



Defend Innovation

How to Fix Our Broken Patent System

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Executive Summary

The patent system is in crisis. Patents—particularly software patents—have become a tool for intimidation and expensive litigation, chilling the very innovation the patent system was supposed to encourage.

The Electronic Frontier Foundation (EFF) launched the Defend Innovation project in June 2012 to propose specific ways to reform the patent system. We invited comments on our initial ideas, and over 16,500 people responded, sharing their stories, expertise, and alternative approaches.

Since then, patent reform has become a top priority for both Congress and the White House, with new legislative proposals to help curb patent misuse. The Supreme Court also issued a series of rulings that have introduced new clarity and common sense to questions of patent quality and litigation abuse.

But the work of fixing the patent system is far from complete. To help inform that effort, this paper synthesizes a huge corpus of material gathered in connection with the Defend Innovation project—comments and criticism from software engineers and lawyers, news stories and anecdotes, legislative efforts and court cases—with our own experience in the patent space. In Part 1, you will find a run-down of the issues plaguing the patent system today. In Part 2, we propose a series of solutions that Congress, the Patent Office, the courts, and companies can implement. Many—including us—question whether software patents should exist at all. Part 3 addresses this fundamental issue.

This report highlights how, since the mid-1990s, software patents in particular have proven to hinder rather than support innovation. For example:

- Software patents tend to be vague and overbroad, and they often cover every solution to a problem, rather than a specific solution, and leave the hard work of making functioning, usable products to others.
- The US Patent and Trademark Office does a poor job of reviewing software patent applications. One major issue is the limited time spent locating and reviewing previous inventions or publications, known as “prior art.”
- The recent flood of software patents has led to a dramatic rise of “patent trolls,” entities that monetize patents by suing or threatening to sue businesses, usually without making or selling a product themselves. Patent trolls now make up a majority of patent litigation. Their common tactics of frivolous lawsuits and forced settlements place a tremendous cost on innovators, busi-

nesses, and end users.

- Companies feel pressured to engage in a patent arms race, acquiring broad software patents for defensive purposes. If a company fails, its patents often end up in the hands of bad actors such as patent trolls.

But the problem doesn't end with software patents; there are also deep flaws in the overall patent system. For example, the patent litigation system encourages patent owners to choose court venues favorable to patentees and prohibitively expensive or unfavorable for defendants (a practice known as "forum shopping"). Moreover, despite recent Supreme Court decisions that have dialed back some of the excesses of the patent system, patent quality remains low.

This paper also offers our thoughts on a better way forward. Congress, the courts, and the Patent Office all play significant roles in shaping the patent system, and fundamental reform will need action from all three. Legislative reforms should include:

- Passing measures that focus on strengthening patent quality—such as reaffirming limits on functional claiming and ending continuation abuse—as well as implementing inexpensive, efficient tools to challenge the validity of issued patents.
- Passing a comprehensive patent litigation reform bill, such as the Innovation Act, that levels the playing field and removes systemic advantages for patent trolls.
- Ending the Federal Circuit's exclusive jurisdiction over patent cases, so that other appellate courts have a chance to offer alternative approaches and legal interpretations.
- Passing meaningful reform to discourage bad actors from sending frivolous demand letters.
- Putting a stop to "forum shopping," the ability for patent owners to file suit in distant favorable districts that have minimal ties to defendant.
- These legislative reforms should be combined with action by the Patent Office to modernize its procedures (such as its use of online resources and databases) and promote patent clarity. The courts, for their part, could seek to limit exorbitant damages awards.
- Private parties also have a role to play. For example, companies could encourage open innovation by adopting alternative patent licensing schemes that prevent patents from being abused by trolls.

Fixing the current patent mess will require concerted action, but it can be done. Now more than ever, there is both the need and the will for real and lasting reform. We hope this paper will help.

Introduction

EFF launched the Defend Innovation project in June 2012 to start a conversation about patent reform.¹ The Defend Innovation website (<https://defendinnovation.org>) discussed our concerns about the impact of our current patent system on innovation and offered seven policy proposals for public comment and critique:

1. The patent term should be shorter for software patents. It should last no more than five years from the application date.
2. If the patent is invalid or there's no infringement, patent trolls should have to pay the winning party's legal fees.
3. Patent applicants should be required to provide an example of running software code for each claim in the patent.
4. Infringers should avoid liability if they independently arrive at the patented invention.
5. Patents and licenses should be public upon filing. Patent owners should be required to keep their public ownership records up-to-date.
6. The law should do more to limit damages so that a patent owner can't collect millions if the patent represented only a tiny fraction of a defendant's product.
7. Congress should commission a study and hold hearings to examine whether software patents actually benefit our economy at all.

Over the following two-and-a-half years, Defend Innovation received over 16,500 signatures and comments, and the specific proposals received over 150 thoughtful comments. The signatures of individuals in support of reforming the patent system to defend innovation, not hinder it, are available on the Defend Innovation website.

EFF also met with a variety of companies, soliciting anonymous comments from software engineers and lawyers on how software patents have affected their workplace and productivity.

In addition, we co-hosted a public meet-up with Mozilla at their headquarters in San Francisco. Around thirty entrepreneurs, software engineers, and lawyers attended, offering stories about the effects of patents as well as potential solutions. A particular story from the event about an engineer's attempt to make a low-cost heart monitor—an idea he abandoned after finding broad patents that seemed to cover his innovation—was featured in the radio show *This American Life's* episode "When Patents Attack... Part Two!"²

After two years of research, with help from the public, we've come to a few conclusions about how to fix the patent crisis (or at least bring it under control). Step one, however, is to define the problem.

PART 1 – THE PROBLEM

A. The root of the problem: Too many bad patents

The U.S. patent system has one primary purpose, embodied in the Constitution itself: to encourage innovation.³ The basic bargain is simple: in exchange for disclosing their inventions (so that others may build upon them), inventors get a “limited private monopoly” on those inventions.⁴ As the Supreme Court has explained, a well-functioning patent system will only grant a patent for “those inventions which would not be disclosed or devised *but for* the inducement of a patent.”⁵ If we grant patents on mundane improvements that would have existed anyway, the patent bargain isn’t much of a deal for the general public; we are stuck with the cost of the monopoly, but get little in exchange. Similarly, if an inventor can get a patent over technology that is broader than the inventor’s actual contribution, the public will again have given the inventor a significant benefit without having received a corresponding contribution of knowledge.

Unfortunately, the current patent system isn’t doing a very good job of fulfilling its purpose. The United States Patent Office is issuing far too many weak and overbroad patents, particularly on software. And many of the courts that end up reviewing those patents seem unwilling to second-guess the Patent Office. Instead of promoting innovation, these patents become landmines for companies that bring new products to market.

Today, the problem is made worse by the rise of non-practicing entities: companies that own patents but have no intention of actually developing and marketing new technologies based on the inventions those patents cover, or even helping others to do so by, say, licensing those patents out at a reasonable rate. Instead, these companies, often called patent trolls, are only interested in using their patent portfolios to extract undeserved fees from real innovators who happen to develop a technology that might relate to something in that portfolio. These innovators often have no idea that they might be infringing a patent until they get a nasty letter in the mail demanding payment.

B. Software patents: lurching toward system failure

The “bad patent” problem is particularly present in software.

Software patents are a relatively new phenomenon. In the early years of computing, the Patent Office was generally reluctant to issue patents that covered software.⁶ Yet this did not impede software development. To the contrary, software grew “from being a nonexistent industry to a major, flourishing, and highly innovative industry without patent protection.”⁷ For example, Microsoft became an industry giant while almost completely ignoring the patent system. In its first fifteen years (1975-1990), the company transformed from a tiny startup into a \$1 billion a year company while acquiring only five patents.⁸

But then the law changed. In the mid-1990s, the Federal Circuit, the court that hears patent appeals, ruled that a programmed general-purpose computer could be patentable.⁹ This opened the floodgates to software patents. By the end of the 1990s, the Patent Office was issuing nearly 20,000 software patents a year.¹⁰ Just a decade later that number had doubled.¹¹ In 2013, the Patent Office issued approximately 68,000 software patents.¹² Today, Microsoft alone applies for between 2,000 and 2,500 patents every single year.¹³

That's a lot of patents.¹⁴ With roughly 400,000 software patents in force today it has become virtually impossible, as a practical matter, for entrepreneurs and engineers to avoid stepping¹⁵ on some purported inventor's toes, no matter how hard they try.¹⁶

1. Software patents tend to be vague and overbroad

The sheer number of software patents might be less of a problem if the patents themselves were narrow and clear, so innovators could know what was covered. Unfortunately, software patents are rarely clear. Instead, the claims in software patents (the language that is supposed to mark the boundaries of the invention) are usually vague and overbroad.

In some fields, inventions can be described, or "claimed," with precision. For example, chemical inventions can usually be claimed with a well-understood chemical formula. In contrast, software does not have a standardized lexicon.¹⁷ As a result, unscrupulous patent owners can insist that their patents cover a wide range of technologies.¹⁸

The widespread use of vague language also helps patent applicants get low-quality applications past the Patent Office. By describing old or obvious ideas with new words, applicants can convince the Patent Office that their invention is worthy of a patent. As one technology company lawyer told EFF:

I can take something where the prior art is so obvious and turn it into something that the Patent Office thinks is novel. There is no one set of shared terminology for how these things work. It's easy to come up with a term that sounds technical or real . . . that the Patent Office will think is real.¹⁹

As the Federal Trade Commission explained in a 2011 report, the prevalence of such patents works to "encourage[e] patent speculation, ex post licensing and 'being infringed' as a business model."²⁰

Many of those who submitted comments to Defend Innovation complained that vague and overbroad software patents are harming creators. Here a sample of what we heard:

- "Software patents are generally written in vague and nontechnical legal language, which obfuscates the patent in question . . . and also makes it easy to dramatically extend the patent to elements not considered at all when the patent was originally filed."²¹
- "As a developer for a small startup, absurd software patents are a constant worry. Stories abound of people like us getting pressured out of existence over the use of incredibly vague, basic interface elements and system components."²²
- "It is nearly impossible to write a program these days without inadvertently infringing on some overly vague, obvious idea that a large company managed to slip by the Patent Office. Programming is hard enough without having to tiptoe through a minefield."²³
- "It is impossible to code anything innovative without stepping on countless patents—the general advice is 'never search for prior art' as doing so means if the 'owner' of the patent wants to enforce the trivial patent, damages are triple. This means that the goal of patents which is to expand the sharing of knowledge is fundamentally broken."²⁴

By law, the Patent Office isn't supposed to issue patents that can't be understood. The law requires patents to "particularly point[] out and distinctly claim[] the subject matter" that the patentee regards as her invention.²⁵ Unfortunately, for many years the Federal Circuit had said this standard was

met so long as the claims weren't "insolubly ambiguous,"²⁶ an extremely low burden for any patentee to meet.

