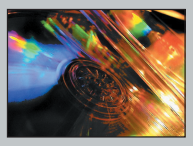
Computer & Communications Industry Association

open markets, open systems, open networks



Patent Reform for a Digital Economy

Brian Kahin,
Senior Fellow
November 2006

Computer & Communications Industry Association

open markets, open systems, open networks

Patent Reform for a Digital Economy

Dear Friends,

It is with great pleasure that CCIA is issuing this white paper prepared by Brian Kahin, Senior Fellow at the Computer & Communications Industry Association (CCIA). *Patent Reform for a Digital Economy* presents and explains the unresolved problems in our patent system and recommends innovative solutions for solving them.

Why reform patent law? In the 1970s, ill-advised technology policies hindered growth, limited consumer choice, and ultimately delayed the information revolution. Today that revolution has arrived, yet we may still be denied its fruits. Why? Our intellectual property law runs amok. Current patent law encourages fraud, abuse, and opportunism. Patents invade all aspects of modern life. Instead of promoting innovation, patent law often only promotes more patents.

Why do CCIA's members care about patent law? CCIA is a nonprofit membership organization comprised of cutting-edge information, and communications technology companies, represented by their senior executives. CCIA's members depend on a well-functioning patent system to continue innovating. Our diverse membership encompasses telecommunications, Internet, and web service providers, hardware and software developers, resellers, and financial service companies that together employ almost one million workers and generate nearly $250 billion in annual revenue.

For nearly 35 years, CCIA has worked with our members to further their goals in the legislative and regulatory arenas. Policymakers need to now turn their attention to the patent system. A well-balanced patent system can protect invention and foster innovation in the computer, information, and communications technology industries that CCIA represents. But to do so it must be reformed. With your help, CCIA aspires to create an innovation-friendly landscape.

I trust this white paper will prove to be a valuable tool as we work together to achieve this essential goal.

Yours truly,

Ed Black
President & CEO, CCIA

Patent Reform for a Digital Economy

Brian Kahin[1]
Computer & Communications Industry Association

November 2006

EXECUTIVE SUMMARY

Today the patent system is in crisis. As technology burgeons and diversifies, patents work differently in different sectors – with divergent results in terms of business effects, benefits, and costs. There is growing tension between the pharmaceutical and biotechnology perspectives and the IT sector's need for reform.

While often viewed narrowly as arcane legal problems, patents today raise business problems that are increasingly threatening to high-tech industries. Since the goal of the patent system is to promote innovation, this can lead to the conclusion that the patent system is broken.

Litigation, costly and disruptive as it is, is only the tip of the iceberg. The number of patent assertions far exceeds the number of patent cases filed, let alone the number that are fully litigated. Patent practice in IT is characterized by low-quality patents, poorly defined boundaries, a vast number of potentially patentable functions, patent thickets and landmines, and impractically high costs of avoiding infringement.

These problems are manifestations of a volume-driven patent system that has been captured by the business interests of patent professionals and the bureaucratic interests of a fee-funded Patent and Trademark Office. They are also a consequence of decisions by the specialized Court of Appeals for the Federal Circuit that have made patents:

- more potent (automatic injunctions);
- easy to get (a low standard of nonobviousness);
- easy to assert (an unwarranted high presumption of validity); and
- available for virtually unlimited range of subject matter (including software and business methods).

IT experiences these policies differently because it is marketed in the form of complex products that can incorporate many thousands of patentable functions. In pharmaceuticals, by contrast, there is a close association between individual drugs and patents.

An excess of patents creates problems in identifying, evaluating, and avoiding patents. This creates an opaque intellectual

Litigation, costly and disruptive as it is, is only the tip of the iceberg.

[1] Brian Kahin is Senior Fellow at the Computer & Communications Industry Association, where he advises on issues in standards and patent policy. He is also Adjunct Professor and Research Investigator at the University of Michigan School of Information, where he recently directed a project on Patents and Diversity in Innovation (http://patentsanddiversity.com). He was previously founding director of the Harvard Information Infrastructure Project, General Counsel for the Interactive Multimedia Association, and Senior Policy Analyst at the White House Office of Science and Technology Policy (1997-2000). He has edited ten books on the Internet and the digital economy.

property landscape in which, as a practical business matter, it is impossible to know what patent rights are needed to get a product to market, who owns them, what they cover, and whether or not they are valid and worth licensing. At the same time, the networked nature of IT makes it essential to combine many different functions, components, and products – or at least enable them to work together.

Big companies deal with these problems by accumulating and cross-licensing large portfolios of patents. These portfolios deter litigation by other producers, but they are ineffective against patent holders who have no need for cross-licenses because they have no products. The opacity of the landscape makes inadvertent infringement commonplace, enabling non-producing patent holders to profit from "being infringed." By lying low as industry standards and commercial products are developed, implemented, and marketed, they quietly encourage investments that they can later hold hostage.

Legislation introduced in the 109th Congress stalled because pharmaceutical and biotechnology interests resisted reforms that might possibly diminish the value of their patents. But unless the IT sector is to subsidize pharma and biotech, reform is needed to address underlying problems in three areas.

First, the standard of patentability, "nonobviousness," has been lowered by the Federal Circuit and by patent office practice. It needs to be raised to take into account the real world of rising expectations, increased competition, global markets, and changing technology and product markets.

Second, patent administration and practice should be aligned with the vigorous, rapid, and networked movement of technological knowledge. Rapidly evolving Internet-enabled technical knowledge should not be constrained by secretive, slow, liability laden processes of patent examination and assertion. The present mismatch between rapid technological evolution and standards-based investment on the one hand and patent-based incentives to surprise and hold-up on the other is dangerous and damaging to IT.

Third, the forms of capture that have constrained and distorted the rational development of patent policy must be addressed. Patent policy must be firmly tied to the goal of promoting innovation, not the self-interest of those who use and manage the system.

In conclusion, we need to rethink patent policy in terms of fundamental principles: promoting innovation, efficiency in implementation, and accountability for results. To this end, CCIA's proposals for substantial reform include:

- Tailor patent protection to reflect the diversity of innovation environments.
- Raise the basic threshold: eliminate the "ordinary" from patent law.
- Implement peer review for patent applications.
- Reward submissions of prior art that invalidate defective patents.
- Require registration of notice letters that assert infringement.
- Condition full fee-funding on PTO accountability.
- Put PTO at the forefront of knowledge management and information science.
- Stop the ambush of openly developed standards.
- Reengineer patent institutions to promote innovation, preclude capture, and reduce costs.

TABLE OF CONTENTS

1. Introduction

The scope and scale of the U.S. patent system has expanded dramatically over the past two decades. But with expansion has come increasing criticism. Today, talk of reform is widespread and loudly voiced, especially in the high-tech community.

Is the patent system broken? Many in information technology say that it is, pointing to poor patent quality, the frequency of inadvertent infringement, proliferation of patent thickets, use of patents to extort disproportionate settlements, and failure of patents to serve as a practical source of technical knowledge.

The views of the IT sector deserve attention. This is a vast, thriving, and important sector in its own right. And it is essential to productivity, new products, new services, and growth in all sectors of the economy.[2] While the IT sector values patents, it lacks the pharmaceutical industry's passion for patents and the exclusivity they provide. There are important reasons for this difference.

An IT product can contain thousands of potentially patentable functions. Products are the fundamental unit of exchange, not functions. Most individual patents are therefore of limited value – in contrast to pharmaceuticals, where many billions of dollars can ride on a single drug patent. IT companies must build large portfolios of patents,[3] which they frequently cross-license to each other, often with balancing payments to adjust for differences in portfolio size or value. Because of the need to construct complex, interoperating systems from readily patentable functions, non-exclusivity is the norm.[4]

Today, this difference in industry perspectives is evident in the inter-industry tension over patent reform, in which the IT sector perceives a greater need for reform than the pharmaceutical and biotech industries. It can also be seen in persisting controversy over whether the costs and risks of the patent system outweigh the benefits in peripheral areas such as software and business methods. In the United States, the focus has been on the former: how to fix a greatly expanded system in a uniform manner. In Europe, the focus has been on the latter: how and where to limit patentable subject matter in a consistent and coherent manner.

The Crisis

Over time, technologies have burgeoned and diversified, especially with new developments in biotechnology, information technology, and nanotechnology. New business models and practices have appeared, and competition has become increasingly intense and global. Patents are used in a greater variety of ways – some good, some questionable, and some destructive. Yet the absence of data on patent use and abuse frustrates objective analysis. Licensing revenues and transactions are not reported consistently, settlements are not publicly disclosed, and statistics on business use are not collected.

Patents have become pervasive and powerful. Yet at the heart of the system, patent

[2] *See* The Department of Commerce, The Emerging Digital Economy (1998), http://www.technology.gov/digeconomy/viewhtml.htm, and subsequent annual reports on the digital economy.

[3] R. Polk Wagner & Gideon Parchomovsky, *Patent Portfolios*, 154 University of Pennsylvania Law Review 1 (2005); also available as U of Penn, Institution for Law & Economic Research Paper 04-16, 2005), http://ssrn.com/abstract=582201.

[4] Dan McCurdy & Marshall Phelps, *Why Exclusion Is Not Profitable,* Managing Intellectual Property, Nov. 2002.

law remains narrowly process-centered, blind to differences in technologies and market conditions. The U.S. Court of Appeals for the Federal Circuit, which hears patent appeals from the patent office and the district courts, has made patents more potent, easy to get, easy to assert, and available for unlimited subject matter. In the IT sector, the result has been too many patents of uncertain scope and quality – leading to patent thickets, high legal costs, and growing business uncertainty and risk. Yet efforts to reform the system through legislative action are easily paralyzed by highly motivated contending interests.[5] Pharmaceutical companies with a handful of patents protecting billions of dollars in drug investment do not want to see the value or power of these patents diminished in any way. Yet pharmaceutical interests are also responsible for the provision in the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) that is commonly thought to require that all technologies be treated the same.[6]

Given how powerful and pervasive patents have become, it is dangerous for policy to be made in this way, especially when the practical uses and effects of patents are unmonitored and poorly understood. There are no reporting requirements, no statistics collection, and no agencies that oversee how patents affect innovation, competition, and commerce.

Massive portfolio building has been facilitated by the ease of securing and accumulating patents. However, low standards make it easy to get patents and easy to infringe patents. These trivial patents may be awarded or sold to entities that have interest or ability to assemble products and therefore have no need for cross-licenses. Small plaintiffs can often get legal representation on a contingency basis and benefit from jury sentiment for David against Goliath.[7] A growing supply of patents are used in this way, as patents of failed businesses are sold to speculators and patent assertion specialists. With the ability to shut down an entire product line through an injunction, patent holders have been able to secure settlements that are far greater than the value of the patented technology. Until the Supreme Court's recent decision in *eBay v. MercExchange*,[8] the Federal Circuit gave victorious patent plain-

The U.S. Court of Appeals for the Federal Circuit, which hears patent appeals from the patent office and the district courts, has made patents more potent, easy to get, easy to assert, and available for unlimited subject matter.

[5] The last major effort at reform (1996-1999) took years of emotional debate and finally resulted in the highly compromised American Inventors Protection Act of 1999 passed in an omnibus budget reconciliation bill. The recent European effort to address patents on "computer-implemented inventions" culminated in an unprecedented rejection of the proposed directive on the second reading.

[6] TRIPS Article 27.1 reads "patents shall be available and patent rights enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced." Agreement on Trade-Related Aspects of Intellectual Property Rights Article 27.1, Apr. 15, 1994. There is no record of any argument as to why a monolithic system is better that an adaptable or technology-specific system.

[7] *See* Kimberly A. Moore, *Populism and Patents,* New York University Law Review (forthcoming 2007), *available at* http://mason.gmu.edu/%7Ekamoore/Moorepopulismandpatents.doc.

[8] eBay Inc. v. MercExchange, L.L.C., 126 S. Ct. 1837 (2006).

tiffs automatic injunctive relief. In short, "being infringed" has become a very attractive business model.[9]

This problem has played out against other concerns about the health of the patent system. There were 885,002 applications pending at the end of FY 2005.[10] The Director of the Patent and Trademark Office (PTO) has acknowledged that the agency is in crisis.[11] Patents with breathtakingly broad claims suddenly appear, threatening to tax hundreds of businesses, even entire segments of the economy.[12] The Federal Trade Commission (FTC) and the National Research Council (NRC) of the National Academies recently conducted major studies on the patent system.[13] Two prominent economists, Adam Jaffe and Josh Lerner, have written a powerful critique, *Innovation and its Discontents: How Our Broken Patent System is Endangering Innovation and Progress, and What to Do About It.*[14]

"Broken" suggests that the system is suffering from some fundamental structural or institutional defect. Jaffe and Lerner make a compelling case that the roots of the problem can be found in two decisions by Congress: creating the specialized Court of Appeals for the Federal Circuit in 1982 and, in 1990, tying the U.S. Patent and Trademark Office budget to the fees it generates. In their view, these decisions ultimately made patents both easy to get and much more potent. While Jaffe and Lerner correctly diagnose the fundamental institutional problems, the consequences experienced by the IT sector are uniquely severe.

2. Underlying Problems

2.1. The Tip of the Iceberg

In April 2005, Apple Computer testified before the House Subcommittee on Courts, the Internet, and Intellectual Property:

> [F]or us, for every lawsuit we're involved in that goes to final judgment, which, leaving my company aside, but for every lawsuit that goes to final judgment, there is 25 more that don't go to final judgment; that get adjudicated or settled ahead of time, and for every one of those, there's 25 letters that were written that never made it to a lawsuit at all.[15]

[9] Markus G. Reitzig, Joachim Henkel, & Christopher Heath, *On Sharks, Trolls, and Other Patent Animals – 'Being Infringed' as a Normatively Induced Innovation Exploitation Strategy,* http://ssrn.com/abstract=885914.

[10] Performance and Accountability Report Fiscal Year 2005, http://www.uspto.gov/web/offices/com/annual/2005/060403_table3.html.

[11] David Streitfeld, *Note: This Headline is Patented*, Los Angeles Times, February 7, 2003, at A1.

[12] *E.g.,* Graeme Wearden & Rupert Godwins, *Company Claims Patent Win In Online Rich Media,* CNET News, February 22, 2006, http://news.com.com/2102-1030_3-6042085.html?tag=st.util.print. Perhaps the notorious example is BT's claim to own hyperlinks and its lawsuit against an Internet provider, Prodigy, rationalized by its chairman's view that "Everyone sues all the time in the states..." Matt Loney, *BT Loses Hyperlink Patent Case*, ZDNet UK, August 23, 2002, http://news.zdnet.co.uk/business/0,39020645,2121257,00.htm.

