# WE'VE GOT ALGORITHM — SOFTWARE PATENTS BOOM[1]

LORI E. LESSER
SIMPSON THACHER & BARTLETT LLP

JUNE 15, 1999



The race to be first with an Internet business model or hot software product never slows down. In fact, the purse for the victors has just gotten sweeter — a certified legal monopoly to wield against your competitors — thanks to a recent appeals court case that has opened the door to broader U.S. patent protection for Internet and financial software. Much of the financial software that had been turned down for patent protection in the past is now patent-eligible, and Internet start-ups and software makers are racing to take advantage. The next generation of Internet and software patents will cover everything from Internet "reverse auctions" and "shopping carts" to "natural language" search engines to electronic money.

Critics of the court case, *State Street Bank & Trust vs. Signature Financial Corp.*, note that a boom in Internet patents may hurt e-commerce and the software industry, particularly if it results in a "minefield" of legal monopolies that new inventors must avoid to run their Internet businesses without violating the law or paying heavy licensing fees. In sum, a U.S. patent owner can prevent all other parties from making, using or selling the same or equivalent technology in the United States, even if the patent owner does not use the technology itself, and even if those parties later create their technology independently and without copying the patented subject matter. Once the patent issues, for U.S. patents filed after December 1995, protection lasts for 20 years from the original filing date of the application. Infringers can be forced to pay royalties on their unauthorized sales, any damages can be tripled by the court, and an injunction can be issued to block further violations of the patent, forcing expensive redesign costs. In the face of such risks, many companies facing accusations of patent infringement agree to pay license fees to the patent owner, even, at times, when no infringement has actually occurred.

The case that started the current patent "boom" stemmed from a dispute between two Boston-based financial institutions, State Street and Signature, which both act as custodians and accounting agents for multi-tiered partnership fund financial services. Signature had acquired U.S. patent 5,193,056, a 1993 patent that covered a data processing system for implementing

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[1] This article is a general overview of the topic, and is not to be construed as legal advice for any specific problem.

Signature's proprietary "hub and spoke" system, in which several mutual funds (the "spokes") pool their investment funds into a single portfolio (the "hub") for tax and administrative reasons. The software performed real-time calculations to allocate income, gains, losses and expenses among each fund and record daily changes in assets and market prices. State Street challenged the patent in court, after Signature refused to license it to its rival.

In March 1996, the district court struck down Signature's patent as invalid, following the long-standing doctrine that most software is not eligible for patent protection. For years, the courts have regarded software as a type of "mathematical algorithm" — a general formula that solves problems by converting one form of numerical data into another. Many courts had held that algorithms are analogous to mere "abstract ideas," which are not patentable subject matter. Software could only be patented, the courts held, if it assisted in a process that physically transformed the underlying subject matter, such as a medical device that changed patients' heartbeats into electrocardiograph signals, or software that implemented the process of manufacturing synthetic rubber. Mere "number crunching" software was not considered a "physical transformation" — numbers came in, other numbers came out — and thus was generally denied patent protection. (There were exceptions — in 1983, a court upheld Merrill Lynch's software patent relating to its Cash Management Account program.)

In July 1998, the software rules changed. The appeals court hearing the State Street case reversed the lower court, and held that Signature's software was, in fact, eligible for a patent. The court made this finding by changing the legal test for patentable software from "causing a physical transformation" to producing "useful, concrete and tangible results" — a broader and more lenient standard. Indeed, this sounds almost like a definition of financial software — how often does it produce useless, abstract and theoretical speculation? (Don't answer that.)

In *State Street*, the court also strengthened the case for business-related patents in general, by rejecting the long-standing doctrine that "business methods" were not patentable, because they were, like algorithms, merely "abstract ideas." If software otherwise qualifies for a patent, the court held, its business function should not stand in the way.

After the *State Street* decision was announced, legal experts speculated whether "the floodgates" would open, and businesses would win scores of patents to cover widespread and obvious industry practices, thereby blocking rivals from using fundamental techniques and processes, such as accounting standards, advertising campaign basics and recruiting techniques. As one *Wall Street Journal* headline asked, "What's next, getting patents for cold calls?"

