

An Overview of the "Patent Trolls" Debate

Brian T. Yeh
Legislative Attorney

August 20, 2012

Congressional Research Service
7-5700
www.crs.gov
R42668

CRS Report for Congress
Prepared for Members and Committees of Congress

c11173008

Summary

Congress has recently demonstrated significant ongoing interest in litigation by "patent assertion entities" (PAEs), which are colloquially known as "patent trolls" and sometimes referred to as "non-practicing entities" (NPEs). The PAE business model focuses not on developing or commercializing patented inventions but on buying and asserting patents, often against firms that have already begun using the claimed technology after developing it independently, unaware of the PAE patent. PAEs include not only freestanding businesses but patent holding subsidiaries, affiliates, and shells of operating companies that want to participate in the PAE industry and/or a new means of countering competitors. The proliferation of PAEs was among the central factors raised in support of the most recent patent reform legislation, the Leahy-Smith America Invents Act of 2011 (AIA). However, the AIA contains relatively few provisions that arguably might impact PAEs, apparently because of lively debate over what, if anything, should be done about them. Recently, the Saving High-Tech Innovators from Egregious Legal Disputes (SHIELD) Act of 2012 (H.R. 6245) was introduced in an effort to affect the number of lawsuits filed by PAEs.

PAEs emerged alongside the burgeoning tech industry around the turn of the 21st century and gained notoriety with lawsuits claiming exclusive ownership of such ubiquitous technologies as wireless email, digital video streaming, and the interactive Web. They have had the attention of Congress, the press, and the public since at least 2006, when a successful PAE suit almost caused the shutdown of BlackBerry wireless service. Such victories in court are rare for PAEs; they lose 92 percent of merits judgments. But few cases make it that far. The vast majority of defendants settle because patent litigation is risky, disruptive, and expensive, regardless of the merits; and many PAEs set royalty demands strategically well below litigation costs to make the business decision to settle an obvious one. For most PAEs, the costs of litigating and losing are more than offset by the licensing fees they can gain by demonstrating their tenacity to future defendants.

PAEs generated $29 billion in revenues from defendants and licensees in 2011, a 400 percent increase over $7 billion in 2005, and some researchers suggest these costs are primarily deadweight, with less than 25 percent flowing to support innovation and at least that much going towards legal fees. Critics assert that they undermine the purposes of patent law—promoting innovation by providing incentives to invest in development and commercialization of inventions—and injure companies that play a vital role in the American economy. However, defenders of PAEs argue that they actually promote invention by adding liquidity options, managing risk, and compensating small inventors. The Federal Trade Commission and several leading scholars suggest that these benefits exist but are significantly less than the costs they impose. What remains unclear is the extent of imbalance between costs and benefits and whether Congress could recalibrate it to advance the goals of patent law while avoiding unintended consequences.

This report reviews the current debate and controversy surrounding PAEs and their effect on innovation, examines the reasons for the rise in PAE litigation, and explores the legislative options available to Congress if it decides that these are issues that should be addressed.

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Introduction

Congress has recently demonstrated significant ongoing interest in the issue of "patent assertion entities" (PAEs), which are popularly referred to as "patent trolls." The Leahy-Smith America Invents Act of 2011 (AIA) included an order for further study of PAE litigation,[1] and in July 2012 both the House and the Senate held hearings regarding patent disputes at the International Trade Commission, which has seen a surge in patent complaints as federal courts have become less patentee-friendly after passage of the AIA in 2011 and a landmark Supreme Court ruling in 2006.[2] The much-publicized proliferation of PAEs was among the central factors that prompted the AIA,[3] but at the end of the day, Congress passed a few provisions arguably addressing PAEs while leaving several other PAE-related issues unresolved, apparently in light of lively debate over what, if anything, should be done about them.

The PAE business model focuses not on developing or commercializing technologies but on buying and asserting patents against companies that have already begun using them, often after independently developing them without knowledge of the PAE's patent, according to a report by the Federal Trade Commission (FTC).[4] PAEs emerged alongside the burgeoning tech industry around the turn of the 21st century and gained notoriety with lawsuits claiming exclusive ownership of such ubiquitous technologies as wireless email, digital video streaming, and the interactive Web.[5] They have had the attention of Congress, the press, and the public since at least 2006, when a successful PAE suit almost caused the shutdown of BlackBerry wireless service.[6]

Such victories in court are rare for PAEs. According to one empirical study, they lose 92 percent of merits judgments,[7] but few cases make it that far. The vast majority end in settlements because litigation is risky, costly, and disruptive for defendants, and PAEs often offer to settle for amounts well below litigation costs to make the business decision to settle an obvious one.[8]

Observers expect that the AIA will reduce the volume of meritless lawsuits, but not dramatically. While the provisions for post-grant examination and transitional scrubbing of business method patents will help with assertions of invalid patents, they do not address the supposed use of *valid* patents to extract undue royalties from defendants that are either locked in to the patented