[13] Federal Trade Commission, To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy (Executive Summary), 16-17 (2003), *available at* http://www.ftc.gov/os/2003/10/innovationrptsummary.pdf [hereinafter *Federal Trade Commission Report*]; National Research Council, Committee on Intellectual Property Rights in the Knowledge-Based Economy, A Patent System for the 21st Century (Stephen A. Merrill, Richard C. Levin, & Mark B. Myers, eds. 2004), *available at* http://fermat.nap.edu/catalog/10976.html.

[14] Adam B. Jaffe & Josh Lerner, Innovation and its Discontents: How Our Broken Patent System is Endangering Innovation and Progress, and What to Do About It (2004).

[15] H.R. Rep. No. 109-11, pt. 1, at 122 (2005), *available at* http://commdocs.house.gov/committees/judiciary/hju20709.000/hju20709_0f.htm.

We know virtually nothing about these notice letters, because they are not a matter of public record. Yet Apple's rule of thumb suggests that full litigation is averted 624 out of 625 times, and that court filings are averted 24 out of 25 times.

The most recent figures show that even when the amount in controversy is less than $1 million, the average cost of litigation per side is $770,000.[16] This figure includes only outside counsel and related legal expenses. In addition, there is internal staff time (including in-house counsel), opportunity costs, and distraction of key personnel. These costs are often prohibitive for small entities, whether plaintiffs or defendants.

While it is commonly assumed that avoiding litigation is a good thing, the high settlement rate is, in fact, motivated by the high cost of litigation and the uncertainty of outcomes. Indeed, settlements generally leave questionable patents standing, with the patent holder better positioned to pursue other targets. The "other targets" may include the alleged infringer's competitors, giving the alleged infringer an additional incentive to settle![17]

As documented in the 2002 hearings held by the Federal Trade Commission and Department of Justice,[18] assertions of patent infringement are epidemic in IT, because of the likelihood that complex products will inadvertently infringe on third-party patents. The fact that this is not a problem for pharmaceuticals shows that the one-size-fits-all paradigm of patent law is broken, and that producers (and users) of information technology are suffering the consequences. The ideal of a uniform system may have been viable when technologies were fewer and more alike. But as innovation practices, subject matter, and product markets diversify, uniform rules inevitably lead to increasingly disparate results.

In part, this is because of the sheer power of patents. Copyright only regulates certain behavior – unauthorized copying; it allows for independent creation. But patent law regulates innovation regardless of behavior. Everyone – competitors, distributors, even users – is obliged to locate and evaluate patents relevant to the technology they create, market, or use. This means researching the meaning and validity of numerous claims within each of thousands of relevant patents.

2.2. Blurred Boundaries

The claims in a patent are the patent's equivalent of metes and bounds descriptions in real property. But claims are marked by words and ideas, not precision surveying. There is no equivalent to the fences of the physical world that provide

The most recent figures show that even when the amount in controversy is less than $1 million, the average cost of litigation per side is $770,000.

[16] American Intellectual Property Law Association, Report of the Economic Survey 2005, I-108 (2005) *hereinafter Report of the Economic Survey 2005*.

[17] For a critique of settlements in the IT context of uncertainty and indeterminacy, see Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 Journal of Economic Perspectives 75 (2005), *available at* http://faculty.haas.berkeley.edu/shapiro/patents.pdf.

[18] Federal Trade Commission, http://www.ftc.gov/opp/intellect/index.htm.

fixed, visible notice of where the boundary is supposed to be. In the real world, it is impossible to straddle hundreds or thousands of separately owned parcels of land at once. By contrast, producers, distributors, and users of information technology face the possibility of thousands of virtual boundaries that can only be discovered and evaluated through costly, time-consuming research.[19] Clearance searches – locating and evaluating patents and then investigating whether a product infringes – can cost $10,000 to $50,000 per function.[20] And searches cannot find patent applications, pending or not yet filed, until the application is published. This is usually 18 months after filing. But if the applicant is not planning to file abroad, the application need not be published – in which case, the patent will be hidden until it issues and is fully in force.[21] In a product with thousands of functions, full clearance searches quickly become impractical. As one FTC panelist observed: "[T]here are too many patents to be able to even locate which ones are problematic. I used to say only IBM does clearance . . . but IBM tells me even they don't do clearance searches anymore."[22]

Conversely, finding a patent that appears to cover the function in question is also not determinative. Often the entire patent file must be reviewed to properly interpret the patent. By searching for more than the few hours the examiner is able to invest, it may be possible to discover disqualifying prior art that invalidates the patent, or at least some of its claims. The odds of missing prior art are especially high for patents for software and business methods. The language of such patents is abstract and ambiguous, while documentation is sparse, inaccessible, unorganized, and ephemeral. In contrast, the state of the art in traditional technologies is readily searchable in issued patents and journals.[23]

If a patent is found, interpreting the claims is not only costly; it is one of the most frequently disputed issues in patent litigation. The Federal Circuit reviews claim construction *de novo*, *i.e.,* without deference to the interpretation of the trial court.[24] In practice, it vacates or reverses the district court's interpretation 30-50% of the time![25] In a fast-moving field like information technology, the vocabulary and the equivalencies

[19] The term "patent thicket" is used to describe the difficulties and costs of negotiating through and around proliferating patents. Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting* (March 2001), *available at* http://ssrn.com/abstract=273550.

[20] Recent figures show an average of $13,182 for each validity/invalidity opinion (including evaluating obviousness) and $11,670 per infringement/non-infringement opinion. Report of the Economic Survey 2005, *supra* note 16. A clearance search includes finding relevant patents, evaluating the validity of those that may read on the product, and then determining whether the product infringes valid claims within the valid patents.

[21] The rest of the world has long required early publication, so significant applications in process were routinely published abroad. When early publication was introduced in the last round of patent reform, independent inventors, concerned that pre-grant publication forced them to give up trade secret protection, managed to secure an exception for patents applied for only in the United States.

[22] Robert Barr, Worldwide Patent Counsel, Cisco System, FTC Roundtable, Competition, Economic, and Business Perspectives on Substantive Patent Law Issues: Non-Obviousness and Other Patentability Criteria, 81 (October 30, 2002), http://www.ftc.gov/opp/intellect/021030trans.pdf.

[23] The difficulty of locating prior art in software combined with the likelihood that somebody somewhere has come up with the same idea before may make it desirable to put out calls for help, at least if the defendant has good relationships within the community of developers. *See* Paul Festa, *Netscape Recruits Mozilla In Suit*, CNET News, April 24, 1998, http://news.com.com/Netscape+recruits+Mozilla+in+suit/2100-1023_3-210551.html.

[24] Cybor Corp. v. FAS Tech., Inc., 138 F.3d 1448, 1456 (Fed. Cir. 1998) (en banc).

[25] R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance*, 152 University of Pennsylvania Law Review 1105, 1127 (2004), *available at* http://ssrn.com/abstract=511003.

among components and functions keep changing. In this volatile environment, claims interpretation and infringement determination are especially difficult and unpredictable. In contrast to descriptions of chemical compounds, many words can be used to say more or less the same thing.

Uncertainty, ambiguity, and indeterminacy are endemic to the patent system. While these problems may encourage litigation, they also discourage litigation – especially for firms that have a lot to lose. Patent holders risk having their patents invalidated. Producers of complex products risk more: adverse publicity, customer anxiety, past and future royalties, and the possibility of having a product line shut down by injunction. Given this uncertainty, both sides have an interest in settling the dispute, but this may not be in the public interest. As noted, a settlement leaves the patent holder able to assert the patent against others, including competitors of the original target, who may be less capable of withstanding a patent attack.

2.3. Capture at Multiple Levels

As Apple's experience suggests, this uncertainty breeds threats of litigation more than litigation itself. But the effect of expanding the pervasiveness and power of the patents is much the same. Asserting patents and entering into settlements is less an alternative to litigation than it is a newly expanding use of patents.[26]

As threshold standards fall, patentable subject matter expands, and as new uses emerge, demand grows. Legal work *on patent applications alone* has become a $5 billion/year industry.[27] The increased demand faces a limited supply of patent attorneys who must meet certain academic credentials and pass an exam administered by the Patent and Trademark Office. Despite

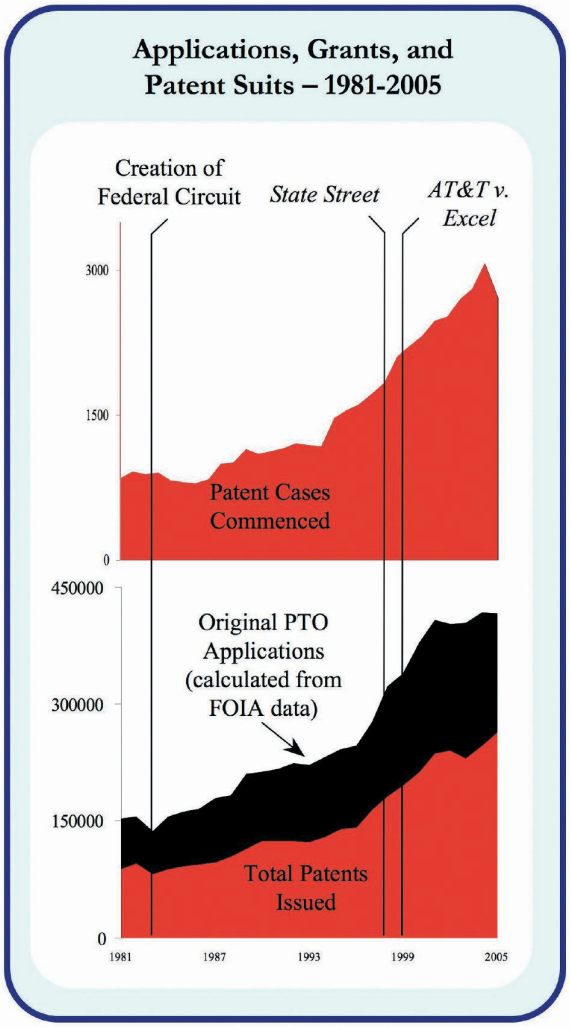


Figure 1

[26] *I.e.,* the business model of "being infringed." *See* Reitzig *et al.*, *supra* note 9.

[27] Extrapolated from earlier figures calculated by Mark Lemley in his paper, *Rational Ignorance at the Patent Office*, 95 Northwestern University Law Review 4 (2001):

> The cost of 196,900 regular applications prosecuted through to issuance or rejection at $20,000 per patent totals $3.94 billion. An additional 78,100 continuing patent applications at $5,000 per patent costs $391 million. This gives us a total annual cost of $4.33 billion for domestic patent prosecution.

As threshold standards fall, patentable subject matter expands, and as new uses emerge, demand grows. Average legal fees rose roughly 50% over the four years from 1999 to 2003.

growth in the number of patent attorneys, average legal fees rose roughly 50% over the four years from 1999 to 2003.[28]

While law firms benefit most directly from growing demand for patents, corporate patent departments benefit from increased prestige and deference within their companies, as well as increased job security and higher pay. Lerner and Jaffe put the problem bluntly:

> When issues of patent policy are considered by the courts, the Congress, and the Executive branch, you can be sure that the opinions of patent lawyers and patent holders will be heard. While their arguments will often be couched in terms of the public interest, at bottom their interest is in their own profits and livelihoods, not in designing a patent system that fosters the overall rate of innovation.[29]

To make matters worse, the highly technical nature of patent law and practice limits input into policy development processes and makes it difficult for outsiders to separate self-interest from sound policy advice.

The problem goes beyond professional self-interest. Once the Patent and Trademark Office became fee-funded, it was motivated to enhance its budget by increasing the scope and scale of patenting. It developed a "customer service" orientation in which the new mission for the PTO's patent business was "to help customers get patents."[30] Although application fees do not cover the full costs of examination, about one-third of the PTO budget comes from the maintenance fees paid at regular intervals to keep patents in force. Since there is no cost burden for the PTO in maintaining patents, the agency has an incentive to grant patents in the expectation that maintenance fees will be paid. The maintenance fees, in effect, subsidize examinations, allowing application fees to remain artificially low and thereby encouraging more applications.

The motivation to err on the side of granting patents can be seen in the agency's internal incentive system, which rewards examiners for first office actions and dispositions.[31] This discourages examiners from persisting in contesting claims unless they can convince the applicant to file a continuation application, which terminates the original application (awarding points to the examiner) and starts a new application with the same priority date. The allowance rate may be as high as 95 percent when continuation filings are taken into account.[32]

To its credit, the PTO has recently taken some important steps to stem this inflationary spiral. It has proposed limiting the undisciplined practice of continuations,

[28] American Intellectual Property Law Association, Report of Economic Survey 1999 and Report of Economic Survey 2003.

[29] Jaffe & Lerner, *supra* note 14, at 23.

[30] U.S. Patent and Trademark Office, Corporate Plan 2001, 23 (2001), *available at* http://www.uspto.gov/web/offices/com/corpplan/pt04.pdf.

[31] *See* Robert P. Merges, *As Many As Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform,* 14 Berkeley Technology Law Journal 577, 607 (1999).

[32] *See* Cecil D. Quillen, Jr. & Ogden H. Webster, *Continuing Patent Applications and Performance of the U.S. Patent and Trademark Office*, 11 Federal Circuit Bar Journal 1, 3 (2001); Cecil D. Quillen, Jr., *et al.*, *Continuing Patent Applications and Performance of the U.S. Patent and Trademark Office – Extended*, 12 Federal Circuit Bar Journal 1, 33 (2002); Cecil D. Quillen, Jr. & Ogden H. Webster, *Continuing Patent Applications and the U.S. Patent and Trademark Office – Updated*, 15 Federal Circuit Bar Journal 635 (2006).

despite the opposition of the patent bar.[33] Through the Office of the Solicitor General, the PTO has also opposed the Federal Circuit's low standard of nonobviousness.[34]

While it is important that the PTO have sufficient resources to examine patents properly, the insulation provided by fee funding allows the PTO considerable discretion as to how to spend its resources. In particular, it is free to develop and promote policy with little oversight from Congress, especially at the international level where Congress is disinclined to pay attention. Internationally, the agency has embraced a role as an advocate for intellectual property interests, once expressed explicitly as: "help protect, promote and expand intellectual property rights systems throughout the United States and abroad."[35] The call to adhere to raised international standards naturally creates enormous pressure to change domestic policies.

Often the PTO has taken positions in international venues without openly developing and announcing a policy position within the United States – and sometimes in an arrogant, heavy-handed manner. For example, a PTO-staffed delegation to WIPO negotiations on a substantive patent law treaty expended scarce political capital by threatening to walk out of the negotiations if other member countries did not agree to extend the scope of patentable subject matter beyond technology to all areas of activity – *i.e.,* to business methods – on the grounds that this was "best practice."[36]

The Court of Appeals for the Federal Circuit (CAFC or "Federal Circuit") does not have the same interest in its budget as the PTO, but it too has been susceptible to capture in the same manner as regulatory agencies tend to become captured by the industries they regulate.[37] Unlike regulatory agencies, the Federal Circuit has jurisdiction for a number of different specialized areas.[38] However, patent appeals are the one area where the court substantially impacts private sector activity and national policy. Although Congress has done little to change the basic standards and substance of patent law over the half century since the Patent Act of 1952, the Federal Circuit has proven itself a "booster of its specialty,"[39] making patents easier to get, easier to assert, more potent, and available for all areas of activity.

