

How Could Software Patent Law Impact Electronic Commerce?

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Introduction

On July 23rd, 1998, the U.S. Court of Appeals for the Federal Circuit ruled in the *State Street Bank & Trust Co. v. Signature Financial Group Inc.* that business methods are patentable.¹ Soon thereafter, many Internet firms claimed that their patents cover many current and emerging electronic commerce processes.

In its Framework for Global Electronic Commerce, the United States government has already proclaimed that "the private sector should lead."² However if the patentability of business processes embedded in Internet technology is sustained, this could result in a chilling effect upon electronic commerce because patent holders could exert legal powers of restraint upon their competition by prohibiting the competition from using patented business methods, or by charging licensing fees.

This paper will examine the evolution of patent law, the blurring of the boundaries between business method and technology innovation as exemplified by electronic commerce technology, and how these two worlds of law and technology have collided.

Patent Law Basics

Under Article I, §8 of the Constitution, Congress has enacted laws to protect inventors' discoveries ("Congress shall have power ... to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries").³ These patent laws, which are contained primarily in Title 35 of the United States Code, grant the inventors the right for a limited period of time (currently between fourteen and twenty years, depending upon the patent type) to prohibit others from using producing or using the intellectual property covered by the patent.

The government intends that the patent system promotes technological innovation by providing sufficient economic incentive for research and development which result in new innovations that are protected for a limited time from intellectual theft by others. In exchange for the legal protection, the patent-holder must disclose enough information about the patent to allow others to use the patented invention after the patent had expired, and also to allow others to learn from the patent's to allow additional innovations.

In order to be patentable, an invention must pass four tests. However, not all "inventions" can be covered by patent protection, because the patent laws exclude "laws of nature, natural phenomena, and abstract ideas."⁴

1. The invention must fall into one of the five "statutory classes" of things that are patentable:

- processes,
- machines,
- manufactures (that is, objects made by humans or machines),
- compositions of matter, and
- new uses of any of the above.

1. The invention must be "useful". One aspect of the "utility" test is that the invention cannot be a mere theoretical phenomenon, and possesses utilitarian or commercial value.
2. The invention must be "novel", that is, it must be something that no one did before, and is the first embodiment of the idea in a useful thing or process
3. "The invention must be "unobvious" to "a person having ordinary skill in the art to which said subject matter pertains". This definition requires that a person who is reasonably skilled in the pertinent art, given what already exists in the particular area of the invention, could not have obviously arrived at the same invention. However this last test is often the most difficult hurdle for a new invention since the determination whether the differences between the new invention and the prior art are "obvious" is a very subjective process. This test is the one on which many patentability disputes hinge.

The committee reports accompanying the 1952 Act indicate that Congress intended statutory subject matter to "include anything under the sun that is made by man." ⁵ Thus the Supreme Court, in the *Diamond v. Chakrabarty* case, abided by the 1952 act's supplemental information, and reaffirmed that the act covers "anything under the sun that is made by man." ⁶

The patent laws allow for design and plant patents, but this paper will focus upon utility patents. A utility patent's lifetime is twenty years from the effective filing date. However maintenance fees must be paid at 3.5 years, 7.5 years, and 11.5 years after the patent issue date. There are four type of utility patents (see § 101 of Title 35), or areas where a patent can be granted:

1. machines
2. man-made products
3. compositions of matter
4. processing methods

Evolution of Patent Law as applied to Software

Though computer software became increasingly important to the business world, it took a few decades before a case that involved computer software came before the legal system. It was a torturous path that led to the *State Street Bank & Trust Co. v. Signature Financial Group Inc.* decision that business methods are patentable. ⁷ In the beginning, it wasn't even clear that computer software could be covered by patent law.

In the 1972 *Gottschalk v. Benson* case, the patent suit focused upon a computer program algorithm that converts binary-coded decimal numbers to pure binary.⁸ According to the Supreme Court, the Patent Act does not cover a mathematical algorithm, and thus does not provide legal protection to the computer software. However the Supreme Court did not define the term "algorithm". Subsequent to this court decision, the Patent and Trademark Office (PTO) rejected patent applications if they contained the word "algorithm", or the examiner used a broad definition of "mathematical algorithm".

In the 1978 *Parker v. Flook* case, the patent suit focused upon a patent that incorporated an alarm-generating computer algorithm.⁹ The Supreme Court decided that other than the algorithm, which is not patentable, the patent had no significant innovation. Thus the court maintained its position that an algorithm is not covered by the 1952 Patent Act.

