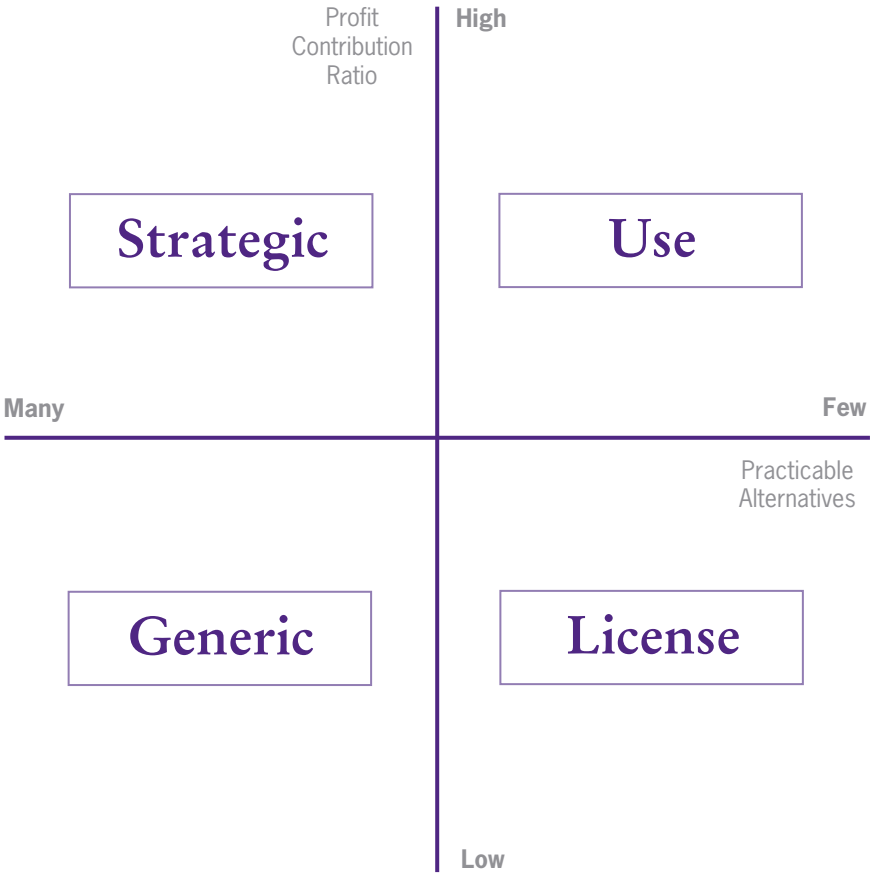
Navigating uncertainty: a framework for understanding patent values (continued)

Sources of Patent Value



However, despite these relatively straightforward value sources, determining the specific patent value is extremely complicated. To help clarify the sources of patent values and the uncertainties related to these sources, consider the two-dimensional framework for articulating and understanding patent values. The framework evaluates the subject patents along two dimensions: profit contribution ratio (PCR), the vertical axis; and practicable alternatives (PA), the horizontal axis.

Profit contribution ratio

The PCR measures the patented technology's contribution relative to the profits generated from the sale of a product. This measure is defined as the value added to the product by using the patent's benefits, divided by the total profits earned from the product. Whenever the embodiment of a patent significantly differentiates a product from its competitors, this ratio will be high.

For example, the market for disposable razors is highly competitive. Most of the disposable razors available have similar performance characteristics and sell at low price points. However, Gillette's MACH 3® razors contain patented technology that improves their performance and allows Gillette to charge a premium price for its product; hence, this patent has a high PCR. Alternatively, some products contain patented technology which may be important but which does not add significantly to the profits from the sale of the product, in which case the PCR will be low.

Practicable alternatives

The horizontal dimension, PA, describes the number of possible methods — many to few — of accomplishing the functionality provided by the patented technology. The PA scale measures the uniqueness of the technology described in the patent. Some patents describe a feature that can be accomplished only through a small number of methods, in which case the patent falls into the "few" side of the scale. Alternatively, patents sometimes cover only one of many possible methods to accomplish a particular goal. Therefore, these patents fall on the left or "many" side of the PA scale.

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Navigating uncertainty: a framework for understanding patent values (continued)

Use of the patented technology (upper right quadrant)

Patents that contribute a relatively large percentage of a product's profit and describe one of only a few methods to accomplish the functionality of the patented invention, with a high PCR and few PA, fall in the upper right quadrant. An example would be patents that cover pharmaceuticals such as Lipitor® or Viagra®. Patents in this quadrant are typically used by their owners in a tactical manner. These owners manufacture products covered by the patents, and they tend not to license their use.

The patent valuation challenge is to separate the increase in sales volume or increase in profit margin resulting from the expected future use of the patented technology. Once this increment has been determined, the valuator can use the income approach to estimate the economic benefits from the patent to determine its value. For patented technology that is closely related to an end product, this process can be relatively straightforward. In the case of Lipitor, the patented technology is the product the doctor desires to prescribe. To estimate the value, one must estimate the number of prescriptions and the likely profit per pill and account for the possible alternative treatments.

License patent rights (lower right quadrant)

Patents that describe one of only a few ways to accomplish the functionality of the invention but contribute a relatively small amount of profit to the product, with a low PCR and few PA, fall into the lower right quadrant. These patents are often characterized as being only a small part of a larger product. For example, automobiles contain hundreds of features that are important to consumers. Most features contribute only a small fraction of profit generated from the sale of the automobile. A patent covering a particular type of turn signal indicator or tinted glass would fall in this quadrant. Patent owners typically license these patents even if they manufacture products covered by the patents because they can earn additional revenue without significantly affecting their competitive position. Similarly, because these patents add relatively little profit to a product, the ownership of the patent does not provide an economic justification to support the manufacture of the product, which implies that licensing is the most likely source of value from the patent. Often, this source of patent value is the simplest to identify and value. If a patent has been widely licensed for a significant amount of time, the valuation analyst need only project future royalties to determine its value.