---

[33] *See* Changes To Practice for Continuing Applications, Requests for Continued Examination Practice, and Applications Containing Patentably Indistinct Claims, 71 Fed. Reg. 48 (proposed January 3, 2006) (to be codified in C.F.R.); *see, e.g.,* comments of American Intellectual Property Law Association, http://www.uspto.gov/web/offices/pac/dapp/opla/comments/fpp_continuation/aipla.pdf; For background see Mark A. Lemley & Kimberly A. Moore, *Ending Abuse of Patent Continuations*, 84 Boston University Law Review 63 (2004).

[34] *See* Brief for the United States as Amici Curiae Supporting Petitioners, KSR International Co. v. Teleflex, Inc., No. 04-1350 (U.S. Aug. 2006), *available at* http://www.usdoj.gov/osg/briefs/2006/3mer/1ami/2004-1350.mer.ami.html

[35] U.S. Patent and Trademark Office, Corporate Plan 2000, 17 (2000).

[36] This episode is graphically reported in the World Intellectual Property Organization, Report of the Seventh Session of the Standing Committee on the Law of Patents 27-30 (2002), *available at* http://www.wipo.org/scp/en/documents/session_7/pdf/scp7_8.pdf.

[37] William M. Landes & Richard A. Posner, Economic Structure of Intellectual Property (2003).

[38] 28 U.S.C. § 1295(a)(2006). Its jurisdiction includes appeals from the United States Court of Federal Claims, the United States Court of International Trade, and the United States Court of Appeals for Veterans Claims, the United States Merit Systems Protection Board, the Boards of Contract Appeals, the Trademark Trial and Appeals Board, the United States International Trade Commission, the Office of Compliance of the United States Congress, and the Government Accountability Office Personnel Appeals Board.

[39] Judge Richard Posner, quoted in: Declan McCullagh, *Left Gets Nod from Right on Copyright Law*, CNET News, Nov. 20, 2002, http://news.com.com/2100-1023-966595.html.

Channeling all appeals through a single court constrains debate about patent policy – and about the court itself.

The Federal Circuit was established to make the application of patent law more consistent and less subject to forum-shopping among the regional circuits.[40] Yet the Federal Circuit has been notoriously aggressive in revisiting the conclusions of lower courts. As a consequence, district court decisions on patents are appealed routinely by litigants hoping for a better outcome. The inconsistency that was once said to exist among the circuits is now manifest in the high reversal rate, as well as in divisions within the Federal Circuit itself.[41]

This raises fundamental questions that are too seldom asked: Why should patent law be treated differently from other areas of the law by channeling it out of the mainstream of appellate review? In principle, the patent system operates as a self-contained, values-neutral machine independent of questions of balance and sensitivity to general principles that we normally expect of regulatory systems. Given its insular and technical nature, patent law should be less susceptible to conflicting interpretations, and therefore less in need of special institutional arrangements to ensure predictability. To the contrary, there is an enduring, and presently growing, problem of uncertainty and indeterminacy in patent law – a problem exacerbated by the complexity of IT and, at the same time, increasingly disruptive for IT.

As an expanding patent system plays a growing role in investment and business decisions, the problem of uncertainty and indeterminacy undermines the premise that patents help support and justify inherently risky research investments. Instead, the patent system promotes uncertainty by encouraging speculative strategies based on being infringed and asserting patents. The difficult problems it poses for risk management are evidenced by the poorly developed market for insurance.[42]

Now that U.S. patent law views not just all technologies but all human activities as one and the same, the institutional and doctrinal insularity of the patent system is more troubling than ever. Other areas of the law evolve through a dialog among regional circuit courts that is picked up and amplified by vigorous debate within practitioner and academic communities. If conflicts persist, the Supreme Court can take a case when it appears that the issues are well-developed and that resolution is needed. The Court then benefits from the scope of thinking and insight that has been developed over time by commentators as well as by different courts.

Channeling all appeals through a single court may merely promote and perpetuate misguided decisions lacking in perspective.[43] Worse, it constrains debate about patent policy – and about the court itself. Practitioners, scholars, and companies are understandably

[40] Rochelle Dreyfuss, *The Federal Circuit: a Case Study in Specialized Courts*, 64 New York University Law Review 1, 7 (1989).

[41] Wagner & Petherbridge, *supra* note 25.

[42] CJA Consultants, Patent Litigation Insurance: A Study for the European Commission of Possible Insurance Schemes Against Patent Litigation Risks (Jan. 2003), http://ec.europa.eu/internal_market/indprop/docs/patent/studies/litigation_en.pdf; Richard S. Betterly, Intellectual Property Insurance Market Survey: A Product That Deserves More Attention Than It Gets, Betterley Report (Apr. 2006), *available at* http://www.betterley.com/adobe/ipims_06_nt.pdf

[43] Craig A. Nard & John F. Duffy, *Rethinking Patent Law's Uniformity Principle*, (Case Legal Studies Research Paper No. 06-17, 2006), *available at* http://ssrn.com/abstract=928498.

reluctant to criticize a court before which they will inevitably appear, perhaps repeatedly. Even district court judges will be reluctant to speak out against a specialized court that so regularly reverses them.

2.4. The Federal Circuit's Transformation of the Patent System

The transformation of patents into potent offensive weapons in the IT arena has been a consequence of the Federal Circuit's aggressively pro-patentee jurisprudence, as well as the law's failure to acknowledge fundamental differences between discrete technology products, such as drugs, and complex technology products, such as computers and software. By making patents more potent, easier to get, easier to assert, and available for a nearly limitless range of subject matter, the Federal Circuit has imposed its own industrial policy on a sector that underlies the continued transformation and growth of the entire economy.

2.4.1. Automatic injunctions make patents more potent.

From the perspective of IT producers, the Federal Circuit's automatic injunction rule was an especially dangerous element of the court's jurisprudence. Despite clear language in the 1952 Patent Act referencing traditional equitable factors for granting injunctive relief,[44] the Federal Circuit made injunctive relief virtually automatic, giving patent trolls an immensely powerful weapon for inducing IT producers to settle. Injunctive relief may well make sense in many circumstances, especially where there is a close correlation between patents and products, but the Federal Circuit's uniquely inflexible rule deprived district courts of their power to tailor equitable remedies to particular circumstances.

In determining damages, a court can evaluate the importance of the infringing function relative to the product as a whole (although the precise calculation is another point of inter-industry contention[45]). However, if the patent owner also gets an automatic injunction on a single patented function or component, this threatens the investment in the entire product line. The producer may have a large inventory and a full distribution channel, plus the burden of extracting and replacing the infringing function after the product has been designed, tested, debugged, packaged, and put on the market. Under the threat of injunction, the economies of scale and scope that bring the benefits of information technology to hundreds of millions of users become a source of massive financial risk and liability. The ready availability of injunctions against complex products invites extortionate settlements – an unwarranted and dangerous addition to the incentive to patent.

The Federal Circuit has expressed its view in the language of natural rights:

[44] 35 U.S.C. § 283 (2006) ("The several courts having jurisdiction of cases under this title may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable").

[45] Compare, *Amendment in the Nature of a Substitute to H.R. 2795, the Patent Act of 2005 Before the House Subcommittee on Courts, the Internet, and Intellectual Property*, 109th Cong. (2005) (statement of Emery Simon, Business Software Alliance), *available at* http://judiciary.house.gov/HearingTestimony.aspx?ID=320, and the Letter from Gary L. Griswold, President and Chief Intellectual Property Counsel, Coalition for Patent Reform to Lamar S. Smith, Chairman, House Subcommittee on Courts, the Internet and Intellectual Property, (September 30, 2005), *available at* http://www.ipo.org/Template.cfm?Section=Patent_Reform1&CONTENTID=20144&TEMPLATE=/ContentManagement/ContentDisplay.cfm.

> If the injunction gives the patentee additional leverage in licensing, that is a natural consequence of the right to exclude and not an inappropriate reward to a party that does not intend to compete in the marketplace with potential infringers.[46]

This kind of leverage simply does not exist for patents in discrete technologies such as pharmaceuticals. It should not be required in complex technologies.

Fortunately, the Supreme Court rejected the Federal Circuit's unique treatment of injunctive relief in the recent case of *eBay v. MercExchange*.[47] The Court held that injunctions for patent infringement were compelled by statute to follow the same equitable standards as in other areas of the law. How this will play out for complex technology products remains to be seen.

2.4.2. A low standard of inventiveness makes patents easy to get.

The struggle over the threshold standard of patentability antedates the Federal Circuit. Inventiveness is a matter of degree, and deciding whether an invention falls on one side of the line or the other is inherently subjective. Prior to the 1952 Patent Act, the patent bar had been concerned that too much emphasis was placed on the concept of "invention" and that too few patents were upheld.[48] Efforts were made to come up with a more objective and consistent standard during the 1940s, but without success. Then came an opportunity to formulate the standard within the context of an ambitious long-term effort to recodify the U.S. statutes chapter by chapter.

The highly technical task was naturally assigned to patent specialists, notably Giles Rich, a New York patent attorney, and P.J. Federico, chief examiner at the U.S. Patent Office, both of whom were appointed to serve as house staffers to draft the new act. A decade later, Rich, then a judge for the Court of Customs and Patent Appeals, the precursor for the Court of Appeals for the Federal Circuit, recounted the history of the legislation in an article entitled, "Congressional Intent – Or Who Wrote the Patent Act of 1952."[49] The thesis of the article is that Congress had very little involvement in the legislation and little intent other than to trust the judgment of the patent lawyers assigned to the task.[50]

The 1952 Patent Act focused the threshold standard on whether a hypothetical "person having ordinary skill in the art" (commonly known as "PHOSITA") would find the invention obvious.[51] When the Supreme

[46] MercExchange, L.L.C. v. eBay, Inc., 401 F.3d 1323, 1339 (Fed. Cir. 2005).

[47] eBay, Inc. v. MercExchange, L.L.C., 126 S. Ct. 1837 (2006).

[48] Giles S. Rich, *Congressional Intent – Or, Who Wrote the Patent Act of 1952, reprinted in* Patent Procurement and Exploitation 61 (Bureau of National Affairs 1963).

[49] Rich, *supra* note 48.

[50] Rich's involvement would shape patent law for decades, as he would go on to write articles and decisions purporting to explain Congressional intent based on language that he and Federico had crafted. Federico, who remained at Patent Office, was modest and nonspecific in his comments on what Congress intended:

> While it is not believed that Congress intended any radical change in the level of invention or patentable novelty, nevertheless, it is believed that some modification was intended in the direction of moderating the extreme degrees of strictness exhibited by a number of judicial opinions over the past dozen or more years; that is, that some change of attitude more favorable to patents was hoped for, 35 U.S.C.A., preceding Sec. 1 (2005).

[51] 35 U.S.C § 103 (2006).

Court first reviewed the standard in *Graham v. John Deere Co.* (1966),[52] amicus briefs submitted by the patent bar argued that Congress had intended to lower the threshold of patentability in the 1952 Act.[53] But the Supreme Court concluded that Congress did not intend to lower the general threshold.[54] Indeed, there is nothing in the legislative history to suggest that Congress thought that it was lowering the standard of patentability, and although the bill contained some modest revisions, it was represented on the floor of the Senate as a mere codification of existing law.

Under *Graham*, "the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined."[55] Nonetheless, the Court of Appeals for the Federal Circuit has departed from the Graham decision and the Supreme Court decisions that followed in two ways. First, it has exalted the role of the "secondary considerations," which do not appear in the statute. These include commercial success, long-felt need, copying, licenses, unexpected results, and prior failure of others – all of which work to the benefit of the patent holder.[56]

Second, the Federal Circuit formulated its own test for *combinations* of known art, requiring an explicit teaching, suggestion, or motivation to make the combination in order to show obviousness – commonly known as the "suggestion test."[57] The FTC, the NRC report, the Solicitor General, and intellectual property scholars have been critical of the suggestion test. While purporting to reduce subjectivity and hindsight, the requirement effectively minimizes the role of PHOSITA and transforms the requirement of nonobviousness into a mere elaboration of the novelty require-

[52] Graham v. John Deere Co., 383 U.S. 1 (1966).

[53] Five amici filed briefs on the side of the patent holder: ABA; New York Patent Law Association, Illinois Bar Association; State Bar of Texas; and University of Texas Professor E. Ernest Goldstein. None were filed in support of defendant John Deere.

[54] Much has been made of the final sentence of Section 103, "Patentability shall not be negatived by the manner in which it is made," 35 U.S.C. § 103 (2006), which was designed to counter some concerns that Cuno Corp. v. Automatic Devices Corp., 314 U.S. 84 (1941), imposed a "flash of creative genius" requirement. However, Footnote 7 of *Deere* denies this:

> The sentence in which the phrase occurs reads: "[T]he new device, however useful it may be, must reveal the flash of creative genius, not merely the skill of the calling." At p. 91. Although some writers and lower courts found in the language connotations as to the frame of mind of the inventors, none were so intended. The opinion approved Hotchkiss specifically, and the reference to "flash of creative genius" was but a rhetorical embellishment of language going back to 1833. Cf. "exercise of genius," Shaw v. Cooper, 7 Pet. 292; "inventive genius," Reckendorfer v. Faber, 92 U.S. 347 (1876); Concrete Appliances Co. v. Gomery, 269 U.S. 177 ; "flash of thought," Densmore v. Scofield, 102 U.S. 375 (1880); "intuitive genius," Potts v. Creager, 155 U.S. 597 (1895).

Rather than establishing a more exacting standard, *Cuno* merely rhetorically restated the requirement that the subject matter sought to be patented must be beyond the skill of the calling. *Graham*, 383 U.S. at 15 n.7.

[55] *Graham*, 383 U.S. at 17.

[56] *Graham* treats these as ancillary:

> Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.

Id. at 17-18.