Recently, the Supreme Court issued an opinion that should help address the problem of vague patents. In *Nautilus, Inc. v. Biosig Instruments, Inc.*,²⁷ the Supreme Court held that the Federal Circuit's standard was too low. The Supreme Court stated that claims must "inform, with reasonable certainty, those skilled in the art about the scope of the invention."²⁸ Unfortunately, however, the Supreme Court's new standard only addresses the issue of how much a patentee can attempt to claim, but doesn't address the issue of non-standardized language.²⁹

2. The Patent Office isn't helping

When the Patent Office reviews a patent application, one of its tasks is to search for prior art (publications and uses from before the filing date of an application) that might show the claimed invention is not new or is obvious in light of what came before.

This is a difficult task. The universe of potential prior art is huge; it can include any publicly available product, academic article, thesis, website, or blog post existing before the filing date of the application.³⁰ For software-related applications, the most relevant prior art will likely include numerous sources—such as open-source code—that are not easily located and searched. If the Patent Office misses key prior art, it will issue patents on existing or obvious ideas.

Unfortunately, the Patent Office doesn't do a good job looking for prior art when it reviews applications for software patents. First, examiners spend very little time actually looking for prior art. Patent examiners spend an average of only 19 hours per application, and only a fraction of that time is devoted to looking for prior art.³¹ Research confirms that as they spend less time reviewing applications, examiners become less and less likely to reject claims based on obviousness.³²

Second, examiners are looking for prior art in the wrong places. Examiners tend to use a limited set of databases containing patents and technical journals.³³ But when it comes to software, the most relevant prior art may not exist in a journal. Instead, it may be in a website or a repository of open source code. In that case the Patent Office will almost certainly miss it.

Many of those who submitted comments to Defend Innovation complained about software patents on old or trivial ideas:

- "Amazingly, it is often impossible to find a new idea, much less a non-obvious new idea, in existing software patents."³⁴
- "Obtuse thoughts, over generalization, . . . 'and the obvious reworded' have become a legal battle ground . . . which no small or independent entity wants to cross into."³⁵
- "When I read patents I very rarely see 'innovation,' instead I see obvious extensions of existing technology."³⁶
- "The fact that it is so easy to accidentally infringe a patent, means that these patents were so obvious that they should never have been granted."³⁷
- "I look at some of these patents and wonder if the [Patent Office] ever researched obvious prior art."³⁸
- "I make my living off intellectual property and yet constantly feel the threat of my industry being

destroyed by people patenting extremely obvious things just to collect from those of us actually coding.”³⁹

3. Software patents too often purport to cover every solution to a problem, rather than the particular solution developed by the inventor

Software patent applications tend to be written in a way that expands the scope of the patent to every possible solution to a problem. In other words, they try to encompass, or claim, the functions of the software, rather than the particular approach developed by the applicant. For example, they claim any and all algorithms, methods, and devices (whether previously existing or not) that achieve a desired outcome, and leave the work of figuring out actual algorithms, methods, and devices to others. This has been referred to as “functional claiming.”⁴⁰

Take claim 1 of US Patent 6,529,725.⁴¹ This patent purports to describe a new system for secure transactions that includes a step of obtaining authorization from the account owner. Yet the claims are drafted with such broad and functional language that they would cover essentially any kind of transaction, however implemented. For example, claim 1 includes empty language like “a transmitter for transmitting” and “a processing device for processing the transaction information.” As Professor Mark Lemley explains, allowing this kind of language in software patents is like allowing someone who developed a cholesterol-reducing drug to claim “atoms configured in a way that reduces human cholesterol.”⁴²

The Patent Act contains a provision that is supposed to limit the scope of patent claims written in functional terms.⁴³ Unfortunately, the Federal Circuit has interpreted this provision narrowly and makes it far too easy for patent applicants (through their attorneys) to avoid it. Dissenting from one such decision, current Chief Judge Sharon Prost explained that, thanks to the court’s jurisprudence, a “minor drafting decision” (in that case, using the word “heuristic” instead of “means”) can allow a patent owner to “greatly expand[] the scope of the claim limitation.”⁴⁴ Another recent case held that the term “distributed learning control module” (a term that has no standard meaning that we know of) was not a functional term like “means” and therefore allowed the patentee to claim any and all “modules” that could be used to carry out the desired result.⁴⁵ This means “patent applicants are able to claim broad functionality without being subject to the restraints imposed by [the Patent Act].”⁴⁶ While this may seem like an arcane legal dispute, functional claiming is a key feature of vague and overbroad software patents.

4. Software patents leave the difficult work—actually developing and marketing a successful product—to others

Patent applications are supposed to “enable” the invention.⁴⁷ In other words, the applicant is supposed to teach the public how to make the thing they are claiming, so that when the patent expires, the public can use the information to practice the invention. Unfortunately, software-related applications enable very little.

As noted in the previous section, software patents rarely contain any actual software. The hard and time-consuming work—writing the code—is left as a task for the reader. This creates an imbalance. Someone who simply wrote a wish list of functions can later demand money from companies that spent years developing, debugging, testing, and perfecting commercial products. Even if applications

did include code, software patents would still protect far more than that program. This is because the scope of the patent is determined by the vaguely worded claim language. So the imbalance would remain—the patent owner gets a monopoly that exceeds his or her contribution and restricts follow-on development.

Consider the infamous patent troll Lodsys, which owns a family of patents relating to remote customer feedback in early-90s technology like fax machines.⁴⁸ Lodsys argues that its broadly worded patents cover contemporary features like in-app purchases. But the patents provide absolutely no useful information for someone trying to build a modern product. As one commentator wrote:

I've looked at Lodsys's four patents and I can't see how reading those patent documents (which those app developers didn't do anyway) would really put a developer much closer to an implementation than starting from scratch.⁴⁹

Unlike patent trolls, actual innovators—the companies trying to bring new products and services to the marketplace—rarely rely on software patents.⁵⁰ Many who submitted comments to Defend Innovation also complained that software patents provide little or no practical value for a programmer:

- “For the knowledge to be useful, patents must not be riddled with legalese, designed to appease lawyers and courts. . . . It's no coincidence that software developers look at journals, papers, and Wikipedia—not patents—as useful bodies of knowledge.”⁵¹
- “The goal of patents which is to expand the sharing of knowledge is fundamentally broken [Patents] never actually create the code for the innovation but still prevent an alternative inventor from creating the idea.”⁵²

5. Many other protections exist for software

Software, unlike other fields covered by patents, also receives some copyright protection. And trade secret protection is generally available for proprietary code. This means that companies usually have multiple legal remedies available if someone actually *copies* a program without permission.⁵³ Many software engineers submitted comments to Defend Innovation stating that copyright provided enough protection for their work:

- “Copyright is the correct protection for software, not patents.”⁵⁴
- “When the only defense against a portfolio of vague and meaningless patents is to build up your own portfolio of vague and meaningless patents, something has to change. . . . [C]opyright is more than enough to protect our creative works.”⁵⁵
- “Copyright law is sufficient to protect developers. Software patents have no other purpose than to be used as industry weapons.”⁵⁶

Empirical research confirms that, in practice, the software industry treats patent protection as a very low priority. A recent study by the National Science Foundation found that, in the information sector (which includes software, Internet, and data processing) only 10 percent of companies found patents either “very” or even “somewhat” important.⁵⁷ Those companies rely instead on copyright, trademark, and trade secret protection. Indeed, from 1994-2004, only 20 percent of software startup companies even applied for a patent.⁵⁸

6. Incremental improvement: *Alice v. CLS Bank*

In June 2014, the Supreme Court issued a landmark ruling about what kinds of things can be eligible for patent protection (usually referred to as patent-eligible subject matter). In that case, *Alice Corp. v. CLS Bank International*, the Court struck down a patent on a computerized method of using an escrow account to manage transactions.⁵⁹ In essence, the Court held that simply adding “on a computer” to an abstract idea does not make it patentable.

The full impact of the Supreme Court’s decision in *Alice* will likely not be understood for a few years, but early indications are positive. District courts and the Federal Circuit have invalidated a number of low-quality software patents in the wake of *Alice*.⁶⁰ However, these cases mostly considered patents that were particularly vulnerable to challenge under the new standard.⁶¹ The decision is unlikely to solve all problems with software patents, such as functional claiming and vague claim language. Nonetheless, it’s good to see the highest court in the nation strike a blow for sensible patent standards.

C. Patent trolls: Gaming the patent system

The past few years have seen the rise of the patent troll (often also referred to as “non-practicing entities” or “patent assertion entities”). As noted, these are companies that don’t create (or intend to create) any products or services but instead acquire patents and use them to extract licensing fees from companies that actually create products, services, and jobs. Trolls launch (or threaten) lawsuits based on vague and overbroad patents against unsuspecting companies in the hope of squeezing out settlements.

Trolls often target smaller companies, such as startups, that lack the resources to defend against a patent suit and thus have little choice but to pay extortionate settlement demands, diverting resources from actual innovation. Trolls also sue technology end users, such as retailers and restaurants, that have little to no knowledge about the operation of accused products or the prior art that may exist.

What is worse, certain courts encourage this behavior. Patent litigation is expensive and can attract economic activity to an otherwise sleepy locale. Some courts invite that activity by becoming “patent havens,” forums where defendants find it difficult, if not impossible, to quickly and efficiently resolve patent cases on the merits.

1. The past decade has seen a massive and sustained rise in patent troll litigation

There is no question that the past ten years have seen a huge increase in the volume of patent litigation. Moreover, this increase has been largely fueled by software patents and patent trolls. Prior to 1996, patent lawsuits numbered fewer than 2,000 per year. By 2004, that number had increased to approximately 3,000.⁶² And by 2013, the number of suits had doubled to over 6,000.⁶³ More than half of patent suits filed in 2013 were filed by patent trolls.⁶⁴

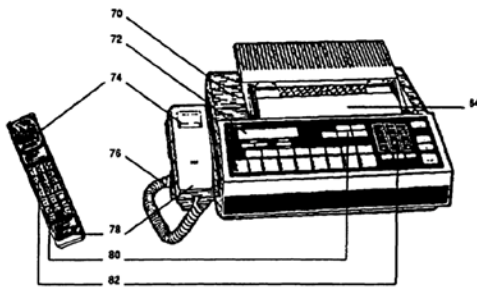
Some commentators have claimed that the explosion in patent trolling is a myth.⁶⁵ These critics claim the data is distorted by a provision of the America Invents Act (AIA) of 2011 that made it more difficult to sue multiple defendants in a single patent lawsuit.⁶⁶ This so called “anti-joinder” provision meant that, in some cases, patent trolls who previously might have filed a single suit with over a dozen defendants instead needed to file over a dozen separate proceedings. Some of the recent increase in patent lawsuits is certainly explained by this change in the law.

Case Study: Lodsys Attacks App Developers

A single patent troll helps illustrate almost all of the problems we've identified in this report. The troll is Lodsys Group LLC, and it owns a patent family that relates to remote customer feedback for fax-era technology. It argues that the vaguely worded claims of its patents cover the "in-app purchasing" features of today's smartphones. In a years-long campaign, Lodsys has sued dozens of companies from large technology firms to tiny startups. It has also sent hundreds of demand letters to small application developers.

Lodsys's conduct covers the entire spectrum of patent abuse:

Figure 3: Customer Directed Product (CDP)



15. A method, comprising:

- monitoring a product for an occurrence in the product of a trigger event of a predefined plurality of trigger events;
- incrementing a counter corresponding to the trigger event upon detection of the occurrence of the trigger event in the product;
- displaying a user interface, configured to probe for information regarding a use of the product, if the counter exceeds a threshold;
- storing an input received from the user interface on a device; and
- transmitting the input to a server.

