The current state of software and business method patents: 2008 edition

From the End Software Patents project

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Abstract

On the economic front, there continue to be billions of dollars in litigation over software patents every year, and such suits are increasingly against companies in the general economy who have software patent liability simply because they have a web site. Several pro-software patent academics have searched the existing data for evidence that software patents foster innovation, and failed to find any.

On the legal front, the courts have begun to take notice, and from the Patent Office to the Supreme Court, judges have begun to indicate a desire to revise the current policy that everything is patentable subject matter. Expect to see the restoration of many important limits on what may be patented.

Contents

This is an overview of the recent history of software patents from an economic and legal perspective.

We intend it to be an annual report. We have chosen March 2006 as the starting point for this report, because that was when the Supreme Court began handing down rulings regarding general patent law, including *eBay v MercExchange* (which limited preliminary injunctions) and *KSR v Teleflex* (which gave examiners more power to declare a patent claim to be obvious).

Part I, on the economic aspects of patents, will demonstrate that these rulings did not address the key problems with software patents: the litany of lawsuits continues, and evidence of benefit from software patents is still lacking. Part II, on the legal front, will show that many in the courts are actively seeking to reform or eliminate software patents themselves.

I The economy

Jaffe & Lerner's seminal 2004 book on patent reform[1] typifies the pro-software patent view: because the authors could think of no difference between innovation in the handling of data and innovation in the handling of materials or machinery, they conclude that any problems with software patents must be due to ineffective implementation of obviousness standards, excessive damage apportionment, or other details of patent law at large.

The Supreme Court gave Jaffe & Lerner their wish list, via the rulings in *eBay* and *KSR*. Yet software patent lawsuits continue unabated, and evidence that software patents promote progress continue to elude us.

> ➤ During this period, some general patent law issues have been curtailed or resolved, but software patent problems continue unabated.
>
> ➤ There is no formal registry of software patent settlements, but simply skimming the headlines turns up $441 million in settlements, none of which are based on a claim that one party copied the work of the other.
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> ➤ We increasingly find companies who are not in software being sued for infringing software patents. Simply having a web site creates the risk of millions of dollars in software patent liability.
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> ➤ Several pro-softpatent academics have done quantitative tests searching for evidence that software patents promote innovation. All failed to find any statistically significant effect.

[1] Jaffe, Adam B., and Josh Lerner, *Innovation and Its Discontents: How Our Broken Patent System Is Endangering Innovation and Progress, and What to Do about It*, Princeton University Press (2004).

I.1 The lawsuits in the headlines

Rulings limiting patent damages and obvious patents have done nothing to abate the litany of million-dollar settlements

Most people know software patents through the eye-catching headlines. Over this period, we saw:

- $47.9 million to Acacia from various companies throughout all computer-using industries in the first nine months of 2007.[2]
- $100 million from Apple to Creative for the iPod's user interface.[3]
- $133 million paid by Microsoft and Autodesk for their software registration systems.[4]
- $80 million from Vonage to Sprint-Nextel for the right to use Vonage's own telecommunications software.[5]
- "At least" $80 million from Vonage to Verizon for same; perhaps as much as $117 million.[6]

This partial sampling of rulings already gives us $441 million in public, headline-making settlements.

It is important to note that **these settlements are not over direct copying of a design or technology.** A patent holder does not need to prove that the other party is aware of the patents or is otherwise copying the patent holder to extract a payment.

Also, notice that all of these headlines are about settlements made *after* the damage-limiting *eBay v MercExchange* ruling, which clearly failed to put a halt to the litany of eight- and nine-digit settlements.

"Undisclosed amount" settlements continue at a steady pace, but we have one hint at the size of one set of such settlements: DataTreasury has made a series of undisclosed-amount settlements with the largest financial service companies in the country, including JPMorgan, BankOne, NCR, and many others,[7] over the right to send check images via Internet. The Congressional Budget Office estimates that DataTreasury could extract at least $1 billion in settlements from the banking industry.[8]

Outside the headlines If a lawsuit settles for under ten million dollars, it isn't news. But the headlines are the tip of an iceberg: software patent

[2] *Acacia fact sheet*, accessed 15 February 2008. http://www.acaciaresearch.com/pr/AcaciaFactSheet.pdf

[3] http://www.news.com/Apple-settles-with-Creative-for-100-million/2100-1047_3-6108901.html