[57] In re Lee, 277 F.3d 1338, 1345 (Fed. Cir. 2002) (rejecting "common knowledge and common sense" in favor of requiring evidence in the prior art). See discussion in Federal Trade Commission Report, *supra* note 13, ch. 4, at 8-15.

ment. It leads to the absurdity that combinations too obvious to publish must be considered nonobvious.[58]

By contrast, Supreme Court decisions hold that new combinations of old elements are obvious unless they produce a new or different result.[59] The Court recently granted a petition to review the Federal Circuit's suggestion test in *KSR International v. Teleflex*, its first review of the nonobviousness standard since the Federal Circuit was formed in 1982. [60]

The Federal Circuit's application of the nonobviousness standard has resulted in far fewer findings of obviousness. The court has been more inclined to resolve cases in terms of infringement or noninfringement rather than the validity of the patent. When it has addressed validity, it has found patents valid far more often than the regional circuit courts did, and when it decides validity, it addresses determinants other than nonobviousness.[61]

Increased availability and increased potency make a deadly combination. As Jaffe and Lerner observe in *Innovation and Its Discontents*:

> "[W]e converted the weapon that a patent represents from something like a handgun or a pocket knife into a bazooka, and then started handing out the bazookas to pretty much anyone who asked me for one, despite the legal tests of novelty and non-obviousness."[62]

Unfortunately, the low standard is tied to the capture problem. Low standards have benefited the patent bar's bread-and-butter business of filing for patents, the PTO's budgetary aspirations and customer service mission, and the Federal Circuit's interest in "boosting" its specialty. Decisions augmenting the power and invincibility of patents spur demand and the pressure for pushing applications to successful conclusion. Sidebar on the following page shows how institutional pressures lead to dramatic growth in overall patent numbers and the number of questionable patents.

2.4.3. An enhanced presumption of validity makes patents easy to assert.

The Federal Circuit has made patents easier to assert by cloaking them in an artificially enhanced presumption of validity. Challengers must show "clear and convincing" evidence that the patent should not have been granted. "Preponderance of the evidence," the normal standard for civil litigation, is not enough.[63] This artificially

[58] "[I]f it is obvious to those of skill in the art to combine references, it is unlikely that they will publish such information." National Research Council, A Patent System for the 21st Century 90 (Stephen A. Merrill *et al.* eds., 2004), http://www.nap.edu/html/patentsystem/0309089107.pdf.

[59] Sakraida v. Ag Pro, Inc., 425 U.S. 273 (1976).

[60] KSR International Co. v. Teleflex, No. 04-1350, 2006 U.S LEXIS 5385 (Sept. 1, 2006).

[61] Glynn S. Lunney, Jr., *E-Obviousness*, 7 Michigan Telecommunications and Technology Law Review 363 (2001), *available at* http://www.mttlr.org/volseven/LunneytypeRE-PDF.pdf. Lunney found that when validity was at issue, 46 to 63 percent of patents were found invalid during the pre-Federal Circuit periods, but only 25 percent were found invalid in 1994-95. Obviousness was the basis for establishing invalidity in roughly 67 to 80 percent of the time periods between 1945 and 1982, whereas in 1994-95 obviousness was determinative in only 20 percent of invalidity holdings. When these developments are factored together, it shows that obviousness was found in only 12 percent of decisions on validity! More recent research suggests that the erosion has stabilized, but this comes after expectations were lowered.

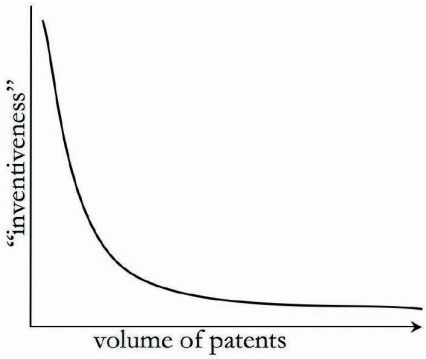
[62] Jaffe & Lerner, *supra* note 14, at 35.

[63] Connell v. Sears Roebuck & Co., 722 F.2d 1542, 1549 (Fed. Cir. 1983).

Implications of a Declining Standard of Inventiveness

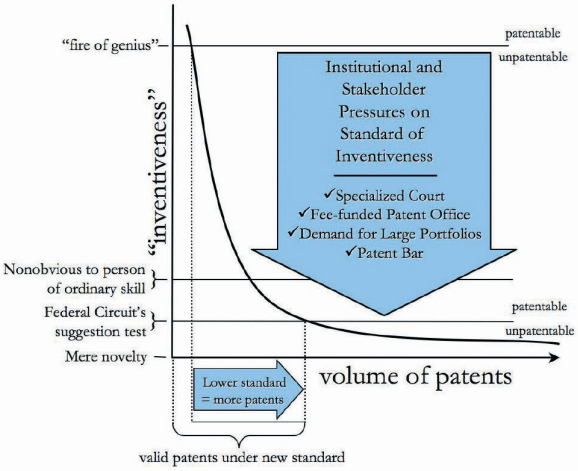
A

Although it is not possible to measure inventiveness directly, patent value can be measured in certain ways, *see, e.g.*, Bronwyn H. Hall et al., *Market Value and Patent Citations*, 36 RAND J. ECON. 16-38 (2005); F.M. Scherer & Dietmar Harhoff, *Technology Policy for a World of Skew-Distributed Outcomes,* 29 RES. POL'Y 559 (2000). Inventiveness can be expected to follow the same kind of skew, so that very few inventions would live up to Abraham Lincoln's "fire of genius" description.



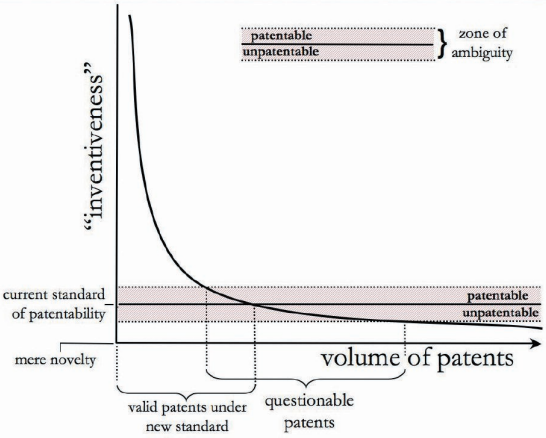
B

Institutional and stakeholder pressures push down the degree of inventiveness required to obtain a patent, so that relatively trivial inventions can be patented, thereby increasing the number of patents. With the burden on the examiner to show that the invention would be obvious to a person of ordinary skill in the art, the standard is relatively low. The Federal Circuit's suggestion test lowers the standard further so that it approaches mere novelty.



C

The standard of patentability is necessarily imprecise, and is therefore surrounded by a zone of ambiguity. Because the number of patents increases rapidly as the threshold of patentability is lowered, the aggregate costs of ambiguity increase exponentially as the standard declines and questionable patents proliferate.



elevated presumption of validity offers an incentive to acquire and assert questionable patents, further contributing to the decline in patent quality.[64]

Yet this extraordinary deference to examiners cannot be justified by the nature of the patent examination process and the widely voiced criticisms of patent quality. Unlike other administrative proceedings, patent examination is an *ex parte* proceeding between the examiner and the applicant. The burden is on the examiner to show that the applicant is not entitled to a patent, and examiners right out of college often face seasoned and well-compensated patent attorneys. With the average time available for searching and analysis limited to 18 hours per application, examiners are motivated to dispose of applications by granting patents.[65] Under these circumstances, the FTC report recommends returning to a normal presumption of validity that can be overcome by a preponderance of the evidence.[66]

2.4.4. The Federal Circuit has removed limits to patentable subject matter.

The controversial extension of patents to pure software and then to business methods is also a product of Federal Circuit decisions that sidestep Supreme Court precedent. After two cases denying patent eligibility for computer programs, the Supreme Court held in *Diamond v. Diehr* that the inclusion of a computer algorithm did not make a traditional physical process unpatentable.[67] While *Diamond v. Diehr* is often misrepresented as allowing for software patents, the patent in question was for a process of curing rubber, a traditional physical process. Yet over the next seventeen years, culminating in the *State Street* and *Excel* decisions,[68] the Federal Circuit single-handedly transformed patent law from a specialized regime restricted to traditional technology based on natural science to a generalist regime for all useful human activity.[69]

The system has expanded in multiple directions – into the many levels and aspects of software, into non-technical business processes, and into biotechnology. Whereas patents in biotechnology seem genuinely needed to support the high costs of R&D, patents on software and business methods remain deeply controversial and widely resented.[70]

This artificially elevated presumption of validity offers an incentive to acquire and assert questionable patents.

[64] National Research Council, *supra* note 58, at 44-48.

[65] Merges, *supra* note 31.

[66] Federal Trade Commission Report, *supra* note 13, Executive Summary, at 8-10 (Recommendation 2); *see also* Federal Trade Commission Report, *supra* note 13, ch. 5, at 26.

[67] Gottschalk v. Benson, 409 U.S. 63 (1972); Parker v. Flook, 437 U.S. 584 (1978); Diamond v. Diehr, 450 U.S. 175 (1981).

[68] State Street Bank & Trust Co. v. Signature Financial Group Inc., 149 F.3d 1368 (Fed. Cir. 1998); AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352 (Fed. Cir. 1999).

[69] John R. Thomas, *The Patenting of the Liberal Professions*, 40 Boston College Law Review 1139, 1163-64 (1999).

[70] For example, according to Martin Konopken of Autodesk, "I speak with my fellow in-house counsel in the software industry frequently. There is an amazing degree of unanimity about software patents. We all hate them." STEP Board Conference, Intellectual Property Rights: How Far Should They Be Extended? National Academy of Sciences, February 2, 2002, transcript at 199.

Under current low standards of nonobviousness, a common off-the-shelf software package contains tens of thousands of possibly patentable processes at multiple levels of abstraction.

Yet all this new territory is embraced with near unanimity among patent professionals and institutions, which benefit in different ways from expanded jurisdiction. A recent treatise recognizes the capture problem:

> Workloads increase and regulatory authority expands when new industries become subject to the appropriations authorized by the patent law. Noticeably absent from the private, administrative and judicial structure is a high regard for the public interest.[71]

Patent law requires sorting out who did what when – a very difficult undertaking for something as easy to generate, ubiquitous, and ephemeral as software. Forty years ago, the President's Commission on the Patent System warned against granting patents for computer programs, explaining "all inventions should meet the statutory provisions for novelty, utility and unobviousness and [computer programs] cannot readily be examined for adherence to these criteria."[72] Today, the problem is many thousands of times more daunting. Software pervades all economic, social, and educational activity. It has become extraordinarily versatile and complex, on a scale unimaginable in 1966. And, thanks to sophisticated development tools, authorship is open to hundreds of millions of programmers.

By abolishing the longstanding rule against patents on business methods as well, the Federal Circuit has opened up the patent system to a vast range of activities, whether or not any technical discipline is involved. It has concocted its own subject matter test, requiring no more than a "useful, concrete, and tangible result."[73] But the Federal Circuit has never defined these terms, and it has yet to find subject matter that fails this test.

From one perspective, software presents the extreme case of the difficulties information technology is experiencing with the patent system. Software functions at many different but overlapping levels of granularity, ranging from code-level algorithms to program features to business methods (which today are commonly implemented in software). Under current low standards of nonobviousness, a common off-the-shelf software package contains tens of thousands of possibly patentable processes at multiple levels of abstraction. Most of these processes are not new, but the costs of determining which are old, which are new, which are covered by patents, which patents are valid, who currently owns them, and how they affect a particular feature or component are prohibitive. As noted, it may cost $10,000 to $50,000 or more to evaluate the patent status of each of the many possibly patentable functions. Even then, the results are not necessarily conclusive.[74]

Production and distribution of software differs radically from traditionally patentable technologies. There are virtually no barriers to creating functionality; production can take place anywhere, and no manufactur-

[71] Roger E. Schechter & John R. Thomas, Intellectual Property: The Law of Copyright Patent, and Trademarks 314 (2003).

[72] President's Commission on the Patent System, To Promote the Progress of Useful Arts in an Age of Exploding Technology § IV (1966).

[73] In re Alappat, 33 F.3d 1526, 1544 (Fed. Cir. 1994).

[74] Hence, the FTC's focus on "questionable" patents. *See also* Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, (Stanford Law and Economics Olin Working Paper No. 288, 2004), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=567883.

ing is required. Reproduction and distribution are nearly costless once a digital infrastructure (the Internet and the Web) is in place, which invites the widest possible adoption and use. It is revealing that the open source model of development is only practical for software, as is the open source model of distribution. Yet despite these profound economic differences, software has been shoehorned into a patent system optimized for pharmaceuticals.

Prior to 1998, methods of doing business had been around for hundreds of years without being considered patentable. The abstract nature of business methods means that patents on business methods actually preempt a wide range of implementations – *i.e.,* the technological solutions that the patent was designed to protect. As IBM recently commented:

> [W]ith the advent of business method patenting it is possible to obtain exclusive rights over a general business model, which can include ALL solutions to a business problem, simply by articulating the problem.[75]

This kind of broad, preemptive non-technological monopoly was never sanctioned until the Federal Circuit's State Street decision summarily eliminated the judicial rule against business method patents by making the preposterous claim that Congress had intended to do so 46 years earlier.[76]

The FTC review of four critical sectors indicates that patent quality and the role of the patent system in innovation is perceived most negatively in the software and Internet sector – in stark contrast to the pharmaceutical industry's passionate embrace of patents.[77] The Commission recommends considering "possible harm to competition – along with other possible benefits and costs – before extending the scope of patentable subject matter."[78] The U.S. experience with business method and software patents helped crystallize consensus in Europe against business method patents[79] and contributed to the failure of a controversial European Commission directive on "computer-implemented inventions" that would have validated European Patent Office practice on software patents.[80]

In short, an activist court has undertaken to extend the patent system far beyond its original domain of technology, *i.e.,* applied natural science, to the whole of the economy, indeed to all human activity. This has happened not in a deliberate and thoughtful public manner, but by mission creep

[75] IBM, Comments on the International Effort to Harmonize the Substantive Requirements of Patent Law, http://www.uspto.gov/web/offices/dcom/olia/harmonization/TAB42.pdf; *see also* Michal Likhovski, Michael Spence, & Michael Molineaux, *The First Mover Monopoly. A Study On Patenting Business Methods in Europe,* (Oxford Intellectual Research Centre Working Paper No. 05/00, (2001), *available at* http://www.oiprc.ox.ac.uk/EJWP0500.pdf.

[76] For background on the authoring judge's questionable role in the decision, see Brief for Amicus Curiae Computer and Communications Industry Association in Support of Petitioner, Laboratory Corporation of America Holdings v. Metabolite Laboratories, Inc. at 7-12 (U.S. 2005) (No. 04-607), *available at* http://www.ccianet.org/filings/ip/CCIALabCorpAmicus.pdf.

[77] Federal Trade Commission Report, *supra* note 13, ch. 3, at 44.

[78] Federal Trade Commission Report, *supra* note 13, Executive Summary, at 14.

[79] United Kingdom Patent Office, Should Patents Be Granted for Computer Software or Ways of Doing Business? The Government's Conclusion (2001), *available at* http://www.fondazionerosselli.it/DocumentFolder/REFERENCES_UK%20Patent%20Office_Consultation%20on%20the%20Patentability%20of%20software.pdf.