Vague claims and continuation abuse: Lodsys filed continuation applications with almost comically vague language (like "trigger event" and "perception information") that it stretches to argue that its patents cover today's technology.

End-user suits: Lodsys has sued or threatened hundreds of small application developers for allegedly infringing its patents. It claims that these developers infringe by using Google and Apple's in-app purchase APIs. But Lodsys has not sued Google or Apple because Google and Apple already have a license to Lodsys' patents. The principle of patent exhaustion should protect application developers. Lodsys has settled any cases that have come close to reaching judgment on that issue.

Lack of Transparency: Lodsys acquired its patents from another shell company controlled by mega-troll Intellectual Ventures. This is significant because Google and Apple's license to the patents likely comes from their agreements with Intellectual Ventures. The lack of transparency has made this difficult to confirm. All of the evidence suggests that Lodsys is a shell company created to file nuisance litigation that Intellectual Ventures was not able or willing to file in its own name.

Forum shopping: Lodsys is a shell company based in Marshall, Texas. Like so many other patent trolls, it is located there solely to take advantage of the patent-friendly Eastern District of Texas.

Using the cost of litigation to extort settlement: Lodsys has become infamous for settling cases before courts have an opportunity to reach the merits of any of its claims. For example, Apple intervened in a case to argue that its license protected the developers that had been sued. After the issue was fully briefed but before it was decided, Lodsys settled the litigation. Similarly, when software security company Kaspersky Lab refused to surrender, Lodsys settled for nothing (yes, absolutely nothing) rather than have its claims adjudicated on the merits. In other words, when its ploy of using the cost of litigation as a weapon failed, Lodsys simply walked away.

Lodsys and the people behind it have exploited almost every defect in the patent system as they mounted a massive trolling campaign. The case shows how problems—both at the Patent Office and in the courts—combine to give trolls powerful weapons to extort settlements. Lodsys has contributed nothing to innovation, yet continues to harass hundreds of productive companies.

But even taking the impact of AIA into account, data confirms that there has been a massive increase in patent troll litigation over the past decade. In 2004, patent trolls sued 634 unique defendants. By 2013, that number had skyrocketed to 3,785, an increase of over 600%.⁶⁷ Given such a sudden and dramatic increase, the rise in patent trolling is not a “myth.”

2. The patent troll business model takes advantage of vague patent language and liberal pleading standards unique to patent cases

Trolls take advantage of vague words and phrases in patents to expand the scope of their claims in ways that are difficult, if not impossible, to predict. That is, even if the accused infringer were to read the patent closely, she would be hard pressed to understand how she infringed it. This problem is compounded by the fact that the legal complaint filed at the start of a patent lawsuit doesn't have to be very specific. In other words, the troll doesn't even need to inform the alleged infringer in any meaningful way how, exactly, she has copied or used the patented invention.⁶⁸ A patentee is not required to identify which claims are allegedly infringed nor specific product functionality that allegedly infringes.

Thus a troll with weak infringement claims can avoid the kind of scrutiny, by both the alleged infringer and the courts, that would normally cause frivolous claims to be immediately tossed out of court. In addition, vague statements about infringement make it difficult for the defendant to quickly and easily consider all potential defenses and responses, including the possibility of designing around the patent and finding the most relevant prior art.

3. The extraordinary cost of defending a patent lawsuit forces targets to settle

Patent litigation is expensive, and trolls know it. As one commenter succinctly stated: “Many of us are forced to settle with patent trolls because the cost to take them to court is far higher than the cost of simply paying them off.”⁶⁹

The American Intellectual Property Law Association estimates that for district court cases with less than \$1 million at risk, the median costs of litigation through trial against a troll are approximately \$600,000.⁷⁰ Although the America Invents Act introduced new, more cost-effective procedures to challenge patent claims,⁷¹ the costs may still be significant for a small patent defendant.⁷² Furthermore, settlement provides certainty, whereas challenging a patent involves a lot of risk, especially in light of the heavy presumption of validity a defendant must face in district court litigation.⁷³ Trolls have used these realities to pressure for settlement, for example by seeking amounts less than the cost of litigation, with full knowledge that the business incentive likely leans toward settlement.⁷⁴

Fee shifting under 35 U.S.C. § 285 is often cited as a way to incentivize defendants to fight against a frivolous lawsuit. That statute allows a court to award fees to the prevailing party in “exceptional cases.” Federal Circuit case law had made it very difficult to collect fees under the standard it developed.⁷⁵ This issue made it to the Supreme Court in early 2014 with the case *Octane Fitness v. Icon Health and Fitness*.⁷⁶ The court unanimously ruled that the Federal Circuit's reading of Section 285 was far too inflexible. The *Octane Fitness* ruling was a welcome, practical reading of the fee-shifting statute, as it lowered the standard required for defendants to be awarded fees and costs incurred in defending against a lawsuit.

The ruling—and the statute—give quite a bit of discretion to judges to rule on when fee shifting is warranted. In an ideal world, this flexibility isn't bad, but some courts, such as the Eastern District of Texas, are notoriously pro-patentee; given wiggle room, they may not choose to award fees. And the Federal Circuit, if the pre-*Octane* past is prologue, has strongly signaled it doesn't think highly of fee shifting. Subsequent Federal Circuit and district court opinions made by Federal Circuit judges sitting by designation have again pushed back on the availability of fees.⁷⁷ Furthermore, even if a court orders a patent troll to pay the defendant's fees, defendants may find it difficult to collect. It is often difficult to determine who is the owner of a patent, who is controlling the litigation, and where any assets are located.⁷⁸

Regardless of whether a defendant ultimately recoups its fees, however, defense against a troll imposes a tax on the true innovators as it diverts time and energy away from hiring new employees, expanding and developing new products, and growing small businesses. Comments to Demand Innovation reflect these realities:

- “We have noticed an increase in patent infringement claims in recent years. Every single one of these baseless claims has cost us scarce time and money, and hurts our ability to keep hiring.”⁷⁹
- “As the owner of a unique software product, I feel particularly exposed to the current weakness of the patent system. . . . [T]he cost of defending one's work, especially for an independent or small company developer, inhibits the ability to defend and represent one's creation. The system that sought to support us has now been turned against us. It is time to take what we have learned and reform the system. The cost of not doing [so] will continue to bankrupt innovation and our small business technological community.”⁸⁰

The money paid out in settlement does not compensate the economy for these lost opportunities. It has been estimated that in 2010, trolls caused over \$80 billion in lost wealth to defendants, while less than two percent of that amount represented transfers to independent inventors.⁸¹

4. Patent trolls are gaming the system by suing end users instead of manufacturers

Direct infringement doesn't require the infringer to have known about the patent its accused of infringing.⁸² That means it doesn't matter whether you intend to infringe; if you use a patented invention without permission, knowingly or not, you may be on the hook.

That, in turn, means trolls can sue people and companies who are not usually in the business of patenting or technology, but merely buy, sell, or use a product “off-the-shelf”—such as an office scanner or wireless router.⁸³ These defendants likely have little knowledge of how a product was made or developed, nor how it operates, making it difficult—if not impossible—for them to determine whether a product infringes.⁸⁴ Furthermore, validity defenses are also difficult, as the customer is often less familiar with the prior art. If the defendants wanted to challenge the patents based on prior art, they would need to seek expertise from outside the firm, incurring significant expenses to do so.⁸⁵

Customer suits often occur for a second reason: the number of customers is often greater than the number of manufacturers, allowing patent trolls to impose higher litigation costs through lawsuits against a larger number defendants.⁸⁶ This has the effect of distributing defense costs across multiple parties, creating barriers to efficient resolution of claims.

Traditionally, courts have recognized that lawsuits against customers are inefficient at best.⁸⁷ But too often patent trolls have been able to prevent manufacturers from intervening in patent litigation.⁸⁸ Even where manufacturers were successful in bringing actions to challenge a troll's claims, courts have denied motions to stay the customer suits.⁸⁹

When sued for patent infringement, customers are at a disadvantage, and under an even larger incentive to settle. Trolls have taken advantage of the law to extract unearned and unjustified settlements. Because of this, as noted by one commenter, “patent infringement should not target the end user but the[] developer of the product that infringes on the patent.”⁹⁰

5. Out-of-control damages awards fuel patent trolling and coerce defendants into settlement

When a troll brings a lawsuit, one of the most effective pieces of information it can use to coerce settlement is the possibility of staggering damages awards. For example, a troll may cite to *Apple v. Samsung*, where a jury awarded Apple the equivalent of \$48 per infringing device.⁹¹ This amount is staggering considering that smartphones are estimated to be covered by over 250,000 patents, and if such a valuation were applied to all relevant patents it would require Samsung to sell its phones at over \$2 million each just to break even.⁹²

The Federal Circuit has encouraged such staggering awards by failing to recognize that patent infringement damages, absent a finding of willfulness, are not meant to punish the infringer.⁹³ That is, the Federal Circuit has adopted damages rationales under a “deterrence” theory, even though it is not possible for an innocent infringer, i.e. those who never knew of the patent they were infringing, to be deterred.⁹⁴ Trolls use this fact to pressure defendants into settlements that vastly overcompensate the troll given the actual value of the patent.

6. Forum shopping by patent trolls puts unfair pressure on defendants

The litigation tactic of “forum shopping”—preferring certain jurisdictions over others because of their history of favorable rulings and practices—is also being used by patent trolls to extract undeserved settlements.⁹⁵ Although the Federal Circuit was created, in part, to reduce forum shopping by patent litigants,⁹⁶ it is clear that forum shopping by patentees has now shifted to the district court level.

There were over 6,000 patent cases filed in 2013.⁹⁷ Remarkably, almost half of these cases were in two districts: the Eastern District of Texas and the District of Delaware.⁹⁸ The concentration of patent litigation has become so acute that, in 2013, over 900 patent cases were assigned to a *single judge* in the Eastern District of Texas.⁹⁹ A recent paper has persuasively argued that this phenomenon can be explained, at least in part, by procedural differences between forums.¹⁰⁰

These procedural differences create more and less hospitable forums for patent litigation. For example, patentees tend to favor forums that tend to push litigation towards trial as quickly as possible. There are various reasons for this,¹⁰¹ but importantly for a patent troll, it puts settlement pressure on a defendant by limiting the amount of time available to mount a defense.¹⁰² As another example, certain judges in the Eastern District of Texas require permission before any “summary judgment” is filed.¹⁰³ Summary judgment allows a case to be decided quickly, without a full-blown trial and the costs that go with it. By limiting the availability of lower-cost resolution, this rule increases the likeli-

hood that the case will be scheduled for trial, where patentees are generally more successful than on summary judgment.¹⁰⁴ Not unexpectedly, for a defendant this increases settlement pressure, especially given the costs and uncertainty involved in going to trial.

