

A general approach for determining when to patent, publish, or protect information as a trade secret

Protecting your invention requires careful consideration of its use, your intentions, and the marketplace.

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Intellectual property (IP) law provides two different and conflicting ways to protect technology: patent and trade secret protection. A patent protects new and useful inventions. With patent protection, an inventor strikes a form of bargain with the government—a limited period of exclusivity in return for complete disclosure of the invention. During the period of exclusivity, the IP owner can prevent anyone from making, using, offering for sale, or selling the invention¹. On the other hand, a trade secret can protect any form of confidential information (not just inventions) that has business value. Unlike patents, a trade secret can last forever as long as the IP owner takes steps to maintain the confidentiality of the information. But one drawback of trade secret protection is that the IP owner can only prevent use of the information by someone who has misappropriated it: reverse engineering of a trade secret is permitted under the law. Companies must therefore weigh the pros and cons of patent and trade secret protection when choosing how to protect their technology, since the wrong choice can have a devastating impact on a company's financial viability².

In certain cases, considering patent or trade secret protection leads to a simple solution for the technology company. For example, a US Food and Drug Administration–approved drug demands full disclosure of all technical matter. Here, the requirements of full disclosure before product commercialization may dictate patent protection—even though such requirements are outside of patent law. Trade secret protection for marketing a drug in the United States is simply not an option.

In many cases, however, when options are present, patent or trade secret protection warrants careful consideration. Variables to ponder include the feasibility and time involved for a competitor to arrive independently at or reverse engineer the invention; potential mar-

ket revenues versus the costs of litigation and enforcement; enforcement of confidentiality to ensure trade secret non-disclosure; and so on. Furthermore, the two forms of legal protection have two very different statutory frameworks. Faced with this labyrinth of business and legal questions, a technology firm might easily be disenchanted with the prospect of commercializing its innovations. As a further note, technologists, especially scientists, may consider a more defensive strategy—publishing inventions in technical or trade journals. Under US patent law, inventions must have the characteristics of utility³, novelty⁴, and non-obviousness⁵. To satisfy the novelty and non-obviousness criteria, it must be shown that the invention is sufficiently different from those found in the literature, in public use, or on sale—known as ‘prior art’⁴. A defensive publication establishes prior art against competitors—potentially disabling a patent or preventing a patent from issuing and thereby canceling a competitor's claim on a piece of intellectual property⁶. In this article, we present a general and pragmatic approach for assessing the best overall legal and business strategy to protect an innovation. This approach lays out a useful road map for determining, from a business perspective, when an innovation should be protected under patent or trade secret law or published as a defensive weapon against future competitors. We conclude with a discussion of the advantages and caveats of this approach.

Before we begin we note two important caveats that go beyond the scope of our analysis. First, a company may choose to pursue a patent for “marketing purposes,” i.e., to impress potential customers, investors, and partners of the technology's unique qualities. Second, the analysis assumes some knowledge of the invention's potential financial returns, which, if they are totally unknown, may lead a company to pursue a patent as a way of hedging its bets.

The 6-step approach

Our general and user-friendly approach to evaluating patent, defensive publication, or trade secret protection is outlined in Figure 1. We will assume, for this discussion, that the invention is indeed patentable: that is, it possesses the legal requirements for patentability

as defined under US patent law. In what follows, we briefly describe each “decision point” and then provide examples of how to use our approach.

Step 1: Is public disclosure necessary? The first question to consider is whether or not there exists any legal condition necessitating disclosure. For example, under FDA regulations pharmaceuticals, such as therapeutics and small-molecule drugs, must be described in detail if they will be marketed as a drug within the United States. In this case, companies must either patent or publish, because trade secret protection is not an option.

Step 2: Is the idea easy to reverse engineer or discover independently? The next question that must be addressed is whether another group could independently rediscover or “re-engineer” the invention, and how long this would take. A rapid, independent rediscovery will decrease the value of any product, because competition will drive down prices. In this scenario, patent protection would be recommended, because a patent allows for a time-restricted monopoly for that particular invention.

Step 3: Is the technology area evolving quickly? A third question concerns the technological environment in which the innovations occurred. If technological advancements are occurring rapidly, then it is important to get the invention to market as soon as possible, which will help build other barriers to entry (beyond intellectual property). Furthermore, the cost to file and process a patent may not be worth it when the underlying technology could soon be obsolete.

Step 4: Is it a new area of technology? A brand new area of technology, such as the Internet in the 1990s, presents a unique issue. Patenting offers a way to monopolize immediately large pieces of intellectual property. Because there will be few records indicative of prior art, unusually broad claims can be defined, limiting competition.

Step 5: Are you potentially interested in licensing the invention? If the owner of the invention plans to allow others access to the invention, it is best to allow for a formal licensing agreement. Because licensing to third parties may provide additional revenues to the patent holder, a patent is more advantageous, because licensing trade secrets risks potential-