[80] *Software Patents: The 'Historic Vote' in the European Parliament Brings the Battle to an End,* European Parliament News, Jul. 9, 2005, http://www.europarl.eu.int/news/public/focus_page/057-1002-255-9-37-909-20050819FCS01001-12-09-2005-2005/default_en.htm.

and judicial fiat. Politically, this is nearly impossible to undo: There was no lobby for patents on business methods at the time *State Street* was decided, but the decision created an instant constituency of lawyers, applicants, and patent holders against attempts to undo it.

The effects will play out for years to come. Like software, "methods of doing business" pervade all areas of the economy, including education, the social sciences, and the liberal professions (even the practice of law!). While bestowing the benefits of patents on those that may have wanted them, the Federal Circuit summarily imposed the obligations, risks, and costs of the patent system on vast swaths of economic activity without notice to or the consent of the millions affected.

2.5. Why IT is Different

The extraordinarily high costs and risks in developing and testing drugs make patents indispensable and extremely valuable. A blockbuster drug may depend on a single primary patent, which may be worth billions of dollars. Against these high stakes, the costs and risks of seeking, avoiding, and litigating patents are modest and manageable. Because they are based on chemical formulas, patents for drugs are well-defined and unambiguous. It is easy to determine who owns what.

Paradoxically, patents are widely sought in IT, but individual patents are much less important than in pharmaceuticals. A single product may encompass thousands of patentable processes or components so that individual patents are likely to be of limited value.[81] Most of these patents could be designed around, but it is difficult and costly to track and assess patents on this scale. Poor quality and potential liability for willful infringement further discourage innovators from looking at patents of others.

Yet IT patents are valuable in the aggregate, and IT companies patent diligently to deter patent attacks by competitors and for cross-licensing to ensure access to patents that other companies may own.[82] Patent portfolios help firms preserve and perpetuate market position. Newcomers must cross-license to enter product markets, but since they bring few patents to the table, they must make substantial "balancing payments" to incumbent firms.

Although the practice of defensive patenting and cross-licensing is effective against other producers, it is ineffective against non-producing patent holders, who are free to sue without fear of patent countersuits. Entities whose principal business is patent assertion or "being infringed" have recently become famous as "trolls."[83] Ironically, the troll phenomenon is in part a byproduct of what has been seen as one of the rising beneficial uses of patents: helping startups secure financing. The problem is that most startups fail, often leaving patents as the only assets, which are then sold to the highest bidder. Once liberated from the original business context, the "highest and best" use of a patent may well

[81] Don E. Kash & William Kingston, *Patents In a World of Complex Technologies*, 28 Science and Public Policy 1, 11 (2001).

[82] The paradox of low patent value and aggressive patenting is examined in depth by B.H. Hall & R.H. Ziedonis, in *The Patent Paradox Revisited: An Empirical Study of Patenting in the US Semiconductor Industry,* 1979-95, 32 Rand Journal of Economics 1, 102-128 (2001). Hall and Ziedonis also confirm the "friendly court hypothesis," *i.e.,* the role of the Federal Circuit in promoting aggressive patenting.

[83] The term was coined by Peter Detkin, then Vice President and Assistant General Counsel, Intel, when Intel was sued for libel for using the term "extortionist." *See* Brenda Sandburg, *Battling the Patent Trolls*, The Recorder, July 30, 2001, http://www.law.com/jsp/statearchive.jsp?type=Article&oldid=ZZZ4DX7MSPC.

be asserting it as aggressively as possible, uninhibited by the need for cross-licensing, business relationships, or good public relations. Thus, IT patents appear to be most valuable in the hands of trolls, especially when they can be used against producers who have made huge sunk investments, unaware of the patent's existence.

2.6. Opacity, Surprise, and Ambush

Trolls benefit from a deeper problem: the failure of the public disclosure function – and the social contract of a limited-term monopoly in exchange for disclosure. To be sure, adequate disclosure is still necessary for an individual patent to stand up in court. But as a practical matter – whether or not patents are read as a source of useful technical information – disclosure is failing at the aggregate or systemic level. Even large companies find it costly to manage knowledge about patents, even the patents they own. According to Texas Instruments, a company that does very well licensing its patents:

> TI has something like 8000 patents in the United States that are active patents, and for us to know what's in that portfolio, we think, is just a mind-boggling, budget-busting exercise to try to figure that out with any degree of accuracy at all.[84]

If it is difficult for a well-resourced company to manage knowledge about its own patents, consider how difficult it must be for a small company to gather and manage knowledge about all the patents it does not hold. As one of the panelists at the FTC/DOJ hearings observed:

> ...[I]n my experience in the software industry we have a kind of business that's easy to enter, but where you enter with sometimes an overwhelming sense of dread because you don't know how many pieces of IP you will need in order to operate. It is opaque, you can't get there, and in fact the system discourages you from looking very hard because your lawyers may advise you that simply by virtue of poking around to find out what patents exist you expose yourself to willfulness claims which can triple the amount of damages and exposure to attorney's fees.[85]

The opacity of a volume-driven patent system creates opportunities for arbitrage, along with incentives for surprise and ambush. A small producer at the hearings explained, the dangers can be life-threatening:

> As a small company, one of the biggest risks I face is uncertainty in the marketplace. I can minimize my risk by understanding my competitor's products very well, by understanding my products very well, by understanding what the consumers and customers want. But I've found in the past year that I really can't understand the patent landscape and that I'm sitting with a nuclear bomb on top of my products that could go off at any point and cause me to simply not have a business anymore.[86]

Under a one-size-fits-all patent system, the IT sector is victimized by the scope and scale of its own success. Its great achievements in managing and designing complex functionality, in putting hundreds of thousands of functions into smaller and smaller spaces, are exposed to patent opportunists. The enormous value created by complex products, systems, and services becomes a source of lia-

[84] Frederick J. Telecky, FTC/DOJ Hearings, Feb. 28, 2002, transcript at 743, http://www.ftc.gov/opp/intellect/020228ftc.pdf.

[85] James Pooley, Milbank, Tweed, Hadley & McCoy, FTC/DOJ Hearings, Feb. 27, 2002, transcript at 380, http://ftc.gov/opp/intellect/020227trans.pdf.

[86] R. Jordan Greenhall, Chief Executive Officer, Divx Networks, FTC/DOJ Hearings, Feb. 27, 2002, transcript at 375, http://ftc.gov/opp/intellect/020227trans.pdf.

bility. As the threat of injunction against RIM's Blackberry service demonstrated, shutting down a network hurts not only the provider, but the whole downstream economy of complementors and users. In the long run, these threats jeopardize and undermine investment by both producers and users of IT.

Modularity and interoperation open innovation to broad range of players, large and small. Cognizant of the need to spur innovation and create new markets, IT firms invest heavily in developing standards. Freely usable nonproprietary standards – including TCP/IP, HTTP, and HTML – were responsible for the rapid uptake and spectacular success of the Internet, the Web, and the many services and products built on top of these platforms. For certain complex standards, such as JPEG and MPEG, patent owners have cooperated in assembling rights needed to implement the standard. However, the critical role that standards play in innovation, commercialization, and the creation of complementary markets becomes another source of expanded risk and liability. If a patent holder is "lucky" enough to have its patent inadvertently infringed by an industry standard, the patent holder can hold up all producers in the market – along with their customers, distributors, and end users.

In this context, patents can be used to undermine the value of other patents. AT&T's recent demand for royalties for patents not included in the MPEG-4 patent pool illustrates the problem.[87] By revealing its patents only after the MPEG-4 standard was adopted and implemented, AT&T diluted the value of the 82 patents voluntarily pooled by the cooperating companies that developed and built the market for the standard – while it enhanced the value of its own patents by using them for hold-up.

In a transparent environment, companies involved in developing industry standards would choose among competing technologies on the basis of price, terms, and value. In an opaque patent landscape where it has become prohibitively costly to know who owns what with confidence, patent holders have good reason not to step forward. Silence is a lottery ticket for the possibility of holding hostage a vast interdependent network of products and services – and getting a free ride on value created by others.

3. The Push for Reform

In 2003, after a year of hearings held jointly with the Department of Justice, the Federal Trade Commission issued a major report: *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy*. Unanimously endorsed by the five Commissioners, the report is a remarkable integration of economic and legal analysis based on a voluminous record of industry, practitioner, and academic perspectives. It reveals profound sector differences in experience with patents, innovation, and competition, and it offers a set of strong recommendations, many of which address the uniquely severe problems experienced by the IT sector.

In April 2004, under the auspices of the Board on Science, Technology and Economic Policy (STEP), the National Research Council published a consensus report from a committee that included academics, practitioners, and different industry interests.[88] As committee co-chair

[87] Bary A. Johnson & Mark Hachman, *AT&T Warns Apple, Others, of Patent Infringement*, PCMAG.com, Feb. 9, 2006, http://www.pcmag.com/article2/0,1895,1923218,00.asp.

[88] *Supra* note 13.

Richard Levin explained at the close of the project, its recommendations were aimed at what was politically possible.[89] In this context, the IT sector's concerns were compromised not only with views of the pharmaceutical and biotech sectors, but with the whole set of broader economic and institutional interests in maintaining patent demand, volume, potency, and unlimited subject matter. The report endorsed moving from first-to-invent to first-to-file in the interests of international harmonization – a longstanding priority of the patent bar and large multinationals – as well as curtailing a set of "subjective" features of patent law: enhanced damages for willful infringement, the best-mode defense, and the inequitable conduct defense. Like the FTC report, it recommended a post-grant opposition proceeding ("open review").

Chairman, Lamar Smith and other members of the House Subcommittee on Courts, the Internet, and Intellectual Property introduced H.R. 2795, The Patent Reform Act of 2005, on June 8, 2005. The bill addressed the NRC report's recommendations on first-to-file, post-grant oppositions, willful infringement, and other measures of interest to the patent establishment. It also included reforms of special interest to the high-tech sector, including provisions limiting injunctive relief, limiting continuation practice, requiring apportionment of damages, and providing a second window for oppositions once litigation is threatened. However, these provisions were opposed by the pharmaceutical and biotech industries, and a substitute bill floated by Smith the following month dropped most of them. Momentum on H.R. 2795 stalled, but many of high-tech's priorities were revived in H.R. 5096, the Patents Depend on Quality Act of 2006 ("PDQ Act"), introduced by Representatives Howard Berman and Rick Boucher in April 2006, without the harmonization and other sections supported by the patent establishment. A Senate bill, S. 3818, the Patent Reform Act of 2006, was introduced on August 3, 2006, by Senators Hatch and Leahy; it spans both the consensus reforms and several areas of interest to IT. See Figure 2, below.

Legislative Proposals in 109th Congress on Crucial Issues

Issue	Industry Concerns	FTC Recommendations	Drafts of H.R. 2795: Initial Bill *June 8, 2005*	Drafts of H.R. 2795: Substitute *July 26, 2005*	PDQ Act *H.R. 5096--Apr. 5, 2006*	Patent Reform Act *S.3818--Aug. 3, 2006*
Damages should be proportionate to relevance of infringing function.	✓		✓ (§ 6)	✓ (§ 6)		✓ (§ 5)
Eliminate venue abuse.	✓			✓ (§ 9)	✓ (§ 7)	✓ (§ 8)
Create procedure for post-grant opposition, including a "second window" review.	✓	✓ (No. 1)	✓ (§ 9)		✓ (§ 2)	✓ (§ 6)
Reform standard for injunctive relief.[1]	✓		✓ (§ 7)		✓ (§ 8)	
Eliminate continuation abuse.[2]	✓	✓ (No. 8)	✓ (§ 8)			
Evidentiary burden to invalidate patents should be "preponderance," rather than "clear & convincing."	✓	✓ (No. 2)			✓ (§ 2)	
Tighten standard of non-obviousness.[3]	✓	✓ (No. 3)				

[1] Addressed by Supreme Court in *eBay v. MercExchange*, No. 05-130 (May 15, 2006)
[2] USPTO rulemaking on procedures pending, 71 Fed. Reg. 48, 61 (Jan. 3, 2006)
[3] Pending before Supreme Court in *KSR v. Teleflex*, No. 04-1350

Figure 2

The recent bills also address a new forum-shopping problem, specifically, the rush of patent holders to file suit in the patent-friendly Eastern District of Texas, by limiting venue to places that have some rele-

[89]

There is a virtual consensus around the things that were in the report. Why? Because we had dozens of meetings. We heard -- all the same people that have been talking today, have testified before our committee pretty much. And we basically tried to reach out to the academic community, to the government, to the PTO itself, to the practicing patent bar, and to the business community to get their views.

STEP Board/AIPLA/FTC Conference on Patent Reform, National Academy of Sciences, Washington, DC, June 9, 2005, transcript at 268-9.

vance to the parties. S. 3818 also repeals Section 271(f) of the patent act, which the Federal Circuit has construed as extending worldwide liability to infringers of software patents.[90]

In the meantime, several issues of importance to IT have come before the U.S. Supreme Court. The Federal Circuit's rule of automatic injunctive relief was unanimously rejected in *eBay v. MercExchange* in favor of traditional principles for equitable relief.[91] A case involving diagnostic information and the limits of patentable subject matter, *Labcorp v. Metabolite*, was accepted for review but eventually dismissed as improvidently granted, an infrequent occurrence. However, the order of dismissal was accompanied by a dissent from three justices who would have used the case to narrow the Federal Circuit's expansive view of patentable subject matter.[92] The Court agreed to review the Federal Circuit's "suggestion test" for obviousness, as presented in *KSR International v. Teleflex*.[93]

These three cases involved issues deemed too controversial for reform legislation. A provision to refine the Federal Circuit's standard for injunctive relief appeared in the initial version of H.R. 2795 but disappeared in the substitute amendment proposed by Chairman Smith the following month. The extremely difficult and contentious problem of defining limits to eligible subject matter has been addressed only in the FTC recommendation to consider costs and benefits when adding subject matter to the patent system. The FTC report also addressed the obviousness standard by recommending reform of the suggestion test, as well as a more nuanced treatment of "commercial success" as a factor showing nonobviousness.

In contrast to the controversial issues before the Supreme Court, there is widespread support in principle for post-grant opposition, which is included in all the reform bills. But while there is consensus on an initial window of nine or twelve months after the patent grant, this is of limited value in the IT sector – where it is impractical to monitor patents as they issue, especially since relatively few patents are ever asserted. Hence, the original House bill provided a second opportunity to file an opposition when and if the patent is asserted. At that point, the opposition would serve as a cost-effective alternative to litigation, rather than an add-on to the examination process. However, the pharmaceutical and biotechnology industries oppose the second window as undercutting the value of patents. The recent Senate bill takes a slightly different approach to the second window, allowing the filing of an opposition anytime by anyone "who establishes a substantial reason to believe that the continued existence of the challenged claim causes or is likely to cause the petitioner significant economic harm."