Certain district courts appear to have encouraged this forum shopping by not only creating unique procedural rules, but also making it difficult, if not impossible, for defendants to transfer to more suitable forums.¹⁰⁵ This unwillingness to transfer has led the Federal Circuit to grant mandamus (this is a relatively rare kind of appeal that takes place in the middle of the lower court proceeding) in at least 20 cases since 2008, a determination that generally requires a finding of a “clear abuse of discretion” by the district court.¹⁰⁶ Of the 20 times mandamus was granted, 18 were from cases originated in the Eastern District of Texas.¹⁰⁷

D. Defensive patenting: The tech sector isn’t helping itself

Defensive patenting is the phenomena of building a patent portfolio with the primary goal of deterring lawsuits from other companies. The idea is to build up a stockpile of patents that other companies probably infringe; if they threaten you, you can threaten them back. Many of the engineers, developers, and investors that we talked to complained about the pressure to file as many patents as possible, regardless of quality, solely for defensive purposes.

Defensive patenting is a wasteful arms race. As technology writer Julian Sanchez explains, “[a] patent that’s useful for ‘defensive’ purposes is very likely to be a bad patent.”¹⁰⁸ He points out that in order for a patent to be useful defensively, it must be broad enough to cover ideas that other companies would come up with. “A patent that is truly so original that somebody else wouldn’t arrive at the same solution by applying normal engineering skill is useless as a defensive patent,” he says. “The ideal defensive patent, by contrast, is the most obvious one you can get the U.S. Patent Office to sign off on—one that competitors are likely to unwittingly ‘infringe.’”

A CEO at a small technology company told us, “I believe the value in what we do doesn’t really depend on patents. My only interest in applying for patents in the future is defensive.”¹⁰⁹ An engineer at a major technology company told us a similar story about why he filed for patents at his previous job. “Fear,” he said. “Nobody wants to make something—to try to make the universe a more interesting place—then find that they’ve pissed off somebody with a big bat.”¹¹⁰ Recent patent wars in the smartphone industry have led to an acceleration of defensive patenting. The New York Times reported that, in 2011, “for the first time, spending by Apple and Google on patent lawsuits and unusually big-dollar patent purchases exceeded spending on research and development of new products.”¹¹¹ With these stresses, companies feel the need to patent early and patent often.

A number of engineers complained to us that they had been pressured to file patents on software ideas they knew to be obvious. One software engineer explained: “My manager at the time agreed that the patent system was ridiculous, but his opinion at the time was: if that’s the game, we have to play it. Everyone else is going to patent ridiculous stuff; you should too.”¹¹² An entrepreneur told us: “I’m not a believer in patents. I’m not a believer in wasting the time to do the patent stuff when we’re limited in resources and I need to do other things. But I’m probably going to be pushed down that direction in order that the company may live, in which case I’m going to make some misshapen little patent that in the worst-case scenario will become the property of a troll.”¹¹³

Defensive patenting feeds the flood of low-quality software patents, which, in turn, can find their way into the hands of patent trolls. Indeed, most of the patents being used by trolls were originally filed by operating companies.¹¹⁴ Moreover, defensive patenting offers no protection from the trolls themselves. In most cases, a troll's only asset is its patent portfolio so it doesn't have any products or practices that could trigger a countersuit.

To help reduce the harm and waste caused by defensive patenting, we recommend that companies give more voice to engineers when considering patenting and adopt licensing practices that prevent patents from entering the hands of trolls (as described in Part 2E below).

PART 2 – SOLUTIONS

A. Introduction

In Part 1, we noted problems in our patent system and related developments since we first launched the Defend Innovation project. Let's now turn to solutions.

We are seeing real and sustained interest in fixing our patent system. Congress has introduced several bills intended to fix various broken parts of patent law. President Barack Obama has supported reform and also ordered revisions to Patent Office procedures. The Supreme Court, in cases like *Alice* and *Octane*, has begun to restore sanity to the system—changes that are being reflected in lower court opinions (albeit with varying success). And private actors have turned to innovative licensing agreements and patent pools to commit their portfolio to defensive uses.

All three branches, as well as individuals and companies, have a part to play when it comes to patent reform. We need legislation that clamps down on litigation abuse by patent trolls and bad actors, and empowers those on the defensive end of frivolous lawsuits to fight back swiftly and cheaply. We need the Patent Office to reform its quality standards and prior art search tools to make sure broad, vague patents don't issue in the first place. We need judicial decisions that reject vague patents and promote patent quality.

Based on comments, interviews, research, and policy shifts over the last two years, we have updated our proposals to fix the patent system from the initial seven offered when we launched Defend Innovation. Our proposals are as follows:

1. Congress

- Congress should pass measures that focus on strengthening patent quality—such as reaffirming limits on functional claiming and ending continuation abuse—as well as implementing inexpensive, efficient tools to challenge broad patents.
- Congress should pass a comprehensive patent litigation reform bill, such as the Innovation Act, that levels the playing field and removes systemic advantages for patent trolls.
- Congress should end the Federal Circuit's exclusive jurisdiction over patent cases.
- Congress should pass meaningful reform to discourage and punish bad actors from sending frivolous demand letters.
- Congress should put a stop to “forum shopping” by making it harder for patent owners to file suit in certain courts solely in order to disadvantage defendants.

2. Courts

- Courts should limit exorbitant damages awards.
- Courts must faithfully apply recent Supreme Court decisions such as *Alice* and *Octane*.

3. Patent Office

- The Patent Office must modernize its prior art search process to include online resources and databases.
- The Patent Office should use standard glossaries. It should require applicants to use clearly defined terms to combat vague patent language.

4. Companies

- Companies should adopt and support alternative patent licensing schemes that encourage openness and innovation, curb offensive litigation, and prevent patents from being abused by trolls.

B. Congress must pass much-needed reforms

Real patent reform depends in large part on real action from Congress. In late 2013, Congress took a major step toward patent reform when the House passed the Innovation Act by an overwhelming 321-90 bipartisan majority. Unfortunately, legislative efforts stalled in the Senate. When the new Congress sits in 2015, patent reform is likely to be back on the agenda.

The Innovation Act included many provisions designed to reduce patent troll abuse. These are discussed in more detail below. The Innovation Act is not a complete solution, however, because it did not include any significant provisions to improve patent quality. Our recommendation to Congress is that it pass a strengthened version of Innovation Act that also addresses the low-quality patents that fuel patent litigation abuse.

1. Patent quality measures

There are two ways Congress can improve patent quality. First, it can stop bad patents from issuing in the first place. Second, it can give companies better tools to invalidate bad patents that have already issued.

Congress should resist calls to interfere with the Supreme Court's decision in Alice v. CLS Bank

The first important thing that Congress can do is easy: don't disturb the Supreme Court's ruling in *Alice*.¹¹⁵ As noted above, *Alice* effectively holds that adding "do it on a computer" to an otherwise abstract idea does not make that idea patentable. Some commentators (oftentimes lawyers that benefit financially from a broad definition of what is patentable)¹¹⁶ have called for Congress to abrogate *Alice*.¹¹⁷ These commentators argue that *Alice* will be too difficult for courts to apply and will frustrate innovation. They are wrong on both counts.

Alice is already working well in practice. Indeed, the first dozen patents invalidated under *Alice* are a rogue's gallery of bad patents that should never have issued. They include, for example, a patent on computerized bingo and a patent on using a computer to upsell a customer.¹¹⁸ While *Alice* will not solve all problems with the patent system, it has given courts an important tool to invalidate the kind of highly abstract software patent most popular with trolls. Congress should let the decision stand. If anything, Congress should codify the long-standing judicial doctrine that patents are not available for laws of nature, natural phenomena, and abstract ideas.

Congress should reaffirm that an invention is not a desired result, but is rather the technology that can be used to achieve that result

The law already provides that patent owners can't claim to own a desired result without describing and limiting it to tools used to achieve those results.¹¹⁹ Unfortunately, the Federal Circuit has severely handicapped this law by enforcing it almost exclusively only when certain words appear in a patent's claims.¹²⁰ But a patentee can easily avoid those "magic" words, which leads to patentees claiming to own every possible way of achieving that result, even if achieved by later technology never thought of, described, or disclosed by the patentee.

Congress, if the Supreme Court fails to curtail the Federal Circuit, should step in and restore the law to its proper place by clarifying that statutory restrictions on functional claiming apply to all patents (regardless of the precise words used in the claims). This means that whenever a patent claims an invention by describing its function, the patent will be limited to the technology actually disclosed (or its equivalents). By enforcing this limit already part of the law, Congress will discourage vague patents and require patentees to actually describe how to implement claimed functions, providing the knowledge and notice patents are designed to do.

Congress should expand successful programs for challenging issued patents at the Patent Office

The America Invents Act of 2011 created some new procedures at the Patent Office for challenging patents that have already issued. These programs (which include what's known as "Covered Business Method Review" and "*Inter Partes* Review"¹²¹) provide significant new tools for challenging a patent's validity.¹²² Although the two programs differ in scope and procedures, they both generally allow accused infringers to challenge a patent at the Patent Office. The procedures are cheaper and quicker than litigation (for example, they limit the availability of discovery and have strict deadlines) and have been widely used. Over 1,400 *Inter Partes* Review petitions were submitted as of June 30, 2014.¹²³

These procedures could be made even more effective and useful to defendants hit with frivolous lawsuits. First, both programs should be expanded. *Inter Partes* Review should be expanded to allow parties to ask the Patent Office to consider whether an issued patent actually covers an unpatentable "invention" (this is especially important in the wake of the *Alice* decision). Currently, *Inter Partes* Review petitions may only argue that a patent is invalid based on prior art printed publications or patents.¹²⁴ Challenges based on the more fundamental question of whether the material is patentable in the first place are left to the courts, sharply limiting the usefulness of the *Inter Partes* Review procedure for parties that cannot afford to fight in that arena.

In addition, Covered Business Method Review should be expanded to allow challenges from any party, not only those sued or charged with infringement.¹²⁵ Companies that are considering creating a competitor program should have a forum to challenge patents that create a business risk to the development of the program. Covered Business Method Review should also be made a permanent program. Currently, it is set to end by 2020,¹²⁶ despite the fact that "business method" patents were regularly issued prior to *Alice* and would therefore last well beyond this sunset date.

Second, the Patent Office should reduce filing fees for these review procedures, especially for small businesses.¹²⁷ Currently the costs are orders of magnitude more than the cost of filing a patent application.¹²⁸ Many patent defendants are unable to afford those costs.¹²⁹

Congress should end continuation abuse

Because of the perverse incentives it creates at the Patent Office, Congress should limit the number of continuation applications a patentee may file.

“Continuation applications” are those that are based on one or more originally filed patent applications, claiming “priority” (for prior art and infringement purposes) to the original filing date of the original application(s). They include both continuation filings, pursuant to 37 C.F.R. § 1.53(b), and requests for continued examinations, pursuant to 35 U.S.C. § 132. Although slightly different in that the former is considered a “new” application and the latter merely “restarts” a previous application, they are both prone to the same abuse: both allow an applicant to endlessly churn an application.

This churning is extremely problematic. First, it allows applicants to “wear down” examiners, causing patents to issue when they should not.¹³⁰ Second, studies indicate that the number of continuation applications has risen from 11% of all applications in 1980, to 40% of all applications today, creating a significant burden on the Patent Office and distracting it from considering new applications.¹³¹

More importantly, however, it allows a patent applicant, upon seeing the success of a product in the market, to attempt to capture that product within a previously filed application. The maker of the product is then hit with a lawsuit based on infringement of something a patentee never before sought to claim. This eviscerates the public notice function of patents. An application that can be continually “updated” to claim matter disclosed but not previously claimed does not meaningfully point out to the public what the public can and cannot do—and instead sets a trap.