[1] *See* Leahy-Smith America Invents Act, P.L. 112-29, §34 (2011) (instructing the GAO to study PAE litigation and report back on costs, benefits, and consequences, and how to minimize any negative impact).
[2] eBay, v. MercExchange, L.L.C., 547 U.S. 388 (2006); *The Int'l Trade Comm'n and Patent Disputes: Hearing Before the H. Subcomm. on Intellectual Prop., Competition, and the Internet*, 112th Cong. (2012) [hereinafter "ITC House hearing"]; *Oversight of the Impact on Competition of Exclusion Orders to Enforce Standard-Essential Patents, Hearing Before the S. Judiciary Comm*., 112th Cong. (2012) [hereinafter "ITC Senate hearing"].
[3] *See, e.g., Patent Trolls: Fact or Fiction?: Hearing Before the Subcomm. on Courts, the Internet, and Intellectual Prop. of the H. Comm. on the Judiciary*, 109th Cong. (2006).
[4] FEDERAL TRADE COMMISSION, THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION 50–51 (2011) [hereinafter FTC Report].
[5] *See* Gerard N. Magliocca, *Blackberries and Barnyards: Patent Trolls and the Perils of Innovation*, 82 NOTRE DAME L. REV. 1809 (2007).
[6] *Id*.
[7] John R. Allison, Mark A. Lemley & Joshua Walker, *Patent Quality and Settlement Among Repeat Patent Litigants*, 99 GEO. L.J. 677, 694 (2011).
[8] *Id*.

technology or not infringing the patent at all. Additionally, post-grant examination is not available for patents granted prior to the AIA, and joinder restrictions do not apply in the ITC.

Reform advocates fear that PAEs impede innovation, undermine the patent system, and wreak havoc on businesses that play a vital role in the American economy. According to one study, PAE activity cost defendants and licensees $29 billion in 2011, a 400 percent increase over $7 billion in 2005, and the losses are mostly deadweight, with less than 25 percent flowing to innovation and at least that much going towards legal fees.[9] Another recent study suggests that PAE activity could harm competition to the extent that operating companies use or "sponsor" PAEs as a means of imposing costs on rivals and achieving other anticompetitive ends.[10]

Defenders of PAEs argue that they actually promote invention by increasing the liquidity and managing the risk of investments in applied research and invention, as well as by compensating small inventors.[11] PAEs' strongest allies include universities and other non-practicing entities that benefit from having PAEs as buyers for their patents and are not as vulnerable to lawsuits because they ordinarily do not make or sell anything that could be infringing.[12] Other defenders of the status quo raise concerns about unintended consequences and collateral effects of changes to the law.

The Federal Trade Commission and numerous scholars suggest that PAE activity does indeed have beneficial effects but that, under current law, these benefits are significantly outweighed by the costs.[13] What remains unclear is the extent of the imbalance between costs and benefits and whether Congress should attempt to rebalance any disparity. In Section 34 of the AIA, Congress instructed the Government Accountability Office to study the costs, benefits, and consequences of litigation by "non-practicing entities" and "patent assertion entities" and report back with findings and recommendations on how to "minimize any negative impact" of such litigation by September 2012.[14]

This report reviews the current debate and controversy surrounding PAEs, examines the reasons for the rise in PAE litigation, and explores the legislative options available to Congress if it decides that PAEs are an issue that should be addressed.

[9] *See* James Bessen & Michael J. Meurer, *The Direct Costs from NPE Disputes* 18–19 (Boston Univ. School of Law, Law and Economics Research Paper No. 12-34, 2012).
[10] *See generally* Tom Ewing, *Indirect Exploitation of Intellectual Property Rights By Corporations and Investors*, 4 HASTINGS SCI. & TECH. L.J. 1 (2011); *see also* FTC Report, *supra* note 4.
[11] *See, e.g.,* Ron Epstein, *Debunking the 'Patent Troll' Myth*, BLOOMBERG BUSINESSWEEK, August 15, 2011, *available at* http://www.businessweek.com/stories/2010-02-01/debunking-the-patent-troll-mythbusinessweek-business-news-stock-market-and-financial-advice.
[12] *See* Mark A. Lemley, *Are Universities Patent Trolls?*, 18 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 611, 618 (2008).
[13] *See generally* FTC Report, *supra* note 4; James Bessen et. al., *The Private and Social Costs of Patent Trolls*, REGULATION 26 (2006).
[14] P.L. 112-29, §34 (2011).

Patent Law Fundamentals

Patent law finds its constitutional basis in Article I, Section 8, Clause 8, of the U.S. Constitution[15] and its statutory basis in the Patent Act of 1952.[16] Patents provide the right to exclude others from making, using, selling, or importing claimed inventions for a limited period of time, generally 20 years. Inventors may acquire patents by submitting an application to the U.S. Patent and Trademark Office (PTO), where officials will examine it to determine whether the statutory requirements are met. This process is commonly known as "prosecution."

Applications consist of "claims" establishing the metes and bounds of the patent property right, which is typically broader than the specific invention, and a "specification" that describes the claimed invention. The specification must be detailed and concrete enough to enable others to make and use the invention without undue experimentation.[17] Claims must consist of a patentable subject matter—"any new and useful process, machine, manufacture, or any composition of matter, or any new and useful improvement thereof"—rather than abstract ideas or law of nature, and satisfy substantive requirements of novelty, nonobviousness, and utility.[18]

The patent holder may enforce its rights by filing infringement suits in federal court against anyone who makes, uses, sells, or imports the patented technology, regardless of whether it was copied or developed independently.[19] Courts presume that patents granted by the PTO are valid, but accused infringers may introduce evidence of invalidity or unenforceability. The patent holder bears the burden of establishing infringement by each alleged infringer.[20] Patent litigation is very expensive;[21] the average suit in which $1 million to $25 million is at stake costs $1.6 million through discovery and $2.8 million through trial.[22]

Upon a finding of infringement, a federal court may issue an injunction if doing so seems more equitable than simply awarding monetary damages. The statute also provides for the award of damages "adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer."[23] The U.S. Court of Appeals for the Federal Circuit has national jurisdiction over most patent appeals from the district courts.[24]