Valuing unlicensed patents in this quadrant can be difficult because their value is often entwined with other nonpatented features. For example, a patented tread design could be an important feature of an automobile tire. However, there are many additional features beyond the tread design that factor into the customer's purchasing decision, such as tire speed rating, existence of white walls, tire profile, expected tread life and manufacturer reputation. The challenge to the valuation expert is to separate these effects and isolate the value provided solely by using the patented tread design. One approach may be to use statistical methods to compare the profits generated by tires which contain the patented tread design with the profits generated by similar tires which do not contain the patented tread design.

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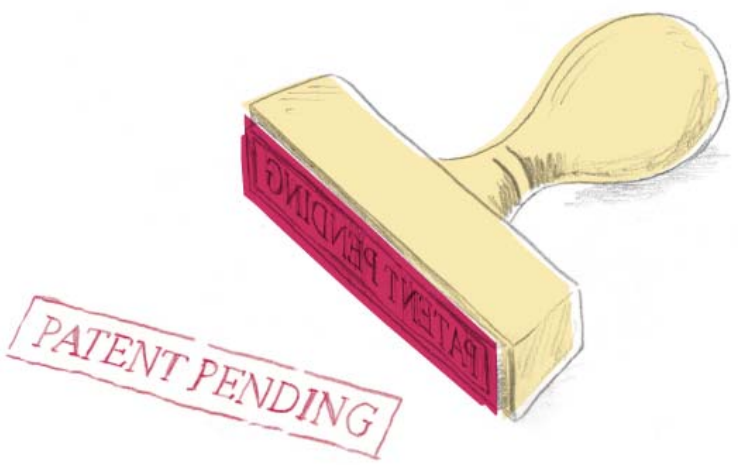
Navigating uncertainty: a framework for understanding patent values (continued)



Strategic restriction competitors (upper left quadrant)

Patents that contribute a relatively large percentage of the product's profits but have many alternatives, with a high PCR and many PA, plot in the upper left quadrant. Though the patent owner may manufacture a product embodying the patented technology, the value of the patent often derives from more strategic sources. These patents may be used to restrict the actions of competitors by blocking access to certain technologies or may be cross-licensed in pools to reduce conflict between major competitors.

Often, early entrants into an industry can employ a blocking strategy because they have developed several generations of products and the early patents supporting these products discourage new entrants into the industry. These early patents increase the profit margins on the new generations of products by preventing new entrants from selling inferior prior-generation products at lower prices.

Alternatively, early entrants into an industry or others that have large numbers of patents may decide to cross-license the portfolio. Cross-licenses are agreements between companies that allow each company to manufacture products covered by the other companies' patents. Often these agreements cover a company's entire portfolio of patents or all of the patents related to a division or subsidiary. These cross-licenses may benefit the patent owners by restricting entry into the marketplace.

The value of patents used for strategic purposes is difficult to measure because one cannot easily determine the cash flows generated by the patents. The cash flows could be substantial, but they are embedded in the profits from the sale of products covered by the cross-licenses. Disentangling these profits is complicated by the fact that often no single patent can be identified as critical to the strategy.

Patent value may also result from the strategic preservation of rights to develop technologies in the future. The patent may not provide any tactical value or generate any licensing revenue today, but it may still have value because the patent owner anticipates that a market for the patented technology will develop. These patents are extremely hard to value because the cash flows associated with these future opportunities are arguably the most difficult source of value to quantify.

Other sources (lower left quadrant)

Finally, patents that provide only a small portion of the product's profit margin and are only one of many ways to accomplish the functionality of the invention, with a low PCR and many PA, fall in the lower left quadrant. Though these patents may be licensed, their small contribution to profits and the existence of multiple alternatives decrease the probability that someone would be interested in taking a license. These patents also generate little strategic or tactical value. However, they may provide value in a variety of other contexts. For example, there is evidence that large patent portfolios indicate an active, successful research and development program, which increases corporate value. Even if the patent portfolio may have little market value, it can still be highly valued as a signal of future corporate earning power.

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Navigating uncertainty: a framework for understanding patent values (continued)

Also, these patents may provide value through the legal system if patent owners receive compensation for infringements of their patent rights. Federal statute ensures that if a valid and enforceable patent is infringed, the patent owner will receive no less than a reasonable royalty for that infringement. These payments for the infringement of the patent rights are cash flows related to the patent and are considered a source of value, although legal outcomes are notoriously difficult to predict.

Conclusion

This simple framework does not attempt to answer every question about patent values, but it offers an easy way to understand the sources of patent value and the strategies and uncertainties typically associated with each source. Though each patent is unique and its value is derived from varying combinations of these value sources, this framework is a rough guide to help you navigate the many uncertainties surrounding patent value. •

This article is an excerpt from the book From Assets to Profits: Competing for IP Value & Return, *edited by Bruce Berman, November 2008, John Wiley & Sons, Inc.*

About the author

James Woods, PhD, is a principal and the Economic Advisory Services practice leader for the Houston office of Grant Thornton LLP. Over the past 10 years, Woods has assisted clients with a broad range of issues involving the valuation of various types of intellectual property. He has worked on projects with clients involved in numerous industries, including computer hardware and software, Internet transfer technologies such as TCP/IP and Voice Over Internet Protocol (VoIP), microelectronics and cellular telephones.

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