[4] http://www.msnbc.msn.com/id/12392763/

[5] http://www.networkworld.com/community/node/20342

[6] http://www.networkworld.com/community/node/21091

[7] http://www.datatreasury.com/consentdocuments/

[8] http://www.washingtonpost.com/wp-dyn/content/article/2008/02/13/AR2008021303731_pf.html

infringement suits are filed every day, and each can cost both sides millions of dollars.[9]

- Bessen and Meurer[10] estimate $24.1 billion in costs incurred by patent suit filings in all genres, as of 1999.
- 38% of these are regarding software.[11] All signs indicate that the number of software patent suits has risen faster than the norm, but we will assume that they remain at 38% of the total.
- The number of patent suits themselves has risen, from about 2,300 in 1999, to 2,830 in FY2006—a 23% rise.[12]
- Putting it all together, we get an updated total of **$11.26 billion** in costs incurred by software patent lawsuits.

I.2 Every company is a software company

Any company with a web site could be liable for software patent infringement.

As discussed by Klemens,[13] the concept of a centralized software industry is a myth: almost every company in the USA has a web site, an accounting database, and some number of in-house software specialists who designed and customized the system. Thus, every company in the USA could find itself on the wrong side of a patent infringement suit. In fact, such suits have decidedly picked up over the past year.

For example, Global Patent Holdings holds a patent on the use of certain images on a web site.[14] The company is seeking settlements between $7 and $15 million from (partial list): CDW Corp., Motorola, the Green Bay Packers, OfficeMax, Caterpillar, Kraft Foods, ADT Security Services, AutoNation, Florida Crystals Corp., HearUSA, Tire Kingdom, and Boca Raton Resort and Club.

ESP has collected a list of over fifty non-software companies that have been accused of infringing a software patent. Prior to this period, the list of such

[9] **A retraction**: ESP had earlier used a rough figure of $11.4 billion, which we had widely reported to the press, based on a number of conservative but rough estimates of the costs of a patent suit. After external feedback and internal discussion, we have chosen to switch to the figure here. We apologize for the inconvenience caused by this modification.

[10] Bessen and Meurer, *The Private Costs of Patent Litigation*, Boston University School of Law Working Paper No. 07-08. They report a total cost of $16.1 billion in 1992 dollars which we updated to 2008 dollars here.

[11] James Bessen & Michael J. Meurer, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk*, Princeton University Press, chapter 9.

[12] Report and historical graph at http://www.researchoninnovation.org/WordPress/?p=77.

[13] Ben Klemens, *Math You Can't Use: Patents, copyright and software*, Brookings Institution Press, 2005.

[14] Once again, notice that these are post-KSR lawsuits, meaning that examiners have already been given more leeway to reject a patent as obvious. Yet Global Patent Holding seems comfortable that its patents will hold up to reexamination.

non-software companies accused of infringement was significantly smaller.[15] We expect the upward trend in the number of software patent infringement claims levied against companies in the general economy to continue into the near future.

I.3 Academic studies found no effect

Pro-softpatent scholars have tried to find evidence that software patents foster innovation, but found nothing.

Software patents have been widely recognized since the mid-1990s, which many pro-software patent academics felt would be enough data to allow for a search for benefits from software patents. Thus, during this period, a number of papers tried to find that software patents influence innovation and increase productivity. But despite their best efforts, they found nothing.

Lerner and Zhu,[16] Mann and Sager,[17] and Merges[18] all did empirical studies searching for benefit from software patents, and all found no evidence of benefit. All three spun the lack of findings to say that they could find no evidence of harm.

However, there is no statistical test that will prove a lack of effect: the studies could have had insufficient or noisy data, or simply have looked in the wrong place. Instead of looking at the software industry as a whole, as did the above studies, Cockburn and MacGarvie[19] compared different subindustries of software and found evidence that patents do indeed have a stifling effect: in those subindustries with more patenting, new firms were slower to enter.

In summary

The Supreme Court began handing down broad rulings on patents as a whole in early 2006, and not much has changed with software patents since then. We continue to see headlines with settlements in the tens of millions of dollars, even without evidence that the defendant copied (or had even been aware of) the plaintiff.

We are seeing more companies everywhere in the economy, who have the misfortune of having a web site, being sued for software patent infringement as if they are part of the software industry.

The quantitative scholarship in this period provides no evidence that software patents promote the progress of science and the useful arts, and provide some support to the claim that they hinder progress.

[15] For example, Southwestern Bell's 2003 claims against Museum Tour, a toy company, was a pioneering case in expanding software patent liability to the entire economy, but the lion's share of 2003 patent infringement suits were still aimed at large software companies.