A patent holder can also enforce its rights by filing a complaint with the International Trade Commission (ITC), which may issue an exclusion order blocking importation of the infringing product into the United States.[25] The ITC is not authorized to issue damages, however.[26]

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[15] U.S. CONST. art. I, §8, cl. 8 ("To promote the Progress of ... useful Arts, by securing for limited Times to ... Inventors the exclusive Right to their ... Discoveries. . .").
[16] P.L. 82-593, 66 Stat. 792 (codified at 35 U.S.C.).
[17] 35 U.S.C. §112 (2012).
[18] 35 U.S.C. §101 (2012).
[19] 35 U.S.C. §271 (2012).
[20] 35 U.S.C. §271 (2012).
[21] ALAN R. THIELE ET. AL., THE PATENT INFRINGEMENT LITIGATION HANDBOOK 125 (2010).
[22] AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, 2011 REPORT OF THE ECONOMIC SURVEY (2012).
[23] 35 U.S.C. §284 (2012).
[24] 28 U.S.C. §1295 (2012).
[25] 19 U.S.C. §1337 (2012).
[26] *Id*.

The "Patent Trolls" Controversy

Skyrocketing rates of patent litigation since the turn of the 21st century have often been tied to the rise of "patent assertion entities" (PAEs),[27] businesses modeled on "purchasing and asserting patents against manufacturers who may be using the technology" rather than developing or commercializing the technologies themselves.[28] They are frequently accused of being classic arbitrageurs, taking advantage of the "large gap between the cost of getting a patent and the value that can be captured with an infringement action" in the information technology (IT) sector.[29]

PAEs are frequently referred to as "patent trolls," after the villains of folklore known to lie in wait under bridges they did not build, then emerge from the smog to demand tolls from unsuspecting travelers.[30] The term "troll" is controversial because it is both pejorative and ambiguous, often used imprecisely for any opportunistic or unpopular patent holder.[31] But it is best understood as an epithet for PAEs, which object to the label and argue essentially that the fees they collect are legitimate and needed to fund investment in infrastructure—that if they did not take tolls, bridges would be fewer in number and lower in quality.

Enforcement by PAEs

PAEs seek to license their patents primarily *ex post facto*—often after defendants have independently invented and begun using a technology allegedly covered by their patents, and frequently only after it has become ubiquitous or standard-essential in an industry.[32]

Indeed, the average patent asserted by the most litigious PAEs is not litigated for the first time, or assigned to its final owner, until seven years into its term, according to a study by Professor Michael Risch.[33] By contrast, product firms tend to assert their patents early in the patent term, and Professor Brian J. Love finds that the gap in litigation timing is such that "the average

[27] There is no consensus on a less-loaded synonym for "patent troll" as it is most commonly understood, but "PAE" has recently become the choice of both Congress and the FTC. *See* FTC Report, *supra* note 4, at 60–61; ITC House and Senate Hearings, *supra* note 2. The most popular alternative choice is "non-practicing entity" (NPE), but that term is too broad, ensnaring universities and fledgling inventors. Research organization Patent Freedom defines NPEs as companies receiving most of their revenue from patent licensing or enforcement—which is how this report defines PAEs—but that usage is confusing because it does not align with the intuitive or common meaning of "NPE." *See* PATENT FREEDOM, WHAT IS AN NPE?, https://www.patentfreedom.com/about-npes/background (last visited July 20, 2012). PAEs bring most NPE suits. Allison et. al., *supra* note 7, at 684.

[28] *See* FTC Report, *supra* note 4, at 67–68.

[29] Magliocca, *supra* note 5, at 1812.

[30] The term was coined at Intel in 2001 as a pithy label for litigants asserting patents that they owned but did not practice and which they typically acquired. An Intel Corporation vice president had been sued after referring to such litigants as "patent extortionists." *See* Joff Wild, *The Real Inventors of the Term "Patent Troll" Revealed*, IAM MAGAZINE, August 22, 2008, http://iam-magazine.com/blog/detail.aspx?g=cff2afd3-c24e-42e5-aa68-a4b4e7524177.

[31] *See, e.g.,* Ronald S. Katz et. al., *Patent Trolls: A Selective Etymology*, IP LAW 360, March 20, 2008, http://manatt.com/uploadedFiles/News_and_Events/Articles_By_Us/patentroll.pdf.

[32] FTC Report, *supra* note 4, at 50–51. Standard-essential patents claim technologies that have been adopted as industry-wide standards by standard-setting organizations. *Id*. at 191–92.

[33] Michael Risch, *Patent Troll Myths*, 42 SETON HALL L. REV. 457, 490 (2012).

product-company patent has been shelved by its owner before the average NPE patent has even been asserted."[34]

PAEs suggest that they simply enforce patent property rights against infringers, but much of the controversy surrounding their activities comes from the impression that they lack valid claims to the royalties they demand and receive.[35] Studies suggest that PAEs rarely prevail on the merits. Their win rate in cases decided on the merits is just 8 percent, versus 40 percent for other entities, according to a study by Professors John R. Allison, Mark A. Lemley, and Joshua Walker.[36] But they persist with litigation nonetheless, apparently supported by the licensing fees obtained by posing a credible threat of extended litigation.[37]

Contrary to popular belief, however, PAEs do not lose more because their patents are weaker or more likely to be invalid, according to Villanova University Law Professor Michael Risch.[38] In fact, he finds the patents asserted by the most litigious PAEs to be on par with other patents by objective measures of quality and value, and no studies supports the idea that they are especially prone to invalidation, relative to other patents.[39] Rather, PAEs often fail to show infringement, perhaps because they seek and depend upon overly broad constructions of what their patent claims cover.[40]