There is an often unacknowledged free-rider problem that will inhibit filing of oppositions. Although the European opposition system is in many respects the

[90] *See* Eolas Technologies v. Microsoft Corp. 399 F.3d 1325 (Fed. Cir. 2005); AT&T Corp. v. Microsoft Corp., 414 F.3d 1366 (Fed. Cir. 2005).

[91] 126 S. Ct. 1837.

[92] Laboratory Corporation of America Holdings v. Metabolite Laboratories, Inc. 126 S. Ct. 2921 (2006) (dismissing the writ of certiorari as improvidently granted); the Court had asked the parties for comment on the criterion for patentable subject expressed in *Diamond v. Diehr*, 450 U.S. 175 (1981), the case that accepted a computer program as part of a patentable process for curing rubber.

[93] KSR International Co. v. Teleflex, Inc., 126 S. Ct. 2965 (2006) (granting petition for certiorari).

model for post-grant oppositions, there has been little mention of the declining use of oppositions in Europe – especially the plummeting rate in the IT sector.[94] The basic problem is that the petitioner bears all of the costs and risks associated with the proceeding and attacking of the patent holder, very likely becoming the patentee's first target if the challenge fails. If successful, the challenger's competitors and the public all benefit but contribute nothing. The larger the number of potential infringers, the greater the free-rider problem. Accordingly, experts have suggested the need for market-based incentives, such as bounties, to invalidate patents.[95]

Despite widely voiced concerns about patent quality as the motivation for patent reform, the reform bills focus on litigation reform and would actually do little to change the examination process itself. They do require early publication, 18 months after filing, in all cases. At present, early publication is only required when the applicant is seeking patents outside the United States.[96]

The reform bills would also enlarge and formalize the window during which third parties can submit prior art after publication. They would <u>require</u> a statement of relevance – completely reversing the present administrative rule, which actually forbids any accompanying comments.[97] Consistent with current practice, they would require a fee from those submitting prior art – presently set at $180. While the fee might seem perverse since the submitter is doing part of the examiner's job, the fear is that otherwise the applicant's adversaries might deluge the patent office with paper.

Nonetheless, those who might challenge a patent have good reason to hold back, and, in fact, very little prior art is submitted. As noted, if potentially invalidating prior art is cited by the examiner in an issued patent, it gets cloaked in the artificially enhanced presumption of validity created by the Federal Circuit, losing any force it might have as new evidence. A competitor will do better to keep the prior art in reserve and then introduce it in court as something that the examiner completely missed. Or the prior art can be used in settlement negotiations, in which case the challenger may agree to leave the patent standing, so that the patent holder can continue to assert it against the challenger's competitors, who may not be aware of it.

One of the recommendations of the NRC/STEP study (included in H.R.2795) might well further diminish the quality of patent information: the elimination of the requirement that the applicant disclose the best mode of implementing the invention. Likewise, the proposed shift from first-to-invent to first-inventor-to-file may result in a multitude of half-baked overlapping applications as applicants race to the patent office – *i.e.,* more information of dubious quality.

The ritual answer to the quality problem at

[94] Dietmar Harhoff, *Patent Quality and Quantity*, in Advancing Knowledge and the Knowledge Economy (Brian Kahin & Dominique Foray, eds., MIT Press 2006).

[95] *See e.g.,* John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties,* 2001 University of Illinois Law Review 305 (2001); *see also* Joseph Scott Miller, Building a Better Bounty: Litigation-Stage Rewards for Defeating Patents, 19 Berkeley Technology Law Journal 667 (2004).

[96] 35 U.S.C. § 122(b)(2)(B) (2006). Eighteen-month publication was introduced in the 1999 reform legislation subject to this compromise. Since 18-month publication is required in most other countries, this provision had little effect on applicants who were also planning to file abroad.

[97] *See* 37 C.F.R. § 1.99 (2006) ("Rule 99").

In the long run, fixing the patent system means addressing the quality issue head-on.

the front end has been to give the PTO more money. This is commonly cast in terms of stopping the diversion of the PTO's fee income by the House Appropriations Committee, even though the idea of funding the PTO from the fees that it generates was a poor policy to begin with that set up the wrong incentives within the agency. For now, fee diversion has been stopped and statutory application fees have been increased.

A separate bill, H.R. 2791, the "United States Patent and Trademark Office Fee Modernization Act of 2005," attempts to sidestep the Appropriations Committee by requiring that any excess of fees over expenditures be refunded to applicants (instead of being diverted to other programs). This potentially costly exercise would, in practice, ensure that the PTO spends its fee income fully. Instead, Congress should ensure that fees will be expended to improve quality and speed examination – and not to promote more patenting and expansionist policies, as has sometimes been done in the past.

Specifically, the PTO should be charged with instituting standards and procedures for monitoring patent quality that are open to outside review and demonstrate the benefits of expending additional resources. Former director, James Rogan, once noted that the enhanced ("second set of eyes") review under the initiative on business method patents resulted in a drop of the allowance rate from 75% to 25%.[98] The lessons of the business methods initiative should be publicly documented and evaluated as background for quality-focused reform.[99]

4. Raising the Standard

In the long run, fixing the patent system means addressing the quality issue head-on. This must be done by raising the basic standard of nonobviousness, not by throwing more money at a PTO that has to follow the law as interpreted by the Federal Circuit. This means attacking the problem broadly, not just as a problem of locating prior art. It means acknowledging the inherent subjectivity of the standard and explicitly raising it so as to exclude the large number of trivial and questionable patents that clutter, obfuscate, and seed the IT landscape with landmines.

The Federal Circuit has explicitly interpreted PHOSITA as a very low standard:

> The statutory emphasis is on a person of *ordinary* skill. Inventors, as a class, according to the concepts underlying the Constitution and the statutes that have created the patent system, possess something – call it what you will – which sets them apart from the workers of *ordinary* skill, and one should not go about determining obviousness under § 103 by inquiring into what *patentees* (i.e., inventors) would have known or would likely have done, faced with the revelations of references. A person of ordinary skill in the art is also presumed to be one who thinks along the line of conventional wisdom in the art and is not one who undertakes to innovate, whether by patient, and often expensive, systematic research or by extraordinary insights, it makes no difference which.[100]

[98] Streitfeld, *supra* note 11, at A1.

[99] *See* John R. Allison & Starling D. Hunter, *On the Feasibility of Improving Patent Quality One Technology at a Time: The Case of Business Methods* (MIT Sloan Research Paper No. 4564-05, 2005) (finding positive results, but warning that implementing enhanced review by groups invites gaming the system), *available at* http://ssrn.com/abstract=815007. A recent National Academy of Public Administration report indicates that second-level review has been extended to new areas on a trial basis. National Academy of Public Administration, U.S. Patent And Trademark Office: Transforming To Meet The Challenges Of The 21st Century, Table 3-2 (2005), *available at* http://www.napawash.org/pubs/pto-8-25-05.htm. However, the PTO has not officially announced this expansion, nor has it provided a documented account of its experience with enhanced review in class 705.

[100] Standard Oil Co. v. American Cyanamid Co., 774 F.2d 448, 454 (Fed. Cir. 1985).

If patents are only read by lawyers, rather than by innovators and entrepreneurs, then the patent system fails its essential mission of promoting the "progress of the useful arts."

Here we have the line-drawing conundrum of nonobviousness recreated in the person who is to judge it. But the judgment call is not to be made by qualified experts above this line, as one might expect. Instead, it is to be made by someone below the line, a tradesman of routine competence far removed from the intensely competitive heat of today's innovation-driven economy.

Assigning the threshold judgment to a hypothetical person of ordinary skill does not make the standard of inventiveness (nonobviousness) any less subjective, and it adds the problem of identifying the "analogous art" and the level of "ordinary" skill within it. Even so, this supposedly objective PHOSITA standard, which on its face requires identifying the field of technology, is not rigorously adhered to in practice. As one authority notes:

> Surprisingly few judicial opinions actually reach a specific determination of the level of ordinary skill in the art. . . In practice, the concept of "a person of ordinary skill in the art" seems more to remind judges to put themselves in the shoes of a skilled artisan, rather than compel a specific factual finding.[101]

Keying the threshold test for patents to the perspective of the non-innovative may make sense in a mature artisan economy where the technology is stable and competition is local and limited in scope, but it makes little sense in today's global mass-market economy. A baseline of acceptable mediocrity is difficult to apply and invites constant erosion from trophy seekers, opportunists, and lawyers. It is the antithesis of the peer review process used to allocate scarce research resources by the National Science Foundation and other public agencies. Why should the grant of patent rights, which are not rights to exploit but merely rights to exclude others, be allowed under a much lower standard?

Standards should not only rise over time as the state of the art advances, they should rise as innovation becomes more the work of multidisciplinary teams than individuals, and as global competition raises standards around the world. They should rise as potential for conflict among inventors and inventions grows, whether the inventor chooses to patent or not.

5. Aligning Patents and Knowledge

If the basic standard were raised so that fewer patents were issued, patents would be much more likely to fulfill the goal of promoting the diffusion and use of technical knowledge. It is a matter of getting the noise – trivial, questionable, unreadable, unduly broad, and invalid patents – out of the system. It requires ensuring that patents are worthy of respect, and read for their technological content. If patents are only read by lawyers, rather than by innovators and entrepreneurs, then the patent system fails its essential mission of promoting the "progress of the useful arts."

Still, the *low standard of patentability* is only

[101] Schechter & Thomas, *supra* note 71, at 382. Even the Supreme Court's textbook analysis of nonobviousness in *Graham v. John Deere*, does not identify the person of ordinary skill in the art and ask his/her opinion. *See* Rebecca S. Eisenberg, *Obvious to Whom? Evaluating Inventions from the Perspective of PHOSITA*, 19 Berkeley Technology Law Journal 885 (2004).

one factor in the mismatch between patent practice and the flow of technological insights. Others include:

Treble damages for willful infringement: As noted, engineers and developers are advised not to read patents because of the potential liability. The reform legislation would fix this, in part, by limiting enhanced damages to egregious conduct.

The artificially high presumption of patent validity: This unwarranted presumption discourages the disclosure of prior art by making it less effective to use in the event of litigation.

Ex parte examination and delayed publication: The examination process is entirely secret until the required publication of the application after 18 months; hence, the application is not visible to competitors for what is a very long time in fast-moving technologies. As long as the *ex parte*, secret nature of patent examination is established policy, high standards of nonobviousness are needed to minimize the likelihood of blindsiding and inadvertent infringement.

Broadening of claims in prosecution, especially in continuation applications: Continuation applications allow patent applicants to secure new or broadened claims on the same disclosed subject while retaining the same priority date as the original application. While a case may be made for continuations in biotechnology because of the ongoing, expensive process of testing and discovery, it is frequently abused in IT by applicants who monitor competitors and/or industry standards and then rewrite and expand their claims accordingly.[102] Recognizing that much of its enormous backlog is attributable to continuation applications, the PTO issued a notice of proposed rulemaking that would modestly discipline the use of continuations.[103]

6. Institutional Reform

The more important the patent system becomes, the more important it is that it function as intended. Yet the patent system is endangered by the success of its own institutions in expanding its scope, scale, and presence while remaining insulated from accountability and oversight.

How can we ensure that the patent system is generating the kind of results we expect of it – in information technology as well as pharmaceuticals and biotechnology? How do we guard against the capture of the system, including the generous inclination to "hand out bazookas to everyone who asks for them"? What can we expect of an agency whose self-proclaimed mission is to help customers get patents?

The Federal Circuit's jurisprudence has transformed patent law from a rigorous technical specialty into a general law of novelty that extends into every sector of the economy and all practical aspects of human activity. The court has developed an appreciative and vocal constituency in the patent bar, as well as in the few industries where patents may be needed to justify and sup-

[102] For the general case against continuations, see Mark A. Lemley & Kimberly A. Moore, *Ending Abuse of Patent Continuations*, 84 Boston University Law Review 63 (2004), *available at* http://mason.gmu.edu/%7Ekamoore/LEMLEYMOORE2.pdf.

[103] Changes to Practice for Continuing Applications, Requests for Continued Examination Practice, and Applications Containing Patentably Indistinct Claims, 71 Fed. Reg. 48 (Jan. 3, 2006). A provision specifically authorizing the PTO to regulate continuations was included in the original H.R. 2795 but was dropped in Chairman Smith's proposed substitute amendment.

port costly investments in research and trials. Yet it has not realized the original goal of regularizing patent law and eliminating forum-shopping. Today, the inconsistency and tension is manifest, not among the regional courts of appeal, but across district courts,[104] between the district courts and the Federal Circuit,[105] between panels of judges within the Federal Circuit,[106] and lately between the Federal Circuit and the Supreme Court, as well as between different sectors of the economy!

Unlike executive agencies, the Federal Circuit has no general information gathering capacity. As Chief Judge Paul Michel candidly explained:

> We would probably be the least expert, and the least informed, and the least able to even reason from input -- if we had it . . . We just keep replicating the old results based on the old precedents, whether they have kept pace with changes in business, changes in technology, or changes of a different sort . . . [W]e just get the Federal Circuit talking to itself, with the brief writer just being the echo of what we wrote in all those prior cases. And then we write some more cases, and the cycle just goes on and on and on. And it certainly lacks the benefit of being tightly wired to the evolving reality.[107]

Yet the Federal Circuit has promulgated an industrial policy that favors certain sectors of the economy over others. In comparison with the regional courts of appeal, it is a court with a predilection for referencing its own opinions – and disdain for scholarship.[108] The court's near monopoly on appellate jurisprudence inhibits robust policy debate, because companies, academics, and practitioners alike will inevitably appear before it as advocates.

Given the residual uncertainty in patent litigation and demonstrated reality of capture, it is questionable whether a centralized appellate structure makes sense. There is robust dialog among circuits in other areas of the law. Why should patent jurisprudence be as insulated and insular as it is – especially when the patent system has expanded beyond its technological roots to all areas and facets of human enterprise? A good case can be made that specialized technical expertise is best marshaled at the fact-intensive trial level in district courts, and that appeals should benefit from a broad perspective informed by rich understanding of other interests and values.[109] A recent proposal by professors Craig Nard and John Duffy makes a compelling case for giving at least one other circuit court jurisdiction in patent appeals.[110]

The PTO also lacks the capacity to monitor the effects of patents on business practice, competition, and innovation. Unfortunately,

[104] *I.e.,* the Marshall, Texas problem of a reputedly patent-friendly jurisdiction. *See* Julie Creswell, *So Small a Town, So Many Patent Suits*, New York Times, September 24, 2006.

[105] Kimberly A. Moore, *Markman Eight Years Later: Is Claim Construction More Predictable?*, 9 Lewis & Clark Law Review 231 (2005), *available at* http://mason.gmu.edu/%7Ekamoore/Moore Galley rev.pdf.

[106] Wagner & Petherbridge, *supra* note 25, at 1105.