[16] Josh Lerner and Feng Zhu, What is the Impact of Software Patent Shifts?: Evidence from Lotus v. Borland. NBER Working Paper #11168, March 2005.

[17] Ronald Mann and Thomas Sager, Patents, Venture Capital, and Software Start-Ups (September 2005). University of Texas Law, Law and Econ Research Paper No. 57.

[18] Robert, Merges, Patents, Entry and Growth in the Software Industry August 1, 2006.

[19] Iain M. Cockburn and Megan J. MacGarvie, National Bureau of Economic Research. "Patents, Thickets and the Financing of Early-Stage Firms: Evidence from the Software Industry."

II The law

At the beginning of last year, there were effectively no boundaries on what is patentable. For example, patents had been granted on tax loopholes, and one creative individual had argued that current case law indicates that storylines and new words should be patentable, and had applied for patents regarding both.[20]

But the tide is turning on software/business method patents. A number of judicial comments and rulings have shown an increasing skepticism, setting the stage for a coming re-examination of the question.

Because the legal basis of software patents is often misunderstood, this section will begin with some historical background before discussing the events of 2006–2007.

> ➤ There are three key courts overseeing patent law: the patent office's administrative court, the Court of Appeals for the Federal Circuit (CAFC), and the Supreme Court. All three have recently given indications that patentable subject matter needs to be curtailed.
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> ➤ Justices Breyer, Stevens, and Souter presented a nonbinding statement lambasting the current standards as too broad and in need of reform.
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> ➤ The administrative court of the patent office made a clean break with CAFC precedent by stating that "there is no authority that we know of which permits software per se to be considered statutory within [the US Code]."
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> ➤ The CAFC has taken the above signals and has begun questioning the issue itself. The key case at the moment is *In re Bilski*, which some believe is being groomed by the CAFC for hearing at the Supreme Court.

The players This section of the report will look at the status of three courts.

- The BPAI: The Board of Patent Appeals and Interferences is an administrative court of the US Patent and Trademark Office (PTO), whose rôle is basically to answer detailed questions of how law is to be implemented in the day-to-day affairs of the PTO. If a patent application is rejected, the applicant has the right to bring the rejection before the BPAI.

[20] Andrew F Knight, "A Potentially New IP: Storyline Patents", The Journal of the Patent and Trademark Office Society, Vol. 86, No. 11. See also application 2005/0244804, "Process of relaying a story having a unique plot" (about a character who suffers a peculiar case of *deja vu*), and application 2004/0249626, "Method for modifying English language compositions to remove and replace objectionable sexist word forms" (in which HIM + HER becomes HIR, for example)

- The CAFC: The Court of Appeals for the Federal Circuit was founded in the early 1980s to hear appeals on a number of relatively technical issues, such as veteran's affairs and patents. About half of the CAFC bench focuses on patent issues; within that group, most of the judges are former prominent patent attorneys.[21]

- The Supreme Court: This court needs no introduction. But note that the Supreme Court basically stopped hearing patent cases after the CAFC was founded, but initiated a new series of rulings beginning with *eBay v MercExchange* in early 2006.

II.1 1972–1981: The Supreme Court rejects software patents

The Supreme Court repeatedly and unequivocally ruled that software is not patentable.

How can we draw the line between physical invention, for which patents are appropriate, and information, which has traditionally been covered by copyright? The trouble is that it is easy to tack on a trivial physical step to any work of pure information: instead of a structured data set, patent a *hard drive on which is loaded* a data structure. This characterizes an information processing algorithm as the manipulation of physical bits on a computer disk.

The Supreme Court's rulings on such technically-physical devices are flowery in language but clear in intent: pure software—text or math in the abstract—is not patentable, and adding a step to a mathematical algorithm like "now load the above onto a computer" does not magically turn the software into patentable hardware.

- *Gottschalk v Benson*,[22] quoting a Presidential commission:

  > Indirect attempts to obtain [software] patents and avoid the rejection, by drafting claims as a process, or a machine or components thereof programmed in a given manner, rather than as a program itself, have confused the issue further and should not be permitted.

- *Parker v Flook*:[23]

  > The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance. A competent draftsman could attach some form of post-solution activity to almost any mathematical formula [...] The concept of patentable subject matter under [the US Code] is not 'like a nose of wax which may be turned and twisted in any direction'.