PAEs vs. Other Non-Practicing Entities

PAEs describe themselves as critical intermediaries. Some claim to offer "department stores" for patents, providing one-stop shopping for licensing and purchase.[41] Others suggest they serve key functions by enabling individual inventors, who generate about 12% of patents,[42] to earn returns despite lacking the resources to enforce or commercialize their patents themselves.[43]

No one doubts that an efficient patent system needs intermediaries who reduce transaction costs between those who invent things and those who develop and commercialize them. Many observers note, however, that PAEs "do not seem to operate that way,"[44] and that other non-practicing entities (NPEs) serve these functions more efficiently and without "trolling" tactics.[45] PAEs are alleged to be one-of-a-kind in that they are said to speculate on patents—they bet on

[34] Brian J. Love, *An Empirical Study of Patent Litigation Timing: Could a Patent Term Reduction Decimate Trolls Without Harming Innovators?* 3 (SSRN Working Paper Series 2011), http://ssrn.com/abstract=1917709.
[35] *See* Risch, *supra* note 33, at 459.
[36] Allison et. al., *supra* note 7, at 694.
[37] *See* AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, *supra* note 23.
[38] *See* Allison et. al., *supra* note 7, at 706.
[39] *See* Risch, *supra* note 33, at 481.
[40] *Id.*
[41] Nathan Myhrvold, *The Big Idea: Funding Eureka!*, HARV. BUS. REV. 44 (2010).
[42] JAMES BESSEN AND MICHAEL J. MEURER, PATENT FAILURE 169 (2008).
[43] *See* Myhrvold, *supra* note 41, at 48–49; Sannu K. Shrestha, *Trolls or Market-Maker? An Empirical Analysis of Nonpracticing Entities*, 110 COLUM. L. REV. 114, 126–30 (2010); FTC Report, *supra* note 4, at 64, 68.
[44] *See* Robin Feldman & Tom Ewing, *The Giants Among Us*, 2012 STAN. TECH. L. REV. 1, 20–21 (2012).
[45] *See, e.g.,* Bessen et. al, *supra* note 13, at 34; Elizabeth D. Ferrill, *Patent Investment Trusts: Let's Build a PIT to Catch the Patent Trolls*, 6 N.C. J.L. & TECH. 367, 371–374 (2005).

how much more a patent will be worth in the future, when it is asserted, and focus on high-risk high-yield acquisitions.[46]

Other NPEs with licensing-based business models include technology development firms and licensing agents, but PAEs differ from these in that they generally offer licenses only after infringement and lock-in have begun.[47] The FTC explained that while other NPEs transfer technologies that they or their clients invented and developed so that licensees can benefit from not having to develop them in-house, PAEs transfer nothing but a legal right not to be sued for using a technology that the licensee may have already invested in developing on its own, without help from the PAE or its patents.[48] PAEs also diverge from other NPEs that *enforce* patents because they focus on acquiring patents outright and asserting them on their own behalf, as opposed to providing services and collecting fees or a slice of the litigation award.[49]

The Impact on Innovation

PAEs have frequently been accused of imposing a "tax on innovation" and undermining or impairing the incentives that patent law aims to create. Yet PAEs have also been defended on the grounds that they actually promote invention by adding liquidity, absorbing some of the risk otherwise borne by investors, and getting more royalties for small inventors.[50] Without a doubt, PAEs both add to and subtract from the incentives of patent law,[51] but the FTC and many experts in the field indicate that they currently do more harm than good to innovation and the patent system.[52] The extent of this imbalance—and whether Congress could or should recalibrate it to "support the beneficial effects, and lessen the detrimental ones"— remains unclear, however.[53]

To the extent that PAEs wait to seek licenses until defendants have sunk costs into a product or invested in developing a disputed technology on their own, the FTC suggests that they can deter innovation by raising costs and risks for the companies and investors that actually bring products to market.[54] Investment decisions must factor in the likelihood that PAEs will later emerge and demand royalties or bring costly litigation,[55] directly reducing returns on investment.[56] Faced with lower profit margins and uncertain but potentially significant risk, manufacturers may find that

[46] *Id*.; Steven M. Cherry, *Patent Profiteers*, IEEE SPECTRUM, June 2004, at 38–41; FTC Report, *supra* note 4, at 62–67; Raymond Millen & Ron Laurie, *Meet the Middlemen*, INTELL. ASSET MGMT. 54 (2008).
[47] Development firms, such as Qualcomm, focus on research and development of technologies, rather than acquisition of patents, and then pitch their patented technologies to licensees in advance. Licensing agents, meanwhile, offer enforcement and negotiation services without acquiring or asserting patents on their own behalf. *See* Cherry, *supra* note 46, at 38–41; FTC Report, *supra* note 4, at 62–67.
[48] FTC Report, *supra* note 4, at 40 n. 43.
[49] Ferrill, *supra* note 45, at 371–374.
[50] *See* Myhrvold, *supra* note 41, at 44–45.
[51] *See* FTC Report, *supra* note 4, at 67–68.
[52] *See* FTC Report, *supra* note 4, at 67–68.; Love, *supra* note 34.
[53] It is worth noting that the asserted benefits of PAE activity tend to be more long-term, abstract, and indirect, and thus more difficult to estimate.
[54] *See* FTC Report, *supra* note 4, at 52–54; Bessen et. al., *supra* note 13, at 31–35 (finding the risk of future lawsuit-related losses to be a large disincentive to invest in innovation that far exceeds counterbalancing incentives).
[55] *See* FTC Report, *supra* note 4, at 52–54; Bessen et. al., *supra* note 13, at 31–35; *see also* Eric Savitz, *Cuban Says Vringo Stake Hedges Patent Risk In Other Investments*, FORBES, April 17, 2012.
[56] *See* FTC Report, *supra* note 4, at 52–54; Bessen et. al., *supra* note 13, at 31–35.

some R&D projects, features, and product improvements are simply not worth doing, even if beneficial to consumers. Similarly, startups and small businesses may have a harder time getting funding from venture capitalists and other investors who anticipate future PAE demands.