[107] Patnews Newsletter, (Greg Aharonian, ed.) July 31, 2002 (transcription credited to Gerald Peters).

[108] Craig A. Nard, *Toward a Cautious Approach to Obeisance: The Role of Scholarship in Federal Circuit Patent Law Jurisprudence*, 39 University of Houston Law Review 101 (2002), *available at* http://ssrn.com/abstract=335100.

[109] Arti K. Rai, *Specialized Trial Courts: Concentrating Expertise on Fact,* 17 Berkeley Technology Law Journal 887(2002) *available at* http://www.law.berkeley.edu/journals/btlj/articles/vol17/rai.pdf. Specialized trial courts for patent cases in Germany and the United Kingdom have proven successful and have not developed "pro-patent" reputations. German patent courts even specialize by subject matter.

[110] Nard & Duffy, *supra* note 43.

the PTO's draft Strategic Plan 2007-2012 offers little hope for anything more than business as usual.[111] There is virtually no hint of the ferment and contention in business practice revealed in the FTC study – or on the issues before Congress and Supreme Court. The agency argues for a role in expanding public understanding:

> Intellectual property rights and their utilization in the global economy impact every American on a daily basis but are all too frequently not well understood by the general public. Increasing public awareness of various intellectual property issues and interests and how these affect them is an important aspect of the USPTO role. Educating the public about the examination processes of the USPTO and how these relate to the use of intellectual property rights in the marketplace would help in that process.[112]

Yet there is nothing on the agency's website to suggest the many ways that patents are used and abused, tactically and strategically, in the rough and tumble of the real world. Nor is there any other elucidation of policy issues in terms of positions and arguments, pro and con. No mention of portfolios, thickets, trolls, or hold-up, and little acknowledgment of prohibitive legal costs which drive patent-related business behavior.

At the same time, the PTO still sees itself in an expansionist role as "developing positions and proposals for specific patent reform proposals to promote and enhance patent protection." It assumes that promoting patents is promoting innovation. "Increasing public awareness" equates to the conviction that patents = invention = innovation, and that if people only knew what patents can do, they would get more of them.

The PTO is increasingly focused on managing its colossal backlog, which its excursion into "helping customers get patents" helped create. Should we confine the agency to a narrow rigorous focus on examination – or expand its capabilities so that it can assess how the system is working, and how it could be improved to yield better results? Relying on the FTC to undertake occasional studies when conditions become bad enough is not a satisfactory solution.

7. Conclusion and Recommendations

Information technology today faces an opaque intellectual property landscape, where it is practically impossible to know who owns what with confidence. Opportunities for surprise and hold-up abound. The patent system, designed to keep imitators from free riding on inventors, has been turned upside-down. It now offers incentives for opportunists to free-ride on industry standards and the intellectual property of others. Opportunists get to ambush businesses that transform disembodied ideas into full-fledged products and services through the hard work of moving them from labs to factories and into the hands of end users.

In the past, stewardship for the system has been left to professionals who earn their living working it. Today, as patent strategy becomes a business issue, patent policy becomes a business issue, too important to be left to lawyers. To the extent it affects business decisions, it becomes a matter of public interest. As the FTC reminds us:

[111] United States Patent and Trademark Office, Draft Strategic Plan 2007-2012, http://www.uspto.gov/web/offices/com/strat2007.

[112] *Id.*

> [P]atent policy is for the benefit of the public, not patent holders. The ultimate point of granting a patent is not to reward inventors, but rather to create incentives for actions-invention, disclosure and commercial development-that will further the public interest and thus benefit consumers over time.[113]

Yet the growing diversity of uses, practice, and experience inevitably leads to divergence in policy perspective. Facing a profusion of secondary phenomena and effects that have no place in patent law, we need fundamental agreement on what we expect from the patent system.

7.1. Agreement on Principles

In discussions with industry members and public interest organizations, the Computer & Communications Industry Association (CCIA) has developed a set of principles and corollaries on how the patent system should work (Appendix I). Together, they provide an opportunity for consensus on how a patent system can work effectively toward common goals.

In summary, those principles are as follows:

INNOVATION:

- **The fundamental purpose of patents is to promote innovation, not patents.**
- **Patent law and policy should be sensitive to the different social and economic contexts** (including other means, incentives, and motivations for innovating, such as free-market competition).
- **The patent system should be limited to fields and applications where benefits outweigh costs.**

EFFICIENCY:

- **Threshold requirements for patenting should be sufficiently high that inadvertent infringement rarely occurs.**
- **Public disclosure is an essential function of the patent bargain.** (Innovators should learn from patents and be able to avoid infringing the patents of others with a minimum of effort, cost, delay, or uncertainty.)
- **Invalidation of questionable patents should be encouraged so that they do not impose burdens on other innovators.**
- **Patents should not endanger investments in other forms of knowledge creation and use** (such as scientific research or the development of open standards).

ACCOUNTABILITY:

- **Governments should monitor and evaluate the impact of the patent system on an ongoing basis so that the patent system is justified and accountable on the basis of results, not ideology.**
- **National and international patent policy should be advanced by informed democratic policymaking.**

7.2. Real Patent Reform: The Long-Term Agenda

CCIA supports the FTC recommendations for reform and the reform agenda supported by IT industry consensus.[114] Many are included in pending legislation, but as important as these reforms are, they generally address symptoms rather than underlying structural or institutional problems. Patent reform ultimately means coming to grips with fundamental problems: disproportionate costs, uncertainty, and capture – all of which undermine the goal of promoting innovation.

[113] Federal Trade Commission Report, *supra* note 13, ch. 6, at 4, quoted in Committee for Economic Development, Open Standards, Open Source, and Open Innovation, Harnessing the Benefits of Openness 7 (2006), *available at* http://www.ced.org/docs/report/report_ecom_openstandards.pdf.

[114] Federal Trade Commission Report, *supra* note 13; for example, see the Coalition for Patent Fairness, http://patentfairness.org.

With this in mind, CCIA advocates a strong set of long-range reforms to address underlying problems. By offering specific solutions to root causes, CCIA seeks to broaden and deepen the debate – especially for the benefit of leaders in business and policy.

Our proposals:

1. Tailor patent protection to reflect the diversity of innovation environments.

The need for sector-specific tailoring was recognized in the 2005 National Academy of Sciences report, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future.* Following this report, a Senate resolution co-sponsored by 30 senators was introduced, advocating patent reform legislation that "reduces barriers to innovation in specific industries with specialized patent needs." The Committee for Economic Development has urged Congress to "reexamine the premise that today's unitary system continues to serve all industrial sectors well, especially given the proliferation of problems regarding software patents."[115]

There are already a number of statutory industry-specific protections in U.S. patent law (nuclear engineering, surgical methods, business methods, biotechnology, and pharmaceuticals). Professors Dan Burk and Mark Lemley have shown that the Federal Circuit applies basic patent standards differently in different fields.[116] Empirical studies show that patents are viewed and used differently in different sectors.[117] Fundamental differences in experience were documented by the FTC hearings and report[118] – and conclusively demonstrated by the industry split over patent reform. Given the explosion in kinds and uses of technology and the greatly expanded scope of the patent system, it is clear that one size cannot possibly fit all.

Some claim that language in the TRIPS agreement precluding discrimination based on field of technology requires mechanical application of patent rules and standards. This language was inserted solely for the benefit of pharmaceutical interests, who wanted to insure universal recognition for patents on pharmaceuticals. It has no doctrinal basis in patent jurisprudence and should not be used to lock IT into a system optimized for blockbuster drugs. The true test of discrimination lies in the results: A system that provokes investment in one sector at the expense of another is inherently discriminatory. The economic importance of innovation demands that the U.S. system be responsive to innovator needs, *i.e.,* as intelligently and appropriately fitted for IT as for pharmaceuticals.

The logical place to start tailoring the patent system is to acknowledge in statute what legal experts have shown – that judges do take industry differences into account as they interpret patent law. This would simply require language such as the following: "In applying the provisions of

[115] Committee for Economic Development, Open Standards, Open Source, and Open Innovation, Harnessing the Benefits of Openness 7 (2006), *available at* http://www.ced.org/docs/report/report_ecom_openstandards.pdf.

[116] Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, 17 Berkeley Technology Law Journal 1155 (2002).

[117] W.M. Cohen, R.R. Nelson and J.P. Walsh, *Protecting their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)*, (National Bureau of Economic Research, Working Paper No. 7552, 2000) (revised 2004).

[118] Federal Trade Commission Report, *supra* note 13, at ch. 3.

this Act, courts shall give due deference and weight to the characteristics, circumstances, and practices of different areas of innovation to ensure that outcomes promote innovation in all fields of technology."

2. Raise the basic threshold: eliminate the "ordinary" from patent law.

Abraham Lincoln spoke of the patent laws as adding "the fuel of interest to the fire of genius." He would be shocked by today's entitlement program, in which anything more than the obvious gets a patent. Today, undistinguished patents in IT are so plentiful that innovative producers often inadvertently infringe the patents of others.

Only by fixing the statutory language of the standard for patents can Congress convey the message that the threshold is too low. This could be done merely by eliminating one word, "ordinary," from the standard of skill used to determine obviousness. A hypothetical "person having ordinary skill in the art" may have been appropriate for the local artisan-based economies of the early 19th Century, but not for today's intensely competitive global economy. In IT, constant innovation is the rule, because it is necessary for day-to-day survival.

It may be preferable to raise the standard higher to guard against erosion and to make it more objective. This could be done with a standard of "recognized skill in the art," which could be presumptively tied to peer-reviewed publications and, once the higher standard is implemented, patents. This would provide greater objectivity and an expert standard consistent with the levels of skill needed for genuinely inventive and meaningful contributions to the state of the art.

3. Implement peer review for patent applications.

The Federal Circuit endows patents with an artificially high presumption of validity that can only be overcome with "clear and convincing evidence." In the long run, of course, we want this kind of confidence in issued patents. For now, the deficiencies of *ex parte* examination and well-publicized problems of patent quality make this standard unrealistic. It encourages the assertion of questionable patents and discourages competitors from submitting prior art to the PTO.

Quality information about prior art is needed early to reduce uncertainty and delay for both patent applicants and innovators who want to avoid infringement. Review by peers, rather than inexperienced examiners, should be explored and developed as a means of reducing costs, improving quality, and expediting the examination process. A pilot is underway in the Peer to Patent project supported by IBM, with the active collaboration of the PTO.[119]

A uniform *ex parte* process may have made sense when innovation was irregular and rare, but it is time to rethink the examination process in light of higher standards, the speed of innovation, and the frequency of independent invention. Applicants should be encouraged to elect peer-review alternatives to conventional examination. By doing so, they would merit a patent with an enhanced presumption of validity. Initial secrecy, currently required for a full 18 months after application, can be

[119] The Peer to Patent Project – Community Peer Review of Patents, http://dotank.nyls.edu/communitypatent (last visited Oct. 16, 2006). However, as implemented, the peer review process only begins after the publication of the patent application (18 months after filing).

retained as an option for inventors that may lose meaningful trade secret protection by publishing a patent application. But secrecy imposes risks and costs on others and adversely affects patent quality. These costs should be recognized in the form of differentiated application fees.

The draft PTO strategic plan argues the case for a menu of examination options.[120] IBM recently announced that it would lay its patent applications open to public scrutiny upon filing, thereby facilitating timely peer review. These initiatives deserve support as steps toward a more flexible, high-quality patent system.

4. Reward submissions of prior art that invalidate defective patents.

The persistence of questionable patents is costly and potentially disruptive for innovators, producers, distributors, and users of technology. However, there are plenty of disincentives to challenging these patents. Attacking a patent or patent application suggests that the challenger is a present or potential infringer and therefore an obvious target for the patent holder should the challenge fail. Fighting the patent also benefits the challenger's competitors at no cost to them and, tactically, it is better to reserve prior art for trial or for settlement negotiations. None of these factors will change substantially if and when the law provides for opposition proceedings.

These disincentives must be countered with strong incentives to promote efficient flow of knowledge about the state of the art and to eliminate unworthy patents early on, preferably before the patent is granted. Rewards should be paid to those who bear the costs and risks of locating, documenting, and asserting prior art. Timely submission of relevant knowledge would save PTO resources, encourage expert involvement in monitoring patent applications, and reduce waste for applicants, examiners, and competing innovators.

Although it is possible for third parties to submit prior art in response to a published patent application, they must pay a fee ($180) for the privilege of doing so, and they are not permitted to comment on it. At present, very little prior art is submitted. The reform legislation would <u>require</u> a statement of relevance, but the fee would still be required. If submitters have to pay to do the work of the applicant and the examiner, they should be rewarded to the extent the prior art invalidates the application by receiving a commensurate amount of the application fee. If this proves insufficient to elicit relevant prior art missed by the applicant and the examiner, the reward should be increased by providing it out of a bond required of all patent applicants.

5. Require registration of notice letters.

Some 3,000 patent lawsuits are filed each year, but this is only the tip of the iceberg. An estimated 25 letters asserting patent infringement are sent for every lawsuit filed.[121] For a few dollars in postage, these letters may be broadcast to dozens of companies, triggering the possibility of damages for "willful infringement." Target companies, especially small ones, may be all too willing to license questionable patents for ten or fifteen thousand dollars, because that is less than the cost

[120] United States Patent and Trademark Office, Draft Strategic Plan 2007-2012, http://www.uspto.gov/web/offices/com/strat2007.

[121] H.R. Rep. No. 109-11, pt. 1, at 122 (2005), *available at* http://commdocs.house.gov/committees/judiciary/hju20709.000/hju20709_0f.htm.

of having a lawyer evaluate the patent and assess the likelihood of infringement. These small payments can provide patent trolls with a steady revenue stream to support further threats and litigation.

Notice letters provide information about the use of patents that has widespread legal, business, and policy consequences. From a policy perspective, broadcast letters are evidence of abuse or of widespread infringement and liability. Either is an indication that the system is not working efficiently.

This activity should be monitored and measured by requiring senders to deposit copies of notice letters with both the PTO and the FTC. This will discourage indiscriminate use of such letters and enable recipients to quickly learn of common threats so they can mount joint defenses that economize on the use of legal and judicial resources.

6. Condition full fee-funding on PTO accountability.

There is widespread support for ending the diversion of patent fees to other purposes, even though this objectionable practice is grafted on top of the dubious practice of fee-funding the PTO. Restoration of PTO fees should be done in a principled manner – not just to throw money at the PTO's problems. There must be assurance that the additional revenue to the PTO pays off, in terms of enhanced quality as opposed to, for example, controversial overseas advocacy.

Permanent restoration of the full amount of patent fees should be conditioned on a program of accountability that helps policymakers understand the real costs and benefits of different examination options, such as the second-pair-of-eyes review or deferred examination. This requires developing appropriate standards and metrics for ensuring patent quality and improving examination. Unscientific internal practices that are not documented with objectively reviewable data do not suffice. The agency should be required to report annually on its progress in measuring quality in ways that are transparent, scientific, and accessible to outside review.