Congress can limit abuse of continuation applications by enacting reforms such as limiting the number of continuation applications allowed, placing time limits on the ability to file continuation applications and allowing for an alleged infringer of any granted continuation application to have a defense of independent invention prior to the filing of the continuation application, even if after the priority date of the application.¹³²

2. Congress should pass the Innovation Act

On December 5, 2013, the U.S. House of Representatives passed H.R. 3309, the Innovation Act, with a vote of 325-91.¹³³ The Innovation Act was the most comprehensive of the many patent reform bills introduced that term. Authored by Rep. Bob Goodlatte, chair of the House Judiciary Committee, the bill introduced litigation reforms that would have made life much harder for patent trolls. Though the legislation passed the House with a bipartisan vote and support from the White House, patent reform was stopped in the Senate soon after.¹³⁴

The Innovation Act, while not perfect, featured promising reforms. The legislation focused on closing litigation loopholes exploited by patent trolls. While the bill once featured language that addressed patent quality (expanding Covered Business Method Review), this provision proved to be too politically controversial and was removed.

Congress should reintroduce the Innovation Act, with additional provisions addressing patent quality. The bill should include the following reforms:

Fee shifting

One of the biggest points of leverage patent trolls have over small businesses is the high-cost of patent litigation. If you're a startup facing a troll lawsuit—even if the odds are in your favor, the patent being asserted is of poor quality, and the claims of infringement are spurious at best—legal fees could run into the millions of dollars. Although the Patent Act already allows for fee shifting, it is only for “exceptional cases.”¹³⁵ Faced with these extreme costs, many businesses choose to settle rather than ride out a lawsuit.¹³⁶

The Innovation Act—and several other bills introduced during the 113th Congress—featured fee shifting provisions that would make it easier for courts to determine if a losing party owed the winning party's attorney's fees.

The Innovation Act amended Section 285 to set a clearer standard for judges that leans in favor of fee shifting. It states that a court “shall award” fees unless the court finds that the losing party's “position and conduct” were “reasonably justified in the law and fact.” As such, the statute would not deter those with legitimate claims and defenses, including small companies, from filing suit or defending a suit, as legitimate claims and defenses would meet the “reasonably justified standard.” On the other hand, those with weak and frivolous cases who are using patents merely to extort settlements will be deterred from pushing baseless claims.

End-user protections / customer stay

The Innovation Act also featured a provision designed to help protect end users. The “customer-suit exception” would allow manufacturers and suppliers to step into litigation against their customers. It also allows the cases against these customers to be put on hold until the manufacturer's case is resolved.

As mentioned above, one egregious part of the patent troll problem involves lawsuits against end users—users who did not develop, manufacture, or sell the technology in question. These users have found themselves at the receiving end of lawsuits for simply buying off-the-shelf products. One particularly notable case involves the patent troll Innovatio, which targeted those who provide access to Wi-Fi networks in public spaces, like coffee shops and hotels.¹³⁷ Other trolls have sued offices with networked scanners, podcasters, and entrepreneurs using generic app development tools. Most, if not all, of these defendants had no idea that any patent existed that might apply to how they use those products.

If manufacturers could step in and defend their customers, staying a magnitude of frivolous cases at the same time, patent trolls might be less inclined to target end users. Also, focusing a suit on a manufacturer promotes efficiency: the cost of litigation is kept low, and the question of infringement is more directly, and fairly, addressed.

Transparency

There's a serious lack of transparency in the patent system, especially with what Professor Colleen Chien refers to as the “who owns what” problem.¹³⁸ As she notes, it is often almost impossible to figure out who owns a particular patent and what other patents that particular entity owns. Knowing who owns what is especially important when dealing with patent infringement against distributors and end users, since an entity higher up the chain may have received a license from a previous owner or parent company already. Furthermore, transparency helps ensure that if fees are awarded to a defendant, they are better able to collect on those fees.

The Innovation Act set out to shine a light on patent ownership by requiring disclosure of all parties who have a financial interest in a patent and holding them to account if fees were awarded against the patentee.

Heightened pleading

Patent defendants should be able to determine, at the outset, how they have allegedly infringed someone else's rights. Thanks to vague complaints, however, defendants are often forced to guess. Congress can help by requiring that a patentee state, in its complaint: (1) the claims alleged to be infringed; (2) whether the defendant allegedly infringes by direct, contributory, and/or induced infringement, with facts which would support each element of each type of claim; and (3) an analysis of how the accused systems, methods, or apparatuses are alleged to meet each limitation of each asserted claim and therefore infringe.

These requirements would benefit legitimate patent holders and alleged infringers alike. A detailed complaint will allow the parties to more accurately assess the strength of a case, which would put the parties in a better position to assess the possibility and desirability of settlement.

And it won't burden legitimate patent holders. Patent holders are already required, pursuant to the Federal Rules of Civil Procedure, to engage in a pre-filing investigation as to the alleged infringement.¹³⁹ If they've done their homework, it should not be hard to explain how a defendant allegedly infringes at the outset of the case.

Discovery reform

Patent trolls use the expense of litigation to pressure defendants to settle, even when their underlying claims are weak. One major pressure point is the extraordinary cost of discovery (especially the cost of locating, reviewing, and producing electronic documents like email messages). Patent trolls, who are often shell companies with few employees and documents, face a much lower discovery burden—a fact they use to their advantage. Some will even openly threaten to make litigation as expensive as possible in order to extort a payment.¹⁴⁰

The General Counsel of SAS testified in front of Congress in 2013 that in just one patent case, his company was required to produce over 10,000,000 documents at a cost of over \$1,500,000. Of these millions of documents, only 1,873 documents (0.000183%) appeared on the plaintiff's evidence list for use at trial. SAS ultimately won that case before trial on summary judgment. Yet it still had to bear the extraordinary discovery cost.¹⁴¹

The Innovation Act dealt with this problem in two ways. First, it delayed most discovery until after the relevant patent claims have been interpreted by the court. (This is known as claim construction.) In many cases, claim construction quickly disposes of a case by establishing that the defendant does or does not infringe. Delaying most discovery until after this point will save many innocent defendants from huge and unnecessary expenses.

Second, the Innovation Act limited discovery to "core documents." These are defined as those documents most likely to be relevant to the litigation (such as documents about how the accused products actually work). Plaintiffs that want additional discovery will have to pay for it themselves. This should stop patent trolls from using asymmetric discovery burdens as a litigation weapon. Taken together with the other reforms in the Innovation Act, this will make the patent troll business model much less attractive.

3. An end to the Federal Circuit's exclusive jurisdiction over patent cases

In 1982, Congress created the Federal Circuit in an attempt to create consistency in patent law and limit forum shopping in patent appeals.¹⁴² However, the concentration of all patent appeals in one court has led to its own problems.

First, limiting patent appeals to one court limits the “marketplace of ideas” in patent law. But by allowing different circuit courts to hear and decide patent cases, we are more likely to hear competing viewpoints on how the law should develop. This is not a bad thing. As the Chief Judge of the 7th Circuit recently stated in arguing that the Federal Circuit’s exclusive jurisdiction over patent cases should end:

[C]ircuit splits and disagreements with colleagues force judges to sharpen their writing, push them to defend their positions, and from time to time persuade them that someone else’s perspective is preferable. This process of testing and experimentation is lost when uniformity is privileged above all other values.¹⁴³

Second, the Federal Circuit is widely perceived as “pro-patent.”¹⁴⁴ This has led to an explosion of patents being granted where Supreme Court precedent would have otherwise limited their availability, encouraging the filing of vague, overbroad, and ineligible patent applications we see today.¹⁴⁵ The pro-patent perception of the Federal Circuit has become so widespread that the Federal Circuit has been cited as a reason why Europe should *not* adopt a single unified patent court.¹⁴⁶ Confidence in the impartiality of the Federal Circuit has been further undermined by revelations that its chief judge (who has since resigned) had improper communications with a patent lawyer that regularly appeared before the court.¹⁴⁷

The Federal Circuit was a good idea whose time has passed. Its exclusive jurisdiction over patent cases should end.

4. An end to deceptive demand letters

Deceptive demand letters are a significant problem. In one case, a secretive troll called MPHJ sent over 13,000 letters to small businesses demanding payment for using basic “scan to email” technology.¹⁴⁸ During its campaign, MPHJ routinely lied about the licenses it had collected from other targets.¹⁴⁹ Another troll, Innovatio IP Ventures, sent over 13,000 letters to businesses like cafes and hotels demanding payment for providing Wi-Fi.¹⁵⁰ Many of Innovatio’s targets owned devices that were already protected by patent licenses.¹⁵¹ Every one of these deceptive letters wastes time and money as small businesses evaluate the risk.

Congress has recently considered a handful of bills directed at this problem.¹⁵² These bills give the FTC authority to act against certain kinds of deceptive statements. However, the FTC has already acted against MPHJ and secured a consent agreement preventing it from sending further deceptive letters.¹⁵³ This suggests that the need for legislation in this area is less pressing. Nevertheless, a bill that clarified the FTC’s authority and provided for per-letter monetary penalties would deter abusive demand letters.

It is important that a demand letter bill is not a substitute for broader patent reform. Legislation in this area can only target the very worst actors who send knowingly deceptive letters. (As pre-litigation communications, demand letters receive strong First Amendment protection.¹⁵⁴) The broader problems of trolling and patent quality need more fundamental reforms.

5. An end to forum shopping

Congress should curtail the use of forum shopping by patent owners. Too often, patent trolls have been able to use the cost of litigating in a distant and inconvenient forum as a weapon. This is only compounded by plaintiff-friendly rules in some federal districts. Congress should ensure that patent cases are litigated in forums that make sense and are fair to both parties.

Congress could enact a rebuttable presumption that, in a patent case, the defendants' principal place of business is the most convenient forum. A plaintiff could rebut this presumption by showing that its choice of forum is at least equally convenient. This would not disadvantage practicing entities plaintiffs because they could likely argue information, witnesses, and local interests favor their chosen forum.¹⁵⁵ In contrast, there is little reason for favoring a patent troll's choice of forum (trolls tend to have few documents and witnesses).