There are also opportunity costs as productive entities divert funds from R&D to deal with PAEs. In addition to the obvious diversion to pay licensing fees and legal costs, there has also been a shift towards investing in PAEs instead of startups or other ventures. Some investors buy stakes in PAEs to hedge against the limitless risk of being sued by PAEs—strengthening them to deal with the damage they may experience elsewhere.[57] One high-tech entrepreneur explained that "[i]f patent laws continue to be as they are, this is the only way I can see that allows any level of protection."[58] Other investors have simply realized that PAEs offer great returns on investment—better than many startups—and shifted funding in their direction.[59]

On the other hand, PAEs argue they actually promote investment in invention. Nathan Myhrvold, CEO of PAE giant Intellectual Ventures, styles his company as pioneering a "capital market for inventions akin to the venture capital market that supports start-ups and the private equity market that revitalizes inefficient companies."[60] The most recognized benefit of PAE activity is increased liquidity and better risk management for investments in applied research and invention. By enlivening a secondary[61] market for patents, PAEs provide an exit option and/or extra revenue stream for a variety of patentees. They absorb and manage the high risk[62] by spreading it across large portfolios of patents and extracting value out of otherwise low-value or dormant patents.

Patentees who do not or cannot commercialize in the "primary" market for technology[63] might recoup their costs and perhaps see some returns by selling their patents to PAEs and retaining a cut of future royalties. PAEs suggest this function is especially essential for small inventors and NPEs that would otherwise have a hard time getting any value from their inventions.

[57] When an outspoken advocate for patent reform bought a stake in a company known to "aggressively sue over IP," he explained, "This is a hedge against the unlimited patent exposure all the companies I have investments in face. Patent risk is impossible to quantify. It's unrealistic for most small to medium businesses to have any clue which patents they are at risk over." Mark Cuban, *The Greatest Business Risk You Don't Know About*, BLOG MAVERICK, April 18, 2012, http://blogmaverick.com/2012/04/18/the-greatest-business-risk-you-dont-know-about-your-business-will-be-sued-over-patents.

[58] Jay Yarow, *Mark Cuban: Here's Why I'm Taking A Big Stake in A Patent Troll*, BUS. INSIDER, April18, 2012, http://articles.businessinsider.com/2012-04-18/tech/31359139_1_patent-suit-patent-troll-patent-laws#ixzz1zmuCpoFR.

[59] *See* House ITC Hearing, *supra* note 2 (statement of Connie V. Chien).

[60] *See* Nathan Myhrvold, *supra* note 41, at 41–42.

[61] In the *primary* market for *technology*, revenue and returns on investment come from commercializing the patented technology and exploiting exclusive rights to use it in the marketplace. In the *secondary* market for *patents*, revenue comes from licensing fees. PAEs sell or license their patents "as assets whose values are based on the amount of licensing fees that can be extracted from operating companies already using and marketing the technology." *See* FTC Report, *supra* note 4, at 60.

[62] Some suggest that only 1 to 3 percent of patents turn profits for their inventors, Myhrvold, *supra* note 41, at 46, and that only 7 percent even recoup the costs of their prosecution. Michael Agger, *Google Patent Overload*, SLATE, January 2, 2007, http://www.slate.com/id/2156386/fr/flyout.

[63] Smaller inventors may lack the resources or know-how to commercialize, and it will often be inefficient for them to try. Other patents may not become valuable for years or require further capital and sunk costs.

NPEs that routinely obtain and sell patents in the secondary market—universities in particular—benefit directly from, and in proportion to, PAE activity.[64] The more licensing fees PAEs obtain, the more these inventors earn from their patents, and the greater their incentives to invent.[65]

The FTC, however, warns that an increase in the volume of inventions attributable to PAEs should not be taken as a trump card: "Paying inventors only to invent and patent may generate more *invention and patents*, but it may not generate more *innovation*. Invention is only the first step in a lengthy and expensive development process to bring an innovation to market."[66]

PAEs may create disincentives for firms to invest in the rest of the process to turn inventions into products and bring them to market. The more a firm invests in R&D, the more likely it is to be sued by a PAE.[67] And each extra dollar PAEs pay out for patents in the secondary market may deduct from the profits of firms that actually commercialize and make use of patented technologies.