7. Put PTO at the forefront of knowledge management and information science.

The PTO must treat the challenges of patent examination aggressively and scientifically. As an agency devoted to innovation, the PTO should be at the forefront of research in knowledge management and information science. It should be engaged in researching techniques and strategies for locating, organizing, and evaluating prior art. It should reach beyond the community of patent professionals to researchers and other agencies working in allied fields, including the National Archives and the National Science Foundation.

To this end, the PTO should be required to expend two percent of its fee income to support research to help it better perform its job. This commitment would give it the credibility and dedicated resources needed to build a community of expertise both inside and outside the agency. It would help ensure that important initiatives, like the peer review project, receive the broad attention, feedback, and support that they deserve.

8. Stop the ambush of openly developed standards.

Standards are critical to advancing innovation and developing markets in the IT industry. Unfortunately, the profusion of patents on IT functions makes it far too

costly to clear standards against all possible patents. Nonetheless, standards make very attractive targets for patent holders lucky enough to find that their patents are inadvertently infringed. Luck is not always needed: The more open the standards development process, the more vulnerable it is to capture by opportunists who can rewrite claims in patent applications to cover the standard as it evolves.

Since standards are usually adopted throughout the industry, the potential payoff to infringed patent holders is enormous. A number of well-known standards, including GIF, JPEG, and MPEG4, have been ambushed by patent assertions after they have been developed, adopted, and widely implemented. A patentee who "gets lucky" can benefit most by waiting to assert its patent until large sunk investments are made in reliance on the standard.

In contrast to most IT patents, open standard processes are widely publicized and well-known to professionals in the field. Since there are far fewer voluntary consensus standards than patents, and given the costs and uncertainty of identifying and interpreting IT patents, it makes more sense to put the burden of avoiding conflict on the patent holder. If patent holders claiming against standards are obliged to make their interests known at an early stage, others will have an informed opportunity either to adopt the patented technology or to avoid it.[122]

The equitable doctrine of laches can be applied specifically to the use of patents to ambush standards. The doctrine discourages firms from sitting quietly on their rights to the detriment of others who are not aware of the rights or who reasonably assume that the rights are not going to be enforced. Patent holders should not be allowed to wait until the standard is adopted, implemented in hundreds or thousands of products, and distributed into the hands of millions of users, before springing a trap.

9. Reengineer patent institutions.

Congress should consider reengineering patent institutions to counter their tendency to expand the scope and scale of their operation. Expansion of the patent system is a legislative prerogative that should not be usurped by activist judges or budget-building bureaucracies.

Patent Administration and Policy Development

Fee-funding the PTO should be recognized as poor public policy that induced the agency to adopt the wrong mission and undermined its credibility. Fee-funding failed to insulate the PTO budget from politics, while it created an artificial incentive within the patent operation to stimulate and accommodate customer demand for patents.

Lumping two very different regimes together under an Undersecretary for Intellectual Property is also problematic. The patent operation should be separated from a trademark function that has virtually nothing to do with innovation. Patent examination and policy development logically belong in the Technology Administration of the Department of Commerce, where the patent mission would be complemented by the National Institute for Standards and Technology, a sister operating agency that also serves to support innovation and investment.

[122] Brian Kahin, *Common and Uncommon Knowledge: Reducing Conflict Between Standards and Patents, in* The Standards Edge: The Golden Mean (Sherrie Bolin, ed., 2006), *available at* http://www.ccianet.org/papers/Kahin%20on%20Standards&Patents.pdf.

Enjoying its considerable autonomy with the Commerce Department, PTO has too often enthusiastically and sometimes aggressively promoted rights internationally that do not exist in the United States (database protection, broadcasting rights, webcasting rights) or that, while embraced enthusiastically by patent practitioners and some stakeholders, remain intensely controversial (software and business method patents).[123] Instead of acting as an advocate on behalf of proprietary interests, the top priority of the PTO should be an informed and balanced patent system that promotes innovation and operates on behalf of the public, not just the interests of its customers.

Patents carry a large overhead that is borne not just by patent applicants but by competitors, downstream producers, users of technology, future innovators, as well as the general public. Patent policy must be developed cognizant of these costs, as well as the goal of promoting innovation, not just more patents. To this end, the patent office, or its parent agency, needs to take responsibility for how the patent system is working, *i.e.,* for managing and analyzing information about patent use, value, costs, and practices.[124] If the agency is to produce useful information about the patent system or develop credible policies at a national or international level, it should do so in a farsighted manner informed by real data and economic analysis.

In this spirit, the Patent Public Advisory Committee, which presently serves as a user's council for patent applicants, should be reconstituted as a meaningful set of advisory committees that duly reflect the expanded scope and use of the patent system. These committees should provide input from a full range of business interests and academic perspectives consistent with the growing importance of patents in the global economy.

Adjudication of Patent Validity and Infringement

The costs for full patent litigation when the amount at stake is less than $1 million now average $770,000 per side, or over $1.5 million in all.[125] Legal costs of adjudicating validity and infringement far in excess of the amount in controversy show the impracticality of the system for everyday use – as well as the dangers of opportunistic business and legal behavior. It is especially ill-suited for small businesses and for fields, such as software development, where baseline costs of innovation are inherently low.

By lowering standards and by making patenting routine and pervasive, the Federal Circuit has allocated greater responsibility, authority, and resources to lawyers – at the expense of entrepreneurs, engineers, designers, programmers, and other innovators. There is danger that low-cost models of innovation may be held hostage to high-cost models, simply because low-cost models cannot absorb the costs and risks of patents. Similarly, capital-intensive technologies (where patent costs are not disproportionate) will be favored over fields with low barriers to entry and innovation.

[123] *See* World Intellectual Property Organization, Report of the Seventh Session of the Standing Committee on the Law of Patents 27-30 (2002), *available at* http://www.wipo.org/scp/en/documents/session_7/pdf/scp7_8.pdf. The U.S. delegation to WIPO argued for business methods as "best practice."

[124] Better collection of information could also be tasked to agencies that are already responsible for corporate reporting and the collection of industry statistics, including the Securities and Exchange Commission and the Bureau of Economic Analysis.

[125] American Intellectual Property Law Associations (AIPLA), Report of the Economy Survey 2005, 1-108.

Post-grant opposition proceedings offer a step towards reducing the scope of litigation in favor of a less costly administrative proceeding within an agency that should be expert in patent issues. Could administrative solutions eventually extend to determining infringement and even awarding remedies? The conventional answer is that the Seventh Amendment requires jury trials, so that the enormous costs and uncertainties of civil litigation cannot be avoided.

The spirit of the Seventh Amendment is that disputes should be resolved by the judgment of one's peers, a standard that the patent system needs to embrace in its own terms. As argued above, that means the system should not be designed for the ordinary, but for the extraordinary. Real inventors will have greater confidence in a system that adheres directly to peer review and peer juries with fewer excursions into legal posturing and litigation. At least they should have an opportunity to opt into a less costly administrative system that can resolve disputes quickly and cheaply, so they can get on with the business of innovation.[126]

In the interim, priority should be given to breathing fresh air into patent jurisprudence, which presently suffers from over-centralization and path dependence in the hands of the Federal Circuit. The Supreme Court's decision in *Holmes Group v. Vornado* gives the regional circuits jurisdiction only when patent issues arise in counterclaims; otherwise the Federal Circuit retains exclusive jurisdiction over patent appeals. In a recent paper, "Rethinking Patent Law's Uniformity Principle," professors John Duffy and Craig Nard analyze the problems of the Federal Circuit and propose a solution: granting concurrent jurisdiction to one of the generalist circuit courts, with appeals assigned on a random basis to prevent forum-shopping.

As in the application of patent law to different fields and models of innovation, and as in the design of the examination process, the shibboleth of uniformity straightjackets the patent system and inhibits innovation, not just in technology, but in the patent system itself.

[126] It may be necessary for defendants to opt in as well (similar to binding arbitration). Otherwise, under a conventional reading of "trial by jury," the Seventh Amendment would preclude damages but could allow for injunctive relief.

APPENDIX I
CCIA ON PATENTS: NINE PRINCIPLES

1. **The fundamental purpose of patents is to promote innovation, not patents.** Patents are only one tool in an ecology of knowledge, innovation, and commercialization that varies across technology and market environments. The patent system should be designed to optimize innovation, commercialization of technology, and dissemination of knowledge in all fields that it covers.

2. **Patent law and policy should be sensitive to the different social and economic contexts in which it operates.** The relative contribution of patented inventions to finished products and services varies greatly. Patent policy should recognize that competition is a primary motivator of innovation in free markets and that there are means other than patents for securing returns from innovation. Patent incentives should be balanced against other values, including public health, freedom of expression, security, and voluntarism. Investments in developing and implementing open standards should not be jeopardized by patents.

3. **Threshold requirements for patenting should be sufficiently high that inadvertent infringement rarely occurs.** Standards of inventiveness (nonobviousness) should reflect rising expectations of competence resulting from globalization of knowledge and innovation, increased competition, multidisciplinary teams, and technological advance. The likelihood of independent invention anywhere in the world should be reflected in a high threshold of patentability to minimize chances of inadvertent infringement. The length of any *ex parte* process after filing contributes to the risks and costs of inadvertent infringement.

4. **Public disclosure is an essential function of the patent bargain.** Disclosure is not merely a legal formality; it must be measured by the quality, usability, timeliness, cost, availability, and actual use of patent information. Effective disclosure requires that patents be read for their technical content as distinct from business intelligence or legal implications and that there is no risk of being penalized for reviewing patents. Patent information must be diffused in a timely and efficient manner in order to avoid inadvertent infringement.

5. **Invalidation of questionable patents should be encouraged.** Questionable patents are a burden and threat to innovators and users of technology. The invalidation or clarification of questionable patents is a public good that should be encouraged through appropriate incentives. Patents should not carry an extraordinary presumption of validity absent an objective judicial or administrative determination that such a standard is justified.

6. **The patent system should be limited to fields and applications where benefits outweigh the costs.** Patent policy must take into account the costs of asserting, avoiding, and adjudicating patents. Patents should be available only when and where researching patents to avoid infringement can be justified as cost-effective. Patents should not be asserted against consumers and other

end users who have no practical ability to research and evaluate patents that may affect them.

7. **Patents should not endanger investments in other forms of knowledge creation and use.** Patent policy and practice should respect the creation, management, and exchange of knowledge developed under incentives other than exclusionary rights. Patent rights should be limited to the scope of the new knowledge disclosed. They should not inhibit use of patented technology that is limited to understanding and building on the technology. The patent incentive should not be enhanced by opportunities for surprise, hold-up, and extortion.

8. **National and international patent policy should be advanced by informed democratic policymaking.** The development of patent policy should be open, transparent, and broadly representative. It should guard against capture by professional, institutional, and economic self-interest. Policy development should not be constrained by treaty provisions negotiated under outdated assumptions, incomplete knowledge, or the undue influence of particular stakeholders.

9. **Governments should monitor and evaluate the impact of the patent system on an ongoing basis.** Patent agencies should develop open metrics for different aspects of patent quality and patent practice. Standards for inventiveness and the scope of the patent right should be reviewed by recognized experts to ensure that patents in their field are not overbroad, trivial, questionable, excessive, or otherwise inhibiting innovation.

APPENDIX II

INDUSTRY CONSENSUS POSITIONS SUPPORTED BY CCIA

1. **A normal standard for injunctive relief.**
   Widely applauded by the IT sector, the Supreme Court's recent decision in *eBay v. MercExchange* brings patent-based injunctions in line with traditional equitable principles. Previously, the Federal Circuit had made injunctive relief nearly automatic in patent law, departing from traditional principles of equity and the plain language of the statute. This was a particularly dangerous rule for complex technology products, where a patent may cover only one function among thousands. It gave the patent holder the power to shut down the entire product and, as in the recent Blackberry case, the ability to radically disrupt the businesses of millions of users.

2. **Abolish the "suggestion test" for obviousness.**
   The Federal Circuit has made it difficult to show obviousness by requiring a specific suggestion or motivation to combine elements of prior art. Since most inventions are combinations of prior art, this has broad implications. It effectively turns the nonobviousness standard into a variation of the novelty standard, and perversely results in granting patents for combinations that are too obvious to document. The suggestion test is presently before the Supreme Court in *KSR International v. Teleflex*.

3. **Challenges to patent validity should not face unjustified barriers.**
   Despite widespread concerns about patent quality, the Federal Circuit endows issued patents with an enhanced presumption of validity that can only be overcome with "clear and convincing" evidence. A process in which examiners with little experience and limited time shoulder the burden of showing patent invalidity against seasoned patent lawyers does not warrant a high presumption of validity. This unjustifiably strong presumption intimidates defendants, discourages challenges to bad patents, and encourages the hoarding of prior art for use in the event of litigation

4. **Damages should be proportionate to the contribution of the patent that is infringed.**
   If a complex product infringes a patent, damages should not be awarded on the basis of the entire product's value but only on the value of the particular component or function it enhances.

5. **Provide a "second window" for post-grant review when litigation is threatened.**
   There is general agreement that post-grant review like the European opposition system is needed. However, in the IT sector few companies have the resources to monitor patents as they emerge and fewer still want to bear the costs and risks of contesting the many newly issued patents that may never be asserted. There should be a second opportunity for post-grant review triggered only if and when a patentee threatens litigation. Administrative review should be seen not just as an extension of the examination process but as a cost-effective alternative to litigating validity issues.

6. **Eliminate continuation abuse.**
   Continuation practice allows applications to be refiled at any time and still benefit from the original priority date. Applicants often track developments in the industry and use continuations to rewrite their application to capture practices developed by others. When continuations are taken into account, the allowance rate for U.S. patent applications may be as high as 95%, substantially higher that Europe or Japan. Overwhelmed by the volume of continuations, the PTO has recently proposed regulations to limit their use.

7. **Infringement awards should not extend to extraterritorial damages.**
   The Federal Circuit's interpretation of Section 271(f) held Microsoft liable for infringement wherever a master disk with infringing code was shipped outside the United States for replication. Patent laws are normally territorial in effect. Adding extra-territorial liability for U.S. infringement induces software companies to move development offshore to avoid the potential for world-wide liability that they would face exporting master disks from the United States.

8. **Venue should not be determined by forum shopping.**
   Patent plaintiffs are filing suits in Marshall, Texas, because the district court and juries are perceived to be patent friendly. Venue should be limited to jurisdictions that have a meaningful connection to one of the parties.

Computer & Communications Industry Association
666 Eleventh Street, NW
Sixth Floor
Washington, D.C. 20001
Phone (202) 783-0070
Fax (202) 783-0534
www.ccianet.org