C. Courts should limit out of control damages awards

Exorbitant damages awards encourage patent litigation. To take one prominent example, Microsoft was forced to pay \$290 million for infringing a patent that covered a single feature of Microsoft Word.¹⁵⁶ Other eye-popping damages awards include: a \$388 million award for patent troll Uniloc, also against Microsoft;¹⁵⁷ a \$1.54 billion ruling against Marvell for infringing two hard disk drive patents;¹⁵⁸ and a \$138 million award against SAP for infringement of two patents on a computerized method for pricing products.¹⁵⁹ In recent years, patent trolls have tended to recover larger damages awards than operating companies, even though, by definition, they cannot suffer lost profits due to infringement. In the previous four years, median damages awards to non-practicing entities averaged more than three times awards for practicing entities.¹⁶⁰

Courts should make it harder for patentees to claim these kinds of awards. For example, courts should recognize that punitive damages awards are inappropriate absent a finding of willful infringement.¹⁶¹ Furthermore, courts should recognize that a "reasonable royalty" for a patent by an innocent infringer may well be nominal damages, i.e. just a token sum. Patent law allows a patentee to recover damages for infringement.¹⁶² But courts should recognize that a patentee who never practiced her invention nor attempted to license it has not been damaged more than a token sum. Stated differently, a patent grants the right to exclude. But patentees who lie in wait hoping for others to independently innovate have suffered no damages as they never attempted to enforce that right in the first place. Patentees should not be rewarded for the independent work of others if they never engaged in the work themselves, especially if it would have been easy to design around in the first instance.¹⁶³ To do otherwise imposes costs that could have easily been avoided had the patentee actually enforced her right to exclude before investments were made in duplicative inventions. It also rewards the patentee whose only intent in filing a patent is to hope another person independently invents something similar, allowing her to sue.

D. Reform at the United States Patent and Trademark Office

Unlike many other agencies, the Patent Office does not have substantive rulemaking authority.¹⁶⁴ This means that major changes to the patent system requires action from Congress or the courts. But there are still many procedural changes that the Patent Office can make to improve the patent system so that we see fewer improper patents.

1. The Patent Office should modernize its prior art searching to include resources on the Internet

The Patent Office should strongly encourage examiners to use public resources to search for prior art. The Internet has opened up a vast trove of information available from any location on earth. Despite this, the Patent Office persists in using antiquated technology for its prior art searches. A recent report noted that the Patent Office “the search tools used by examiners [are] built on proprietary technological designs from the 1980s.”¹⁶⁵ Indeed, the Patent Office prohibits examiners from searching for prior art on the Internet other than to search for the general field if the patent application is not yet published.¹⁶⁶ Given that patent examiners are encouraged to conduct only one search at the outset,¹⁶⁷ they should at least be using 21st century tools and databases.

The Patent Office justifies its practice by claiming Internet searches may reveal confidential information. This claim does not hold water. The likelihood of any prior art search revealing any confidential information is extremely small, and far outweighed by the likelihood that excluding the best resource for searching for prior art will lead to the examiner missing invalidating prior art. This is especially true in light of technologies that exist today that limit the ability for third parties to gather any meaningful information about Internet searches.¹⁶⁸ Alternatively, the Patent Office should encourage all examiners to conduct an Internet search as soon as an application is published, even if a search for prior art has already been conducted.

The Patent Office should also develop its own searchable database of open source software programs, and encourage submission of closed source code as a source of prior art. The Patent Office could collaborate with those in the industry to establish date-labeled databases that allow for search and annotation by the Patent Office.¹⁶⁹ Such a database could be continually expanded as new products enter the field.

2. The Patent Office should adopt policies to foster clarity in patent claims and specifications

As mentioned, vague patents present a particularly pernicious problem because of the ability to twist disclosures in order to assert infringement. Two policies should be implemented in order to lessen the ability of applicants to rely on vague language.

First, the Patent Office should adopt rules that require applicants to clearly define terms used in the patent, both to allow a more efficient and complete search for prior art and to allow the public to better understand the scope of any resulting patent grant. For example, the Patent Office could expand a recent pilot project that allows applicants to expedite review of applications if a glossary of terms used in the specification is provided.¹⁷⁰ Unfortunately, this program has not been widely used.¹⁷¹ The Patent Office should make participation mandatory for any applicant for a patent relating to software. Furthermore, the Patent Office should give examiners the authority to offer definitions of any term not defined by the patentee, requiring the patentee to state on the record with citation to evidence any alternative definition should she disagree with the examiner. This will help prevent patentees from later twisting vague terms to encompass systems and methods not contemplated by the patentee at the time of filing.

Second, the Patent Office should relax rules that prioritize formalism over clarity, such as the “single-sentence rule.” The Patent Office requires patent applicants to write claims that “begin[] with a capital letter and end[] with a period. Periods may not be used elsewhere in the claims except for abbrevia-

tions.”¹⁷² This rule, which is entirely of the Patent Office’s making, often leads to virtually incomprehensible claims, as applicants struggle to include everything in one elaborate sentence.¹⁷³

The rule should be repealed as an artifact of an earlier time. Instead, the Patent Office should enact a rule that encourages applicants to draft claims in the most legible way possible, regardless of whether or not it is in the form of a single sentence. Such a policy would improve patent clarity and better serve the public notice function of patents.

E. Promoting Openness and Innovation Through Alternative Patent Licensing

While we wait for action from Congress and the Patent Office, real innovators can do a great deal to help fix the patent system. For example, companies can pledge not to sell their patents to patent trolls, and, where practicable, invest in proceedings at the Patent Office to challenge low-quality patents. By invalidating troll patents and keeping patents out of trolls’ hands in the first place, productive companies can reduce the volume of troll litigation.

In addition, companies can explore alternative licensing models. Some alternative patent licensing agreements include:

- The Defensive Patent License (DPL): The DPL is a non-aggression pact for patents. Companies commit to never asserting any of their patents offensively against any other company that has also committed to the DPL.¹⁷⁴
- Twitter’s Innovator’s Patent Agreement (IPA): The company and its employees agree that any invention assigned by an employee to the company will fall under the IPA. Under the IPA, companies may only use a patent for defensive purposes unless the company has the inventor’s explicit consent to sue offensively.¹⁷⁵
- The Open Invention Network (OIN): OIN acquires patents and patent applications and makes them available royalty-free to any entity that agrees not to assert its patents against the Linux system.¹⁷⁶
- License on Transfer (LOT): Under LOT, companies license their patents to other LOT members, but the license to each patent will *only* become effective upon the patent’s transfer to a third party.¹⁷⁷

While these agreements do not offer a complete solution to the troll problem, wide participation in them should keep many patents away from trolls. This could have a real impact as approximately 70 percent of the patents being used by trolls originated with operating companies.¹⁷⁸

In addition to alternative patent licensing agreements, companies can consider joining various patent risk-management organizations. These include Allied Security Trust, RPX, and Unified Patents. These organizations take a variety of approaches including acquiring and challenging troll patents. For example, Unified Patents has filed petitions for *inter partes* review challenging troll patents in technology areas such as cloud computing.

The Juelsgaard Intellectual Property & Innovation Clinic at Stanford Law School, in partnership with EFF, Engine, and the Open Invention Network, has prepared a guide to alternative patent licensing agreements. This paper, *Hacking the Patent System*, provides more detail about how companies can navigate the patent system while promoting open innovation.¹⁷⁹

Part 3 – Fundamental Reform to Protect Free Software

All of the changes above should significantly reduce patent trolling and reduce the flood of low-quality patents. But this won't solve a more fundamental problem: patents can be used as weapons against software developers even when they are not aware, and have no reason to know, that they might be infringing a patent. This is particularly harmful to the free software community. Free software relies on licenses, like the GNU General Public License,¹⁸⁰ that allow subsequent developers to build upon the work of others. These licenses generally require anyone who copies and adapts free software to be bound by their terms. Patents threaten free software because they allow those outside the free software community to attack a project even when the patent owner's work was not copied and contributed nothing.

By reducing competition (again, even from those who don't copy), software patents favor the big over the small. Indeed, a handful of large companies file literally thousands of software patent applications every year. Given all the problems with software patents (such as vague claims, etc.), and the fact that software is already often protected by copyright, it seems excessive to grant the additional protection of patents. Ultimately, software patents interfere with the freedom to code. For many developers, this interference with their creativity is like being told they need permission before painting or writing a book, despite the idea for the painting or the book being wholly their own.

A. Abolish software patents

Many of those who submitted comments to Defend Innovation wanted one thing: the abolition of software patents. In fact, this was, by far, the most common response we received. As we explain in detail above, many of the problems with the patent system are more precisely problems with software patents, so it is understandable that many feel the best solution to these problems is to eliminate those kinds of patents.

There are two major challenges to this approach. First, in practice the concept of "software patent" can be difficult to define for purposes of drafting legislation.¹⁸¹ But even accepting that crafting (and interpreting) legislation to exclude software from patentability will be a challenge, many felt this was a minor problem compared to the problems caused by software patents, particularly given that other countries have proven that legislation is possible. With the strong backing of its technology community, for example, the New Zealand government recently clarified its laws to ensure that software is not patentable.¹⁸²

The second problem may be more formidable. At present, there is little political appetite, at least in Congress, for abolishing software patents. It is unlikely that abolishing software patents will be part of a patent reform bill in the near term. One way to overcome that hurdle is to continue to educate Congress, the courts, and the public about the harms caused by software patents. Congress itself should be proactive here, and commission a study and hold hearings to examine whether software patents actually benefit our economy at all, and we urge Congress to take that step.

Some respondents criticized EFF for supporting reforms, like fee-shifting, that fall well short of abolishing software patents. They are concerned that such reforms will only entrench a fundamentally flawed system. We recognize that concern, but we believe that any reforms that will reduce trolling—

particularly against small businesses and startups—are worthwhile. Similarly, reforms that slow the flood of low-quality software patents will reduce the ammunition that can fall into the hands of trolls or be abused by operating companies. So we will continue to work for improvements short of abolition, while educating policymakers about the harms of software patents generally.¹⁸³

That said, we believe software patents, as a category, tend to do more harm than good. Congress should be looking closely at the approaches taken by many other countries to sharply limit the patentability of software.

B. Other options for reducing the harm caused by software patents

Our original list of proposals at Defend Innovation included the suggestion that infringers should be able to avoid liability if they independently arrive at the patented invention.¹⁸⁴ Since very few patent cases involve allegations of actual copying (regardless of technology area), this would be a profound change to the patent system.¹⁸⁵ As the most radical of our proposals, it met a mixed response. Nevertheless, there may be less sweeping reforms that can protect inadvertent infringers, especially in software.

If our patent system is supposed to incentivize invention that we wouldn't otherwise have, then it shouldn't be needed where multiple parties independently develop a technology (especially when some of these actors are not motivated by the patent system, and indeed would prefer not to patent their work at all). The standard for obviousness should take this into account. If a party that is not motivated by patent protection independently develops a technology, this shows the patent system was not needed to bring this technology to the world. In these cases, the invention should be presumed to be obvious. This is essentially the proposal advanced by Professor John Duffy and others.¹⁸⁶ It would be especially powerful in protecting free and open source software, where developers rarely get patents. It could deter patent owners from attacking free software projects to which they made no contribution.

Another proposal is that instead of simply abolishing software patents, the law could provide that “developing, distributing, or running a program on generally used computing hardware does not constitute patent infringement.”¹⁸⁷ This would effectively be a safe harbor for software development. Safe harbors are not unprecedented in patent law. In 1996, Congress passed a safe harbor for surgical procedures.¹⁸⁸ Patent applicants might be able use the clever drafting of patent claims to evade a change to patent eligibility. A safe harbor is more resilient.¹⁸⁹ We believe this is a promising alternative to outright software patent abolition.

Conclusion

Significant improvement in the patent system will require major changes in Congress, in the courts, and at the Patent Office. While the Supreme Court has made progress with its recent decisions in *Alice*, *Nautilus*, and *Octane*, much more remains to be done. EFF believes that improving patent quality and reducing trolling will bring significant benefits. In the long term, however, we need fundamental reform to protect free and open source software. Ultimately, software patents have proven to hinder rather than promote innovation.