[21] See the judge bios at http://www.cafc.uscourts.gov/judgbios.html.

[22] 409 U.S. 63 (1972)

[23] 437 U.S. 584 (1978)

- *Diamond v Diehr*:[24]

> A mathematical formula as such is not accorded the protection of our patent laws, and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment. Similarly, insignificant postsolution activity will not transform an unpatentable principle into a patentable process. To hold otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection.

II.2 1990s: The Federal Circuit embraces software patents

Making no reference to the Supreme Court statements above, the Federal Circuit declared software to be patentable.

In the mid-1990s, the CAFC ruled that any physical step makes an otherwise unpatentable mathematical algorithm into a patentable device.[25] They ruled that loading software onto a computer creates a "new machine," which is patentable like any other. In fact, even a number such as a share price was ruled to be "useful, concrete, and tangible," so the means of arriving at that number is patent-eligible subject matter.

Thus, software, business methods, and basically anything else which could be expressed in machine-like wording, became patentable. Because of the Supreme Court's policy during the 1980s and 1990s of leaving the CAFC to preside over patent law, the policy that anything useful can be patented went unquestioned.

II.3 2006–present: The pendulum swings back

All three of the above courts have recently made statements questioning the lack of boundaries on what is patentable.

As the members of the Supreme Court had commented, allowing any trivial physical step to turn an unpatentable principle into a "new machine" means that anything is patentable. And indeed, patents have been granted on tax loopholes and pure mathematical algorithms to calculate Fourier transforms, the cosine of small angles, &c; as noted above, applications are pending for patents on storylines and new words.

LabCorp v Metabolite One salient patent, still standing today, is for the act of correlating two chemicals in a person's blood stream. The correlation between two chemicals is a law of nature and not patentable subject matter. But *the act of correlating* is a physical, human process, and so is perfectly patentable under CAFC precedent; the CAFC therefore upheld the patent claim.

[24] 450 U.S. 175 (1981). Citations omitted.

[25] The most famous in this long series of rulings are *In re Alappat* [33 F.3d 1526 (1994)] and *State Street v Signature Financial* [149 F.3d 1368 (1998)].

This was the patent claim under dispute in *LabCorp v Metabolite*, a case that was heard at the Supreme Court over 2005–2006. Unfortunately, technicalities precluded the Court from handing down a decision in this case, but Justice Breyer (with Justices Stevens and Souter) wrote a fifteen-page argument for why the case should have been heard and the patent denied. In agreement with the above Supreme Court rulings, he states that although anybody can dress up a patent for a mathematical concept as a machine or process, such dress-up games do not make the concept patentable:

> One might, of course, reduce the "process" to a series of steps, e.g., Step 1: gather data; Step 2: read a number; Step 3: compare the number with the norm; Step 4: act accordingly. But one can reduce *any* process to a series of steps. The question is what those steps embody. And here, . . . they embody only the correlation . . . . In my view, that correlation is an unpatentable "natural phenomenon," and I can find nothing in claim 13 that adds anything more of significance.

Although no final ruling was made, the Supreme Court's hearing of the case and Justice Breyer's impassioned comments set things in motion, and we have seen a number of cases in other courts that attempt to fill in the missing LabCorp ruling.

The BPAI The BPAI took the signal of *LabCorp v Metabolite* as indication that it may once again have the power to reject applications based upon the subject matter claimed by the patent. There were several salient cases, including *Ex Parte Kinzhalin et al*,[26] *Ex Parte Yang-Huffman*,[27] and *Ex Parte Rodriquez et al.*[28] For our purposes, these three applications were of the same form: a work of software, with a passing reference to a machine or carrier on which the software is loaded.

From the Yang-Huffman decision: "there is no authority that we know of which permits software per se to be considered statutory within [the US Code]." This is a clear break with the everything-is-patentable position of the mid-1990s CAFC.[29]

The CAFC In response to the long series of rejections at the BPAI, the CAFC considered a few cases in mid-February to be heard *en banc*, meaning that a

[26] Application 09/881,791, for Appeal 2007-1416

[27] Appeal 2007-2130, for Application 10/141,222

[28] Application No. 09/814,159, for Appeal No. 2006-2028

[29] The ruling in *In re Alappat* had even stated that if an applicant fails to recite "a machine on which is loaded" before describing an algorithm, then the examiner is obligated to insert that phrase when reading the claim. Section II.D(1) of the ruling even gives an amusing example which inserts "an arithmetic logic circuit configured to perform" at the head of a series of mathematical-step claims. Therefore, even reading the BPAI's rulings as applying only to software in its purest form is already a step away from the CAFC's rulings.

panel of twelve judges would hear the case and hand down a precedent-setting ruling.