Such a scramble to patent business acumen is not viewed as likely, however. First, according to the U.S. patent laws, patentable subject matter comprises only "processes, machines, manufactures and compositions of matter," and excludes abstract ideas, mental processes, laws of nature and abstract phenomena. Once this initial hurdle is cleared, the patentable subject matter must also be novel, non-obvious, useful, reduced to practice, timely filed and sufficiently and properly disclosed to the government. These hurdles make it unlikely that firms will patent the art of a good "cold call," writing clever ad copy or keeping employees

from goofing off and calling radio talk shows. You can also disregard the recent Internet joke that Microsoft has just patented the numbers "1" and "0," based on its long-time use of binary code.

Yet, if a software "machine" or "process" enters the picture, all bets are off. All of the above ideas *have* been patented (except Microsoft's "1"s and "0"s), when they were enshrined in software to carry them out. For example, the CEO of Melita International in Norcross, GA recently won U.S. Patent No. 5,594,791 for software that analyzes consumers as potential "cold-call" victims (I mean, recipients) and studies available databases, mailing lists, credit reports and the like to figure when they would least object to a sales pitch and the best method (phone, fax or e-mail) for making one. (The patent calls it "result-oriented customer service.") Be Free of Marlborough, Mass. was awarded U.S. Patent No. 5,848,396 in December 1998 for software that combines Internet users' available lifestyle data and "cookies" (the tracking files left on users' hard drives after visiting certain sites) to tailor Internet ads to customers' behavioral profiles. In March 1999, a Canadian inventor received U.S. Patent No. 5,842,174 to help employers identify personal long-distance telephone calls made on the job.

According to recent statistics, these companies will soon be joined by many more, as software patent applications increase in droves after *State Street*. The U.S. Patent and Trademark Office ("PTO") reported a record 151,024 patents issued last year, up 33 percent from 1997, according to patent data firm IFI/Plenum Data Corp. A boom in software patents is credited for much of this growth — some 15,000 software patent applications are now on file at the PTO. The PTO issued 1,016 Internet and network-related patents in 1998, up 109 percent from 1997, and business-method related patent applications soared 40 percent in the six months after the State Street decision. The PTO has increased its recent hiring by 20 percent to process the increased numbers.

This "file early and often" patent strategy has both offensive and defensive components. The costs are not that high; for a U.S. patent, the entire process generally takes about 23 months and costs less than $10,000. Secrecy enshrouds the patent application until the patent issues — no one but the inventor, exclusive licensee and the attorney of record may access the examiner's files. If a patent does issue, as stated above, the owner can use it to prevent competitive manufacture, sales and use, and/or force its rivals to pay years of royalty fees to avoid infringement lawsuits. (An software copyright owner has less leverage against competitors, because unlike a patent, a copyright blocks only later *copying* of software, not independent creation of a similar product. Similarly, the trade secret laws protect software only to the extent that software properly kept "secret" was purloined by a third party.)

Patent licensing fees can be huge and easily collected. According to press reports, Peerless Systems has reportedly quadrupled its licensing revenue since receiving six U.S. patents from 1996-98, including one relating to laser printer imaging software. Open Market Inc., armed with its February 1998 patent for the on-line "shopping cart," announced recently that it was looking to license its technology, as is CyberGold, which in December received a

patent for its "attention brokerage" software, a system of paying Internet users to respond to on-line ads. CyberGold is a familiar name to Internet lawyers, because it was party to a well-known early lawsuit over the proper terrestrial court to try a "cyberspace" case.

As a defensive consideration, if you do not seek a patent, a competitor might do it first, and then, the licensing checks and legal bills will be signed by you. The *State Street* case has been returned to the lower court for further proceedings, and the companies are currently pursuing mediation. In theory, if another trial ensues and state street loses, it could be assessed a percentage royalty on any U.S.-based transactions that use Signature's technology. This is for a company for which $200 billion flows through its systems each day, and for which 90 percent of revenues come from financial information processing and managing services. Even before State Street, Meridian Enterprises of St. Louis sued some 14 firms for allegedly infringing U.S. Patent No. 5,025,372, covering software that enables credit card rebate "points" to be awarded and translated into dollars. Most of the sued companies — including Visa, Mastercard and several banks and oil companies that run credit card programs — have settled for undisclosed (but presumably costly) licensing payments. Visa and Mastercard filed their own "friend of the court" briefs in *State Street*, challenging the validity of Signature's financial software patent. Once burned, twice shy.