Endnotes

- 1 EFF Launches New Patent Reform Project to Defend Innovation, Electronic Frontier Foundation (June 19, 2012), available at <https://www.eff.org/press/releases/eff-launches-new-patent-reform-project-defend-innovation>.
- 2 *When Patents Attack... Part Two!*, This American Life (May 31, 2013), available at <http://www.thisamericanlife.org/radio-archives/episode/496/when-patents-attack-part-two>.
- 3 See U.S. Const. Art. 1, sec. 8 (Congress has the power “To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries”).
- 4 *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 9 (1966).
- 5 *Id.* at 11 (emphasis added).
- 6 See, e.g., *In Re Grams*, 888 F.2d 835 (1989) (affirming the Patent Office’s rejection of program-related claims); *Application of Maucorps*, 609 F.2d 481, 482 (C.C.P.A. 1979) (affirming the Patent Office’s rejection of a computer-implemented model of a sales organization). During this period, the Patent Office attempted to draw a line between patent eligible processes and ineligible “computer programs.” See generally Fred E. McKelvey, *PTO Report on Patentable Subject Matter: Mathematical Algorithms and Computer Programs*, 38 Pat. Trademark & Copyright J. 563 (1989).
- 7 Pamela Samuelson, *Benson Revisited: The Case Against Patent Protection for Algorithms and Other Computer Program-Related Inventions*, 39 Emory L.J. 1025, 1142 (1990).
- 8 Randall Stross, *Why Bill Gates Wants 3000 New Patents*, New York Times (Jul. 31, 2005), available at http://www.nytimes.com/2005/07/31/business/yourmoney/31digi.html?_r=0.
- 9 *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994); see also *State St. Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1373, 1375 (Fed. Cir. 1998) (holding that software is patentable where it “constitutes a practical application of a mathematical algorithm, formula, or calculation” that “produces a useful, concrete and tangible result”).
- 10 See James Bessen, *A Generation of Software Patents*, 18 B.U.J. Sci. & Tech. L. 241, 253 (2012) (Figure 1).
- 11 *Id.*
- 12 Brian Kahin, *Software Patents: Separating Rhetoric from Facts*, Science Progress (May 15, 2013), available at <http://scienceprogress.org/2013/05/software-patents-separating-rhetoric-from-facts/>.
- 13 Julie Bort, *Microsoft Has So Many Patents It’s Outsourced The Job to India*, Business Insider (May 6, 2013), available at <http://www.businessinsider.com/microsoft-has-so-many-patents-its-outsourced-the-job-to-india-2013-5>.
- 14 See Christina Mulligan & Timothy B. Lee, *Scaling the Patent System*, NYU Annual Survey of American Law, Vol. 68, p. 2 (2012), available at <http://ssrn.com/abstract=2016968>.
- 15 See FTC 2011 Report, *supra* note 24, at 80-92 (noting concerns in the IT sector that vague and overbroad patents make it “virtually impossible” to do meaningful patent reviews).
- 16 Brian J. Love, *Should Patents Be Awarded to Software? No: Software Patents Don’t Spur Innovation, but Impede It*, Wall Street Journal (May 12, 2013), available at <http://online.wsj.com/article/SB10001424127887323335404578444683887043510.html>.
- 17 See Mark A. Lemley, *Software Patents and the Return of Functional Claiming*, Stanford Pub. L. Working Paper No. 2117302, p. 42 (2012), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2117302. Of course, every programming language has a syntax and semantics. But software patents often describe their purported inventions at a much higher level of abstraction.
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- 19 May 2013 Defend Innovation interview (subject requested anonymity).
- 20 Federal Trade Commission, *The Evolving IP Marketplace: Aligning Patent Notice and Remedies With Competition* 148 (2011), available at <http://www.ftc.gov/sites/default/files/documents/reports/evolving-ip-marketplace-aligning-patent-notice-and-remedies-competition-report-federal-trade/110307patentreport.pdf> (“FTC 2011 Report”).
- 21 Comment submitted to Defendinnovation.org by Richard Steiner.
- 22 Comment submitted to Defendinnovation.org by Jacob Eakle.
- 23 Comment submitted to Defendinnovation.org by Andrew Tennenbaum.
- 24 Comment submitted to Defendinnovation.org by Andrew Baptist.
- 25 35 U.S.C. § 112(b).
- 26 See *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005).

- 27 572 U.S. ___, 134 S.Ct. 2120 (2014).
- 28 *Id.* at 2124.
- 29 See *id.* at 2130 (In its opinion, the Supreme Court noted that “[t]he Federal Circuit’s fuller explications of the term ‘insolubly ambiguous,’ . . . may come closer to tracking the statutory prescription.”).
- 30 See, e.g., *Suffolk Techs., LLC v. AOL Inc.*, 752 F.3d 1358 (Fed. Cir. 2014) (Usenet newsgroup post found to be invalidating prior art).
- 31 See Michael D. Frakes & Mellissa F. Wasserman, *Is the Time Allocated to Review Patent Applications Inducing Examiners to Grant Invalid Patents?: Evidence from Micro-Level Application Data*, National Bureau of Economic Research Working Paper No. 20337 (2014), available at <http://www.nber.org/papers/w20337>.
- 32 *Id.* at 10.
- 33 See United States Patent and Trademark Office, *Prior Art Electronic Resources Available to Patent Examiners* (listing databases used by examiners), available at <http://www.uspto.gov/patents/resources/priorart.jsp>.
- 34 Comment submitted to Defendinnovation.org by Professor David Dill.
- 35 Comment submitted to Defendinnovation.org by Mark Stratton.
- 36 Comment submitted to Defendinnovation.org by Peter Hardman.
- 37 Comment submitted to Defendinnovation.org by Andrew Baptist.
- 38 Comment submitted to Defendinnovation.org by William Bowen.
- 39 Comment submitted to Defendinnovation.org by Cedric Pansky.
- 40 See generally, Mark A. Lemley, *Software Patents and the Return of Functional Claiming*, 2013 Wis. L. Rev. 905 (2013). The Federal Circuit has encouraged this by repeatedly upholding software patents that do no more than describe a desired result or function of the software, rather than the actual implementation required to achieve that result.
- 41 The claim reads:
1. A transaction security apparatus, comprising:
 - at least one of an input device and a data entry device for at least one of inputting and entering transaction information regarding a transaction into a first communication device;
 - a processing device for processing the transaction information and for generating a first signal corresponding to the transaction; and
 - a transmitter for transmitting the first signal to a second communication device independently of any processing of the transaction by a central transaction processing computer, wherein the second communication device is associated with an individual account holder, and wherein the second communication device provides information to the individual account holder regarding the transaction, and further wherein the second communication device is at least one of a beeper, a pager, a telephone, a two-way pager, a reply pager, a home computer, a personal computer, a personal communication device, a personal communication services device, a television, an interactive television, a digital television, a personal digital assistant, a display telephone, a video telephone, a watch, a cellular telephone, a wireless telephone, a mobile telephone, a display cellular telephone, and a facsimile machine.
- 42 Mark A. Lemley, *Software Patents and the Return of Functional Claiming*, 2013 Wis. L. Rev. at 956. Professor Lemley’s article includes a number of other examples of functional claiming. See *id.* at 922.
- 43 See 35 U.S.C. § 112(f).
- 44 *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1337 (Fed. Cir. 2014) (Prost, J. dissenting).
- 45 *Williamson v. Citrix Online, LLC*, 770 F.3d 1371 (Fed. Cir. 2014).
- 46 *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1337 (Fed. Cir. 2014) (Prost, J. dissenting).
- 47 See 35 US Code § 112(b) (“The specification shall contain a written description of the invention . . . in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains . . . to make and use the same”).
- 48 Lodsys owns US Patents 5,999,908, 7,133,834, 7,222,078 and 7,620,565.
- 49 Florian Mueller, *Lodsys Claims to Supply Building Blocks But Actually Jeopardizes the Entire Mobile Apps Ecosystem*, FOSS Patents (May 16, 2011), available at <http://www.fo SSPatents.com/2011/05/lodsys-claims-to-supply-building-blocks.html>.
- 50 When software companies do get patents, they tend to do so for defensive purposes. This phenomenon is discussed in detail below.
- 51 Comment submitted to Defendinnovation.org by Richard Steiner.

- 52 Comment submitted to Defendinnovation.org by Andrew Baptist.
- 53 The precise scope of copyright protection for certain kinds of code, like the APIs that enable interoperability, is currently being litigated in the courts. See <https://www.eff.org/cases/oracle-v-google>.
- 54 Comment submitted to Defendinnovation.org by Michael Conner.
- 55 Comment submitted to Defendinnovation.org by Steven Hancock.
- 56 Comment submitted to Defendinnovation.org by Bryan Christ.
- 57 See John E. Jankowski, *Business Use of Intellectual Property Protection Documented in NSF Survey*, National Science Foundation InfoBrief, at 3 (Feb. 2012), available at <http://www.nsf.gov/statistics/infbrief/nsf12307/>.
- 58 See James Bessen, *A Generation of Software Patents*, Boston Univ. Sch. of Law Working Paper No. 11-31, p. 6 (2011), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1868979.
- 59 134 S. Ct. 2347 (2014) (“Alice”); see also Daniel Nazer & Vera Ranieri, *Bad Day for Bad Patents: Supreme Court Unanimously Strikes Down Abstract Software Patents*, Deeplinks (June 19, 2014), available at <https://www.eff.org/deeplinks/2014/06/bad-day-bad-patents-supreme-court-unanimously-strikes-down-abstract-software>.
- 60 See Timothy B. Lee, *Software Patents Are Crumbling, Thanks to the Supreme Court*, Vox (Sept. 12, 2014), available at <http://www.vox.com/2014/9/12/6138483/software-patents-are-crumbling-thanks-to-the-supreme-court>.
- 61 See, e.g., *Planet Bingo, LLC v. VKGS LLC*, 576 F. App’x. 1005, 2014 WL 4195188 (Fed. Cir. 2014) (invalidating a patent on managing a bingo game on a computer); *Tuxis Technologies, LLC v. Amazon.com, Inc.*, CV 13-1771-RGA, 2014 WL 4382446 (D. Del. Sept. 3, 2014) (invalidating a patent on using a computerized system to “upsell” customers).
- 62 See Gene Quinn, *The Rise of Patent Litigation in America: 1980-2012*, IP Watchdog (Apr. 9, 2013), available at <http://www.ipwatchdog.com/2013/04/09/the-rise-of-patent-litigation-in-america-1980-2012/id=38910/>.
- 63 See *Lex Machina Annual Patent Litigation Year in Review 2013*, Lex Machina (May 13, 2014), available at <https://lex-machina.com/2014/05/patent-litigation-review/>.
- 64 See *id.*
- 65 See, e.g., Adam Mossoff, *The Myth of the “Patent Troll” Litigation Explosion*, Truth on the Market, (Aug. 12, 2013), available at <http://truthonthemarket.com/2013/08/12/the-myth-of-the-patent-troll-litigation-explosion/>.
- 66 See 35 U.S.C. § 299.
- 67 *Litigations Over Time*, Patent Freedom, available at <https://www.patentfreedom.com/about-npes/litigations/>; see also Colleen V. Chien, *Patent Trolls by the Numbers*, PatentlyO (Mar. 14, 2013), available at <http://patentlyo.com/patent/2013/03/chien-patent-trolls.html>.
- 68 Over seven years ago, the Supreme Court held that to bring a claim and proceed to discovery, a plaintiff must state sufficient facts that, if assumed to be true, would allow the plaintiff to recover. *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544 (2007). Despite this tightening of pleading standards by the Supreme Court, the Federal Circuit ruled in 2012 that the rules “do not require a plaintiff to plead facts establishing that each element of an asserted [patent] claim is met. Indeed, a plaintiff need not even identify which claims it asserts are being infringed.” *In re Bill of Lading Transmission*, 681 F.3d 1323, 1335 (Fed. Cir. 2012). Consequently, patent trolls can file complaints that are bare-bones, providing defendants with scant information about what they are accused of infringing.
- 69 Comment submitted to Defendinnovation.org by Matt Kramer.
- 70 See *Report of the Economic Survey*, American Intellectual Property Law Assoc. at 35 (2013).
- 71 New procedures include *Inter Partes* Review, see 35 U.S.C. § 311, and Covered Business Method Review, AIA § 18.
- 72 For example, one firm has estimated the cost of an *inter partes* review to be approximately \$150,000 to \$300,000. See Daniel G. Barry, *Invalidating Patents Through Inter Partes Review*, 36 Orange County Business Journal 27 (July 8-14, 2013). This does not include the costs of any appeal. Furthermore, if a related district court litigation is not stayed pending the outcome of the review, the parties may be incurring costs in both venues simultaneously.
- 73 *Microsoft Corp. v. i4i Ltd. P’ship.*, 131 S. Ct. 2238 (2011) (invalidity requires proof by clear and convincing evidence).
- 74 See, e.g., *Lumen View Tech., LLC v. Findthebest.com, Inc.*, 2014 WL 2440867 (S.D.N.Y. May 30, 2014) (detailing settlement demands that made explicit threats to engage in expensive litigation and “protracted discovery” if the accused infringer did not immediately settle).
- 75 See Colleen V. Chien, *Reforming Software Patents*, 50 Hous. L. Rev. 325, 377 (2012) (between 2005-2012, fees awarded in less than 2% of patent cases).
- 76 *Octane Fitness, LLC v. Icon Health & Fitness, Inc.*, 134 S. Ct. 1749 (2014).