James Bessen and Michael J. Meurer have reported that of the $29 billion PAEs cost defendants in 2011, no more than 25 percent of it flowed back to innovation—the rest they categorize as deadweight loss.[68] In other words, this report calculated that only a fraction of defendant losses go towards the benefits PAEs assert. Empirical research has also raised doubts about how much PAEs actually help small inventors and startups. Another Bessen-Meurer study indicated that *less than two percent* of losses in wealth caused by PAEs passed through to independent inventors,[69] which according to other studies supply only 29 percent of PAE patents; 43 percent come from large firms.[70] PAEs also impose costs upon small- and mid-sized businesses, which comprised 90 percent of defendants sued by PAEs in 2011 and bore 37 percent of the direct costs, according to Bessen and Meurer.[71]

Behind the Rise of PAEs

Experts attribute the proliferation of PAEs over the past 10 to 15 years to the explosion of the information technology (IT) industry and patent law's struggle to adapt to the unique issues presented by this new frontier of innovation. They indicate that the PAE business model is not about licensing patents generally but *high-tech* patents in particular,[72] including those on software and business methods or processes related to software, as well as computers and electronics.[73]

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[64] Repeat-seller NPEs such as universities are unique because they which benefit greatly from selling to PAEs but never bear the costs on the other side (in the form of licensing fees and litigation costs). *See* Lemley, *supra* note 12, at 618. The Bayh-Dole Act empowered universities to reap revenue benefits from their applied research and patenting activities, but it is a point of contention whether it adds to incentives, or if it does, whether they are the right kind. *Id*.

[65] *Id*.

[66] *See* FTC Report, *supra* note 4, at 69 (emphasis added).

[67] *See* Bessen et. al., *supra* note 13, at 34; Colleen V. Chien, *Of Trolls, Davids, Goliaths, and Kings: Narratives and Evidence in the Litigation of High-Tech Patents*, 87 N.C. L. REV. 1571, 1581 (2009).

[68] Bessen et. al., *supra* note 13; Bessen & Meurer, *supra* note 9.

[69] Bessen et. al., *supra* note 13, at 32–33.

[70] Risch, *supra* note 33, at 459–61.

[71] Bessen & Meurer, *supra* note 9, at 19.

[72] PAE suits are concentrated in the IT sphere, with about 64% of NPE-asserted patents coveting computer- or electronics-related inventions, and almost 40% covering software-related inventions. They also account (continued...)

What do high-tech patents attract and enable PAEs? First, inadvertent infringement is said to be inevitable due to notice failure and the so-called "patent thicket," among other things. Second, uneven bargaining power enables PAEs to negotiate excessive royalties from infringers and undue royalties from non-infringers. The high value that can be extracted from patents that have been plausibly or actually infringed, together with the relatively low cost of acquiring and warehousing them, invites arbitrage.[74]

Notice Failure

There is virtually universal agreement that "notice failure" in the IT sector has contributed to the rise of PAEs, as well as the rise in patent litigation generally. In an optimal patent regime, patent property rights are clearly defined and easily determined so the world is on notice as to their existence, scope, and ownership.[75] This "notice function" enables people to avoid infringement, negotiate permission to use others' IP, and maximize efficiency, such as by not keeping all inventions as trade secrets or doing R&D on inventions already claimed by someone else.[76]

The relative success of the patent system for pharmaceuticals has been linked in part to a manageable volume of clearly defined claims.[77] By contrast, the notice function has broken down in the IT sector. There are two aspects to notice failure: (1) claims have "fuzzy boundaries" that cannot be reliably determined, much less known in advance, without litigation;[78] (2) it is economically infeasible or irrational for defendants to search through existing patents to avoid infringement.

Section 112 of the Patent Act

Several provisions of §112 are supposed to filter out abstract or ambiguous patents and ensure the world is on notice as to what each patent covers. The FTC and many observers indicate that these requirements have been less stringently applied and enforced in the IT industry than other sectors where notice failure is less of a problem.

(...continued)

for 40 to 60 percent of suits over high-tech patents. *See* Bessen, *supra* note 9; Magliocca, *supra* note 5, at 1812; Chien, *supra* note 67; Love, *supra* note 34.

[73] *See, e.g.*, Bessen et. al., *supra* note 13, at 34; ARTICLE ONE PARTNERS, *Strategies for a Shifting IP Landscape: A Summary of Summit Takeaways*, 2011 (reporting that NPEs brought 75 percent of all active litigation matters reported by a non-random sample of leading firms).

[74] Drawing on historical parallels and the concentration of opportunistic litigation around certain types of patents, Magliocca has concluded that "opportunistic licensors flourish when there is a large gap between the cost of getting a patent and the value that can be captured with an infringement action." Magliocca, *supra* note 5, at 1812.

[75] BESSEN & MEURER, *supra* note 42, at 10; FTC Report, *supra* note 4, at 3–8.

[76] BESSEN & MEURER, *supra* note 42, at 10.

[77] *Id*.

[78] *See* FTC Report, *supra* note 4, at 9–12. Among the reasons not discussed here: the inherent limitations and imprecision of language, especially for emerging inventions; the lack, in fields such as software, of "clear nomenclatures and common vocabularies"; the possibility that claims viewed narrowly at the PTO will be construed broadly by courts; and the PTO's focus on novelty and nonobviousness rather than clear claim boundaries. *Id*.