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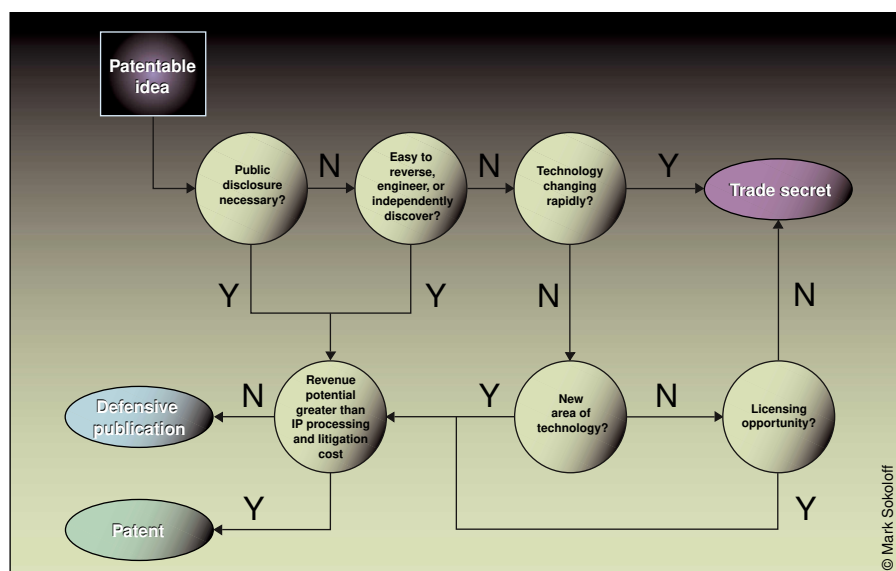


Figure 1. A general approach to determine patent, defensive publication, or trade-secret protection.

ly unauthorized disclosure to third parties.

Step 6: Do the potential market revenues outweigh the patent and associated costs? Arguably the most important criterion concerns the potential market revenues that can be generated from the product. In general, patent and associated costs can be rather expensive. For example, patent filing costs alone in the United States can range anywhere from \$5,000 to \$15,000, and associated enforcement and litigation costs can increase that by several orders of magnitude. Thus, if the expected market revenues are low in comparison to the legal costs, it may be best to simply publish the materials in a respectable journal. Such publication may be considered a defensive publication, as it associates the inventor's name with the invention. This strategy has several additional advantages, including securing a market brand (albeit weak) and removing the opportunity for others to claim the invention.

Examples of disclosure and non-disclosure

A gene-finding computer algorithm. Imagine that we have an algorithm that, when given genotype information about individuals with disease and without disease, can find all genes that are strictly associated with the disease. Further, the algorithm can find such disease-associated genes from even the most rough and weakly stratified data sets, and capable of elucidating even the weakest signals. The resulting data will be a text file containing the gene locations as well as sequence information. Such a program would be invaluable.

Assuming that we are interested in patent rather than copyright protection, we can begin our analysis using Figure 1. Because public disclosure of the algorithm is not necessary, we then investigate the feasibility for a competing

company of reverse engineering the result. If the program merely provides information about each gene—its location, size, and so forth—and we do not reveal the program's source code, then we are not too concerned with reverse engineering. Even though pharmacogenomic gene-finding algorithms constitute a hot field of study, with hundreds of publications per year, little advancement has occurred since the 1980s. Thus, it is unlikely that a better gene-finding algorithm will be found in the near future. In regard to commercialization, we are not particularly interested in licensing the technology, because we are able to sell the information it generates (i.e., the genes and their annotations) on its own. Thus, a new gene-finding algorithm should be preserved as a trade secret.

A therapeutic agent. Let us assume that one has constructed an aspirin analog. According to FDA regulations⁷, full disclosure is required. On FDA approval of the drug, the associated materials—once kept as a confidential matter under FDA regulations—will become publicly available. As public disclosure is required, and drugs typically generate revenues much greater than the incurred patent costs, patent protection is strongly advised.

A machine for counting hair on Patu marples. At 0.43 mm in length, roughly the size of a pinhead, the Samoan moss spider is the smallest known spider. We have found a method to count hair exhaustively, but unfortunately, the machine only works on this particular species of spider. From a brief description of the technology, we do not know if it would be easily rediscovered within a rapidly evolving area of technology. However, we do know that the market size for such a discovery is probably low. Thus, a scientific publication would be the best course of action.

An Internet search browser. Let us assume the year is 1995 and that we have a new semantically driven, keyword-based algorithm for searching the Internet. This search algorithm could become valuable if it can attract large amounts of traffic to our website. We can exploit the traffic brought in by our new search engine through fee-based services. So, it would be wise to protect the algorithm that powers the data-mining engine.

Public disclosure is clearly not necessary, and keeping the source code a secret should prevent reverse engineering. The core search engine technology is the first one in existence, so the next step must be cost-benefit analysis. Because the revenue potential of this piece of IP could be quite high, the cost of pursuing a patent is clearly justified. Therefore, a patent would be the best approach.

Conclusions: Advantages and caveats

In general, when commercially viable technologies are discovered, the next logical step is to secure legal protection, thus obstructing competitors from entering the market space. This is not a trivial task, as many companies realize. As the rate of discovery increases, legal freedom decreases as a direct consequence.

To this end, we have provided a general method for assessing patent, publication, and trade secret strategy. We promote the idea of establishing logical models that can be used to analyze the alternative means available for commercializing technology.

There are, however, some caveats with our approach. These include the fact that detailed information about the (potential) market place, competition, and technological environment must be factored in. The flow diagram only can be used as a general roadmap evaluating the appropriate protection; it cannot answer in-depth business questions. Second, and most important, the model does not address the legal analysis required to determine patentability or validate the procedures to protect trade secrets. Only together can technical, market, and legal insight coupled with logical models offer some aid for companies attempting to protect their inventions.

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- 35 USC § 271.
- Amjad, H.M. Patent vs. trade secret: Look at costs, industry and returns. *The Business Journal* Feb. 1, 2002. <http://kansascity.bizjournals.com/kansascity/stories/2002/02/04/smallb3.html>.
- 35 USC § 101.
- 35 USC § 102.
- 35 USC § 103.
- Barrett, B. Defensive use of publications in an intellectual property strategy. *Nat. Biotechnol.* **20**, 191 (2002).
- Code of Federal Regulations, Title 21, Vol. 5, **21CFR314.50**.