- 77 See Robin Feldman, *Coming of Age for the Federal Circuit*, *The Green Bag* (forthcoming), 14-16 (2014), available at <http://ssrn.com/abstract=2496763>.
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- 79 Comment submitted to Defendinnovation.org by Tom Wayman.
- 80 Comment submitted to Defendinnovation.org by David Fisher.
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- 82 See *Global-Tech Appliances, Inc. v. SEB S.A.*, 131 S. Ct. 2060, 2065 n.2 (2011) (“Direct infringement has long been understood to require no more than the unauthorized use of a patented invention. . . . Thus, a direct infringer’s knowledge or intent is irrelevant.”) (internal citations omitted).
- 83 For example, according to a draft complaint prepared by the Federal Trade Commission, patent troll MPHJ has sent demand letters to approximately 16,465 small businesses alleging infringement of a patent relating to converting scans to email. See *MPHJ Tech. Invest., Inc. v. FTC*, No. 6:14-cv-00011-WSS, Exhibit F to Complaint, ECF No. 1-24, at 20 (W.D. Tex. filed Jan. 13, 2014).
- 84 *Id.* at 10. Indeed, defendants may be unable to determine how it operates even if they wanted to, as the technology may be protected by trade secret or copyright.
- 85 *Id.*
- 86 See Brian J. Love & James Yoon, *Expanding Patent Law’s Customer Suit Exception*, 93 B.U. L. Rev. 1605, 1612-13 (2013), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2234096.
- 87 Colleen V. Chien, & Edward Reines, *supra* note 96, at 11.
- 88 See, e.g., *Lodsys Group LLP v. Brother Int’l Corp.*, No. 2:11-cv-00090-JRG, Order dismissing intervention as moot, ECF No. 1037 (E.D. Tex. Sept. 24, 2013) (dismissing intervenor/manufacture Apple, Inc. after patentee reached settlement with all defendants, finding Apple’s intervention moot).
- 89 See, e.g., *Innovatio IP Ventures, LLC v. ABP Corp.*, No. 1:11-cv-01638, ECF No. 185 (N.D. Ill. Mar. 18, 2011) (denying as moot defendants’ motion to stay in light of declaratory judgment actions by manufacturers because the instant suit had been consolidated with ten others).
- 90 Comment to Defendinnovation.org by Jon Delinger.
- 91 See Brian J. Love, *Apple-Samsung Patent Fight: Fuzzy Math*, Los Angeles Times (August 30, 2012), available at <http://articles.latimes.com/2012/aug/30/opinion/la-oe-love-apple-patent-damages-20120830>.
- 92 *Id.*
- 93 Brian J. Love, *The Misuse of Reasonable Royalty Damages as a Patent Infringement Deterrent*, 74 Mo. L. Rev. 909 (2009), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1359049.
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- 95 See Jonas Anderson, *Court Competition for Patent Cases*, 163 Univ. of Penn. L. R. 16 (2014), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2491077.
- 96 Rochelle C. Dreyfuss, *The Federal Circuit: A Case Study in Specialized Courts*, 64 N.Y.U. L. Rev. 1, 2-4 (1989) (describing Congress’ motivation for creating the Federal Circuit to limit forum shopping).
- 97 Jonas Anderson, *Court Competition for Patent Cases*, 163 Univ. of Penn. L. R. 16 (2014), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2491077.
- 98 *Id.*
- 99 See *Lex Machina Annual Patent Litigation Year in Review 2013*, Lex Machina (May 13, 2014), available at <https://lex-machina.com/2014/05/patent-litigation-review/>.
- 100 Jonas Anderson, *supra* note 110.
- 101 Mark A. Lemley, *Where to File Your Patent Case*, 38 AIPLA Quarterly J. 1, 15 (2010); see also Jonas Anderson, *supra* note 110.

- 102 See Kimberly A. Moore, *Forum Shopping in Patent Cases: Does Geographic Choice Affect Innovation?*, 79 N.C. L. Rev. 889, 908 (2001).
- 103 See Standing Order regarding Submission of Letter Briefs for Cases Assigned to Judge Rodney Gilstrap and Judge Roy S. Payne (Feb. 3, 2012), available at http://www.txed.uscourts.gov/cgi-bin/view_document.cgi?document=22071.
- 104 See, e.g., John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Quarterly J. (1998), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=118149 (finding that patentees win 67% of jury verdicts on validity but only 28% of pretrial motions); Mark A. Lemley, *Where to File Your Patent Case*, 38 AIPLA Quarterly J. 1 (2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1597919.
- 105 For further analysis of forum shopping in patent cases, see Daniel Klerman and Greg Reilly, *Forum Selling*, USC Law Legal Studies Paper No. 14-44, available at <http://ssrn.com/abstract=2538857>.
- 106 See *In re Biosearch Techs., Inc.*, Misc. No. 995, 2011 WL 6445102 (Fed. Cir. Dec. 22, 2011); *In re Morgan Stanley*, 417 F. App'x 947 (Fed. Cir. 2011) (per curiam); *In re Verizon Bus. Network Servs. Inc.*, 635 F.3d 559 (Fed. Cir. 2011); *In re Microsoft Corp.*, 630 F.3d 1361 (Fed. Cir. 2011) (per curiam); *In re Acer Am. Corp.*, 626 F.3d 1252 (Fed. Cir. 2010); *In re Zimmer Holdings, Inc.*, 609 F.3d 1378 (Fed. Cir. 2010); *In re Nintendo Co.*, 589 F.3d 1194 (Fed. Cir. 2009); *In re Hoffmann-La Roche Inc.*, 587 F.3d 1333 (Fed. Cir. 2009); *In re Genentech, Inc.*, 566 F.3d 1338 (Fed. Cir. 2009); *In re TS Tech USA Corp.*, 551 F.3d 1315 (Fed. Cir. 2008); *In re Apple, Inc.*, 2014-143, 2014 WL 4460397 (Fed. Cir. Sept. 11, 2014); *In re Nintendo of Am., Inc.*, 756 F.3d 1363 (Fed. Cir. 2014); *In re Toyota Motor Corp.*, 747 F.3d 1338 (Fed. Cir. 2014); *In re Toa Techs., Inc.*, 543 F. App'x 1006 (Fed. Cir. 2013); *In re Link_A_Media Devices Corp.*, 662 F.3d 1221 (Fed. Cir. 2011); see also *In re Oracle Corp.*, 399 F. App'x 587, 590 (Fed. Cir. 2010) (granting mandamus, ordering the Eastern District of Texas to conduct a new § 1404(a) analysis under the proper legal standard); *In re EMC Corp.*, 677 F.3d 1351 (Fed. Cir. 2012) (granting mandamus, ordering the Eastern District of Texas to conduct a new analysis under the proper legal standard); *In re Nintendo Co., Ltd.*, 544 F. App'x 934 (Fed. Cir. 2013) (vacating decision denying motion to transfer and remanding for further consideration); *In re WMS Gaming Inc.*, 564 F. App'x 579 (Fed. Cir. 2014) (same); *In re Google Inc.*, 2014-147, 2014 WL 5032336 (Fed. Cir. Oct. 9, 2014) (reversing decision denying motion to stay pending resolution of concurrent litigation in another forum).
- 107 See *supra*, note 120 (listing cases, of which all but *In re WMS Gaming Inc.* and *In re Link_A_Media Devices Corp.* originated from E.D. Tex.).
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- 126 See *id.* at Section 18(a)(3).
- 127 The patent act already distinguishes fees based on the size of the company for filing a patent application. See 35 U.S.C. § 41(h). Such a structure could be adopted for post-grant proceedings.
- 128 See *id.* (fees for filing a patent application at \$70 for a “micro-entity” whereas *inter partes* review petitions for the same micro-entity are set at \$9,000, with an additional post-institution fee of \$14,000).
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- 173 See *id.* The rule has resulted in claims of extreme length. For example, U.S. Patent No. 5,386,973 contains a single-sentence claim that is over 2,000 words long.
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- 181 See, e.g., Dan L. Burk & Mark A. Lemley, *The Patent Crisis and How the Courts Can Solve It*, 157-58 (2009).
- 182 See Reuven Cohen, *New Zealand Government Announces That Software Will No Longer Be Patentable*, *Forbes* (May 8, 2013), available at <http://www.forbes.com/sites/reuvencohen/2013/05/08/new-zealand-government-announces-that-software-will-no-longer-be-patentable/>. New Zealand's patent law now provides: "(1) A computer program is not an invention and not a manner of manufacture for the purposes of this Act. (2) Subsection (1) prevents anything from being an invention or a manner of manufacture for the purposes of this Act only to the extent that a claim in a patent or an application relates to a computer program as such. (3) A claim in a patent or an application relates to a computer program as such if the actual contribution made by the alleged invention lies solely in it being a computer program."
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