First, the "definiteness" requirement limits the ambiguity of the patent "claim" language, which establishes the metes and bounds of the patent property right.[79] Claims must "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention."[80] Yet critics say the provision has had no teeth since 2001,[81] when the Federal Circuit replaced a test requiring claims to be "plain on their face" with one under which claims are only invalid for indefiniteness if "insolubly ambiguous" and subject to "no narrowing construction."[82] The test, deemed a "disaster" by some,[83] dramatically widened the "zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims."[84]

Second, the boundaries set by the patent claims are sharpened by looking at the accompanying disclosures, which according to the FTC should explain what the claims cover in a more detailed and concrete way so as to clarify ambiguities around the outer edges that may exist or arise later.[85] It must include a specific "written description" of the claimed invention and enough explanatory details to "enable" others in the field to make and use it.[86] Here, too, observers assert that IT patents undergo less stringent review than other types of patents, and some suggest that this permits more abstract patents and inventions that exist only on paper.[87] If §112 rules are loosely enforced and ambiguity does not put patents at risk of later invalidation, patentees may have less incentive to write definite claims and concrete, detailed disclosures (because every detail added may cabin their patent property right later).[88]

The Patent Thicket

According to commentators, several conditions in the IT sector make it economically and/or practically infeasible or irrational for manufacturers to find and clear all patents incorporated in a given product. They report that, as a result, in most cases, "the first notice of the patent [is] the filing of the lawsuit," at which point it is too late to design around the technology or negotiate a reasonable royalty rate because the producer has become locked in.[89] The leverage this gives to PAEs will be discussed further below. This section explains why it is often said that virtually all IT products inadvertently infringe some patent(s) and why the industry has apparently taken to ignoring patents altogether.[90]

Commentators indicate the IT sector is mired in what they call a "patent thicket," meaning a "dense web of overlapping [IP] rights that a company must hack its way through . . . to actually

[79] Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, 17 BERKELEY TECH. L.J. 1155, 1188 (2002) (explaining that definiteness requires claims to be "written so as to warn members of the public just what is and is not covered by the patent"); FTC Report, *supra* note 4, at 10–11.
[80] 35 U.S.C. §112.
[81] FTC Report, *supra* note 4, at 95.
[82] *See* Exxon Research & Eng'g Co. v. United States, 265 F.3d 1371, 1375 (Fed. Cir. 2001).
[83] *See* FTC Report, *supra* note 4, at 95.
[84] FTC Report, *supra* note 4, at 94 (quoting United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 236 (1942)).
[85] *See* FTC Report, *supra* note 4, at 94–95.
[86] 35 U.S.C. §112.
[87] *See* Chien, *supra* note 67, at 1581; Bessen et. al., *supra* note 13, at 34.
[88] *See* Bessen et. al., *supra* note 13, at 34.
[89] FTC Report, *supra* note 4, at 59 n. 36.
[90] *See generally* Mark A. Lemley, *Ignoring Patents*, 2008 MICH. ST. L. REV. 19 (2008).

commercialize new technology."[91] According to many observers, the set of potentially relevant patents for any IT product is overwhelming due to both the number of (overlapping and possibly invalid) patents *granted* in this area and the number of components *incorporated* in each product.[92]

Even for products with relatively few patents to review, commentators indicate that their "fuzzy boundaries" would still make it a futile endeavor, and under the doctrine of willful infringement, a risky one.[93] That doctrine has been criticized for creating perverse disincentives by exposing defendants who looked at patents they are later found to infringe to enhanced damages, adding to the cost, risk, and duration of litigation.[94] If those issues were addressed, a full search would still entail huge costs for marginal returns, insuring against neither infringement nor litigation.

Even the most thorough search will leave some stones unturned—those pending at the PTO.[95] Between the application and issuance dates, patent claims cannot be accessed or checked by other firms, which meanwhile might develop and market infringing products. Strategic use of continuation practice to keep patents pending and hidden longer at the PTO has become an increasingly common and criticized practice.[96]

Finally, clearing the patent thicket does nothing to prevent weak or baseless suits brought only to extract a settlement from the defendant. Recall that PAEs lose 92 percent of merits judgments and settle the vast majority of their assertions.[97] These figures may be attributable to uneven bargaining power, which is the subject of the next section.

Uneven Bargaining Power

PAEs occupy highly advantageous bargaining positions, and their leverage over defendants has been attributed to an asymmetry of costs and risk that breaks down into three factors: high litigation costs and no way to dispose of weak suits early; the risk of potentially debilitating liability for defendants; and the lack of any major risk or disincentive for PAE plaintiffs to litigate.

First, patent litigation is expensive, and there is no quick or affordable way to get rid of a patent suit except to settle.[98] Defendants frequently find settlement the most cost-effective option, even

[91] Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting*, *in* INNOVATION POLICY AND THE ECONOMY 119, 125 (2001).
[92] "[I]f you're selling online, at the most recent count there are 4,319 patents you could be violating. If you also planned to advertise, receive payments for, or plan shipments of your goods, you would need to be concerned with approximately 11,000." BESSEN & MEURER, *supra* note 42, at 8.
[93] FTC Report, *supra* note 4, at 51; Bessen et. al., *supra* note 13, at 34.
[94] *See* Lemley, *supra* note 90.
[95] FTC Report, *supra* note 4, at 80–90; Richard A. Posner, *Why There Are Too Many Patents in America*, THE ATLANTIC, July 12, 2012, http://www.theatlantic.com/business/archive/2012/07/why-there-are-too-many-patents-in-america/259725/.
[96] *See, e.g.,* Bessen et. al., *supra* note 13, at 34; Posner, *supra* note 95.
[97] Allison et. al., *supra* note 7, at 708.
[98] It costs $1.5 million just to get through discovery and $2.5 million in all for suits where there is $1 million to $25 million at stake. In suits where over $25 million is at stake, it is $3 million through discovery and $5 million total. *See* AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, *supra* note 22.

if they are certain that they are not infringing.[99] The AIA provisions increasing the speed and availability of post-grant examination is expected to ameliorate this issue somewhat for invalid patents granted after 2011. Defendants will be able to challenge a patent's validity, but not its scope or the claim of infringement, at a much lower cost than they can in court, where they must overcome a presumption of validity by clear and convincing evidence to get a patent invalidated.[100]