Similarly, E-Data Corp., formerly Interactive Gift Express, became notorious in the Internet world by suing dozens of companies, including CompuServe, Adobe, Broderbund and Intuit, for allegedly infringing U.S. Patent No. 4,528,643, which covered software for downloading and selling data to users in retail store kiosks. E-Data claimed that the patent covered all e-commerce in which the purchases were downloadable, such as music, software, greeting cards and motion pictures. Internet lawyers viewed the case as a danger to the entire field of e-commerce, and half the firms settled for undisclosed (but again, presumably costly) licenses. Some firms battled it out in court, and the case may soon be over, because in May 1998 a U.S. judge held that E-Data's retail store kiosk technology was improperly "stretched" to cover on-line downloads. After all, the patent originally issued in July 1985, long before the World Wide Web's grand debut.

Against all these considerations, an aggressive stance toward patenting one's software may be prudent. Internet start-ups are certainly taking the lead in this area. Priceline.com, which turned the Internet "reverse auction" into a $1 billion company, was awarded U.S. Patent 5,794,207 in August 1998 for its software allowing buyers to "name your own price." The patent's title is actually "method and apparatus for a cryptographically assisted commercial network system designed to facilitate buyer-driven conditional purchase offers," but William Shatner probably can't say that in a short ad. In August 1998, Inquizit of Santa Monica was awarded U.S. Patent No. 5,794,050 for software modeled on linguistic principles, enabling a user to search the Internet using "natural language," and thereby improve retrieval accuracy. Netcentives of San Francisco was awarded U.S. Patent No. 5,774,870 for software that runs its on-line "frequent shopper" program.

Many more of the best and brightest companies have recently received Internet patents: Amazon.com (on-line credit-card orders), First Virtual Holdings Inc. (on-line payment using off-line agents), V-Cast Inc. (automatically downloading data to subscribers), Citibank (electronic money), Multex (secure electronic distribution of research) and Juno Online Services (changing ad displays, off-line ad display authentication and others). Many others have announced, or are reported to have patents applications in queue: Gist Communications, togglethis, DoubleClick, Wit Capital, Comet Systems and LinkShare. New York-based Comet Systems stated last December that it plans to file for up to 24 patents on the technology underlying its cursor, which users can transform from an ordinary arrow into images of their choice. Linkshare Corp., a provider of on-line affiliate programs, has a patent pending for its Synergy software, which would allow merchants to distribute thousands of new web promotions with a single "click." (Beats licking stamps.)

Joining the patent parade sounds a bit like classic peer pressure — file, because all your friends are doing it. And legal experts differ on whether all these Internet patents will be upheld over time, or construed so narrowly by the courts that competitors are little hindered by them. Speculation abounds as to the ultimate breadth of Priceline's legal monopoly over "reverse auction" technology, at a time when Priceline has announced plans to expand its business scope. Indeed, Priceline's patent has already been challenged by an inventor who claims that he filed first, for a patent covering an on-line marketplace for buyers to bid on collectibles. As noted above, a federal judge made the world safer for e-commerce by deeming E-Data's 1985 kiosk patent too narrow to cover cyberspace. Similar rulings down the line may, to mix metaphors, make the Internet world less akin to slaloming through a "minefield" than merely keeping in bounds on a fairly large gridiron. Yet while the courts sort out these issues, many Internet and software firms are saying: "Better safe than sorry."

Minefields aside, strong patent enforcement also has its benefits to society. If the government awards more legal monopolies to new software, even more talented programmers may decide to drop out of stuffy universities and work in their garages to fuel the Internet revolution. Ironically, State Street itself may be straddling the fence on this issue. While State Street was challenging Signature's "hub and spoke" patent in Federal court, its asset management unit, State Street Global Advisors, was awarded a patent in June 1998 on its own software to help select stocks and construct investment portfolios, and reports to have another investment patent on the way. Can State Street II be too far away?