In the 1981 *Diamond v. Diehr* case, the Supreme Court addressed the issue of whether a process employing a mathematical algorithm is patentable.¹⁰ The Supreme Court found that the invention incorporated a mathematical algorithm, but also found that other portions of the patent, which covered the entire process of molding rubber, were innovative, and thus eligible for patent protection. The Supreme Court still maintained that the Patent Act did not cover a mathematical algorithm.

In the 1994 *Alappat* case, the Court of Appeals for the Federal Circuit, which provided legal review for patent law, ruled that the PTO could not deny a patent solely because it contained a computer algorithm.¹¹ The PTO used the Freeman-Walter-Abele criteria to identify patentable algorithms i.e. those algorithms that manipulated more than abstract ideas. This test had two primary components, the mathematical algorithm test, and the physical transformation test, which could exclude a patent application from legal protection.

The patent application is reviewed to determine whether it directly or indirectly incorporates a mathematical algorithm. A mathematical algorithm cannot be patented because it is considered to be an expression of natural laws that are "merely abstract ideas constituting disembodied concepts or truths that are not "useful."¹² If such an algorithm is identified, then the patent application is reviewed to determine whether the algorithm either contributes to the physical transformation of the final product, or is incorporated into a process that contributes to the development of the final product. A patent application has to fail both tests of the Freeman-Walter-Abele criteria to be disqualified from patent protection.

In the 1996 "*State Street Bank and Trust Co. v. Signature Financial Group*" case, the Circuit of Appeals for the Federal Circuit judged a landmark case in which it extended legal protection to business methods embedded in software. The court concluded that the question of statutory subject matter "should not focus on which of the four categories of subject matter a claim is directed to -- process, machine, manufacture, or composition of matter-- but rather on the essential characteristics of the subject matter, in particular, its practical utility" which is further defined as producing "useful, concrete, and tangible result."¹³ These results can be measured in numerical terms such as "as price, profit, percentage, cost, or loss."¹⁴ The court stated that "Since the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as

applied to any other process or method." [15](#)

The primary business significance of the court's decision can be categorized:

1. Expands patent protection scope. If a software application provides a "useful, concrete, and tangible result", then the software qualifies for patent protection.
2. Eliminates the business method exception. Previously patent lawyers and patent examiner have had always considered that business methods were not patentable. The court's judgement explicitly recognized the patentability of business methods.

This court judgement stirred great interest in the business community because for the first time, the legal system had definitively recognized that software-based business methods could be patented. The remainder of this paper examines the burgeoning rise in Internet software patents, the Internet community's response to the State Street Bank v. Signature Financial Group decision, and the implications for electronic commerce.

Internet Software Patents

In March 1998, the US Patent and Trademark Office granted OpenMarket three patents that covered its electronic commerce products known as Livecommerce internet catalog software, Transact 4 internet commerce software, and Folio information management products. [16](#) The three patents were:

1. Internet Server Access Control and Monitoring Systems (No. 5,708,780) covers the monitoring and analysis of the customers' web site usage patterns as they browse through the website. Session identifiers known as cookies allow businesses to understand the customers' buying patterns, and thus allow them to customize the web browsing experience. This patent also includes the functionality to limit web site access based upon cookie-based customer identification.
2. Network Sales System (No. 5,715,314) covers the use of the "electronic shopping cart" metaphor in which merchants provide customers a mechanism for accumulating items for purchase before checking out and paying. This patent also includes the transmission of payment and purchasing information through a universal resource locator (URL).
3. Digital Active Advertising (No. 5,724,424) covers the secure, real-time payment using credit and debit cards over the Internet. Its December 16th, 1993 filing date marks this patent as one of the earliest known Internet payment patents.

The business methods and technologies documented in these three patents are very widely used in many competing Website products such as IBM's Net.Commerce, Microsoft's Site Server, and Netscape's Commerce server. If these patents are sustained, then under current patent law as indicated by the State Street Bank v. Signature Financial Group decision, OpenMarket can exclude its competition from using the technologies covered under these patents. Patents have a two to three year gestation/examination period before they are awarded. Thus patent application filed between 1995 and 1996 applications have now completed patent review and approval, and are finally being released.