With a 9-3 vote, the CAFC rejected an *en banc* hearing for *In re Nuijten*,[30] regarding data on an electromagnetic signal, so the ruling that one can not patent data on a signal (as opposed to data on a hard drive) was left to stand.

Instead, the judges chose to grant an *en banc* hearing for *In re Bilski*,[31] which is regarding an energy insurance scheme that barely even requires a computer for implementation. Jaffe & Lerner[32] claim that there is a certain "techno-snobbery" that causes many to lean toward approving of patents on software and semiconductors but frown on patents for systems that do not involve high tech; not even techno-snobbery will save the patent under consideration in Bilski's case.

By choosing to have an *en banc* hearing based on a patent that seems especially without merit, the judges make it easier for the final ruling to exclude a larger set of patent applications. This and other factors indicate that the majority of the CAFC is ready to make significant changes in what is patentable subject matter.

II.4 Obviousness

It is possible that the rulings on obviousness may undermine the foundations of the software patent.

To this point, the discussion has been only about the question of what is patentable subject matter. But a patent application must pass other tests, including that it be novel and non-obvious.

We have seen that under the law, software patents rely on the combination of a standard, unpatentable computer with unpatentable text or mathematics, which creates a "new machine" that is patentable.

But isn't it obvious, given a data-processing routine, that one would load it onto a computer?

At the Supreme Court, the news on this front is *KSR v Teleflex*.[33] This was a ruling about physical hardware that stated that if item A is unpatentable, and item B is unpatentable, and the combination of A and B is an obvious step to one having ordinary creativity, then the combination of A and B is not patentable. However, this was not applied in the context of unpatentable text loaded onto an unpatentable computer.

About five months later, the CAFC ruled in *In re Comiskey*[34] that there are indeed cases where the step of loading a process onto a computer is obvious. In this case, the CAFC upheld the rejection of a patent for a legal mediation process loaded onto a computer:

[30] Case #2006-1371.

[31] At the BPAI, Appeal No. 2002-2257, for Application 08/833,892

[32] *ibid*, p 199.

[33] Case No. 041350.

[34] Case No. 2006-1286

> The routine addition of modern electronics to an otherwise unpatentable invention typically creates a *prima facie* case of obviousness.

However, it is unclear whether the CAFC read the algorithm in this particular situation as too obvious, or whether they would also apply the same ruling to a mathematical or data-processing algorithm that is mathematically non-trivial but whose 'load onto a computer' step is obvious.

In summary

By the end of the 1990s, the CAFC had effectively eliminated any and all restrictions on patentable subject matter, so it is little surprise that the courts have begun to re-introduce restrictions on what is patentable.

Our prediction for the next year is that there will be several cases on every docket asking what is a *bona fide* machine and what is data processing with a trivial physical step. LabCorp's pleadings to the CAFC only discussed the question of patentable subject matter in passing, under the presumption that it was a settled matter that everything is patentable; we can expect that attorneys for future cases will not allow the question to go undiscussed. The administrative court of the PTO, the majority of the CAFC, and the Supreme Court have all given indication that the pendulum of patentability has swung too far, and needs to be brought back to a more moderate view of the scope of the patent system.

III The state of Congress

Congress did nothing to address the problems with software patents during this period.

As of this writing, there is much ado about the Patent Reform Act currently being debated in the Senate. However, the proposed reforms, such as a renaming the BPAI, a change from giving the patent to the first-to-file instead of the first-to-invent, and a heuristic for assessing damages that is hoped to reduce the level of payouts, have little or nothing to do with the fundamental problem that software is patentable. If the bill passes, the Green Bay Packers will be as badly off as before.

There is one exception: the DataTreasury patent mentioned on page 3, which the CBO estimates to be worth upward of $1 billion. A specific carve-out may be included in the bill to exempt banks from liability regarding this patent. However, this is a carve-out for a single patent, requested by a specific set of lobbyists, and is not to be construed as a general reform of software patents.

Although the leaders of the relevant subcommittees are aware of the problem of patentable subject matter, they chose to ignore it this term, perhaps because it is a facet of the system that the courts can correct without a change in law from Congress. But regardless of the reason, we find that the problem of software and business method patents has lain dormant in Congress.