Other companies that have also pursued patents for their software technologies include:

1. Netcentives that received a patent for its online reward program
2. Cybergold that received a patent for online brokerage patent
3. Priceline that received a patent for reverse auction

However some of these patents raise some key questions on whether the patent protection could stifle the growth of Internet commerce because these patents claim to cover basic transactional processes that are already commonly known and used in the business world. For example, the "shopping-cart" metaphor that was patented by OpenMarket is commonly used in the retail industry.

The Internet community is beginning to question whether the PTO is equipped to properly understand and evaluate the "novelty" of Internet patents. Professor Pamela Samuelson, of the University of California at Berkeley, has also noted that there is insufficient patent case law to help the PTO apply sound judgement to Internet software patents, and also that the PTO lacks the necessary technical and business expertise to truly judge what's novel in Internet software patent applications. Robert Sachs, an intellectual property lawyer, added "the Patent Office really is not equipped to handle these patents. Examiners ... simply do not have have sufficient expertise to evaluate patents which cover Internet business models. Either they don't realize that what is being patented is simply some old idea being done on the Net (e.g. Priceline's reverse auction), or they don't have access to resources that would evidence this." ¹⁷ Otherwise the PTO could also grant Compton a very wide-ranging multi-media patent that did not adequately recognize prior art. ¹⁸

Furthermore the patent application process takes a very long time, especially in light of the Internet's rapid pace of innovation. An innovation might be obsolete by the time that the patent application is granted. To facilitate the patent process, the government might have to consider tradeoffs that will allow speedier patent review and approval process in return for a shorter patent validity period.

However a key question remains: what is the innovation that should be covered by patent protection? Should the patent, by protecting technological innovation, also inadvertently protect business models that could lead to business models? This is a particularly thorny issue when the software technologies and the business models are so intertwined. Technological innovation can lead to business innovation because Internet companies are inventing new software-based ways of conducting electronic business.

An alternate legal means to protect these integrated software-based business innovations is to consider modifying existing patent law such that the government do not grant patents upon business models, but rather grant them only for expressions of those business models. In other words, it might be worthwhile to consider blending some characteristics of copyright law with patent law to allow for patentability of specific expressions of a business model. Given that the the Internet business models and Internet software technologies have blended to create this legal and business conundrum, it seems only appropriate to blend existing intellectual property law to resolve the situation.

This idea could easily apply to Priceline.com's patent for reverse auction. The concept of "reverse auction" has long existed, and could well be considered "prior art". Under this proposal, Priceline.com

can only hold a patent for its implementation of "reverse auction" over the Internet, and cannot prohibit other companies from undertaking different implementations of the business model of "reverse auction."

Even though the US government has already decreed that "the private sector should lead" in electronic commerce, it would have to address the potential stifling impacts that software patent laws could have on electronic commerce. If the holders of these Internet software patents could monopolize the commonly available electronic commerce transactional processes, these patents could undermine the growth of electronic commerce. The private sector is beginning to perceive this as a sleeper legal issue that could engender time-consuming and wasteful litigation that would slow electronic commerce. Though it is not clear what path the government should take, it should review the existing patent legislation to determine how the laws can appropriately reflect the needs of electronic commerce, and the speed of Internet innovation. The review should incorporate an economic analysis of patent protection upon software innovation. As Professor Samuelson indicated, "We'll find out over the next decade or so whether or not patenting software really does promote innovation." ¹⁹

FOOTNOTES

1. Federal Circular, July 23, 1998
2. <http://www.ecommerce.gov/framework.htm>
3. <http://www.law.cornell.edu/constitution/constitution.articlei.html#science and useful arts>
4. § 101 - 103 of Title 35, <http://www.law.cornell.edu/uscode/35/>
5. H. R. Rep. No. 1923, 82d Congress, 2d Session, 6 (1952)
6. 447 U.S. 303 (1980)
7. Federal Circular, July 23, 1998
8. 409 U.S. 63, (1972)
9. 437 U.S. 584 (1978)
10. 450 U.S. 175, 182 (1981)
11. 92-1381, Court of Appeals for the Federal Circuit
12. *ibid*

13. 96-1327, Court of Appeals for the Federal Circuit

14. *ibid*

15. *ibid*

16. "Floodgates open for patent cases", Beth Lipton, CNET News.Com, Aug 28, 1998

17. *ibid*

18. "Patently Absurd", Simson L. Garfinkel, Wired, July 1994.

19. "Floodgates open for patent cases", Beth Lipton, CNET News.Com, Aug 28, 1998