Second, where injunctive relief is available to PAEs, what commentators call the "patent holdup" problem arises as PAEs leverage the threat of an injunction in royalty negotiations to "capture far more than the intrinsic value of their invention."[101] Those wielding this power have described it as a "Damocles sword."[102] Patent holdup is said to be particularly acute in the IT sector because products incorporate dozens or even thousands of patented features or components, and the owner of any one of them can keep the entire product off the market.[103]

In 2006, the Supreme Court took a step towards fixing the so-called holdup problem with its decision in *eBay v. MercExchange*, which enabled lower courts to deny injunctive relief to PAEs and issue only monetary damages for infringement.[104] The case overturned a longstanding "general rule" of the Federal Circuit that injunctions issue automatically upon a finding of infringement.[105] Courts now apply a four-factor balancing test that tends to weigh against PAEs. Indeed, few injunctions have been granted in patent infringement cases since *eBay*.[106]

Scholars have raised concerns that PAEs have now shifted their holdup efforts to the International Trade Commission (ITC), a quasi-judicial federal agency that grants "exclusion orders" that stop the import of infringing products into the United States.[107] The ITC has responded to the concerns with data showing that just 8 percent of post-*eBay* ITC investigations arose from complaints by PAEs, only one of which obtained an exclusion order.[108] But both sides may be correct if, as the

[99] *See, e.g.,* Eon–Net LP v. Flagstar Bancorp, 653 F.3d 1314, 1326–27 (Fed. Cir. 2011) (observing that plaintiff had filed suit against 100+ defendants then quickly settled with most of them for far less than litigation costs, and the defendant who did litigate had expended $600,000 to avoid paying $25,000–$75,000 in royalties); Darren Cahr & Ira Kalina, *Of PACs and Trolls: How the Patent Wars May Be Coming to a Hospital Near You*, 19 HEALTH LAW. 15, 16 (2006) ("The patent troll offers a license for under $100,000. The end user makes a business decision—millions of dollars to defend a suit that might be lost, or $100,000 or less for certainty? The end user takes a license.").

[100] Scott A. McKeown, *USPTO to Break Patent Troll Business Model in September?*, Patents Post-Grant, http://www.patentspostgrant.com/lang/en/2012/07/patent-troll-business-model-to-change-in-september

[101] *See generally* Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991 (2007).

[102] *See* House ITC Hearing, *supra* note 2 (statement of Connie V. Chien).

[103] *See* Lemley & Shapiro, *supra* note 101.

[104] *See* eBay, v. MercExchange, L.L.C., 547 U.S. 388, 391 (2006). For more information on this case, *see* CRS Report RL33429, *Availability of Injunctive Relief in Patent Cases: eBay, Inc. v. MercExchange, L.L.C.*, by Brian T. Yeh.

[105] *See eBay*, 547 U.S. at 391.

[106] The factors are: (1) necessity to prevent irreparable injury to the patent owner, (2) availability of an adequate legal remedy, such as monetary damages, (3) whether granting the injunction would be in the public interest, and (4) the balance of hardships. *See id.*

[107] See Colleen V. Chien & Mark A. Lemley, *Patent Holdup, the ITC, and the Public Interest* 10–15 (Stanford Public Law Working Paper No. 2022168, 2012); *see also* ITC House Hearing, *supra* note 2 (statement of Rep. Bob Goodlatte).

[108] U.S. INTERNATIONAL TRADE COMMISSION, FACTS AND TRENDS REGARDING USITC SECTION 337 (continued...)

scholars suggest, each of the PAE complaints ensnares entire industries by asserting that industry standards, adopted and incorporated by all manufacturers, infringe their patents.[109]

Third, by contrast to their targets, PAEs have nothing to lose and much to gain by litigating aggressively. Unlike most other patentee-plaintiffs, PAEs pursuing infringement suits "do not risk disruption to their core business" because "patent enforcement *is* their core business."[110]

Because PAEs are NPEs that do not make or sell anything, they are not subject to counterclaims that they infringe on defendants' patents. By contrast, when a product firm sues another firm for infringement, the defendant can dig up or acquire a patent that the plaintiff's products might infringe and counterclaim. The resulting dynamic of mutual assured destruction makes bargain power more even, settlement more likely, and litigation far less appealing. Compounding that leverage, the PAE business model creates unusual incentives for PAEs to forge ahead with weak suits (rather than calling it a loss or accepting a lowball settlement) to reinforce their bargaining position with future targets. The ability to extract licensing fees depends upon posing a credible threat of costly litigation.

PAEs also have less to lose than other plaintiffs if a patent is invalidated or narrowly construed. Although PAEs lose future revenue when a lucrative patent is invalidated, this cannot deter them from litigating because the whole value of a PAE's patents depends upon its demands being backed by a credible threat of litigation. Additionally, by the time a validity judgment comes down, the PAE will often have already extracted royalties from other defendants, and these licensing and settlement agreements are often one-time, non-refundable deals.[111]

The joinder limitations included in the America Invents Act might reduce the leverage PAEs can exert. Section 19 of the AIA restricts the ability to sue multiple unrelated defendants for infringement in the same case or same trial "based solely on allegations that they each have infringed the patent or patents in suit,"[112] which had become a common practice among PAEs.[113] PAEs must now incur more costs per defendant they sue and face multiple assessments of validity, each with potential collateral estoppel effect. Commentators have predicted that Section 19 will have an impact but not a tremendously significant one, potentially reducing the number of defendants getting sued while increasing the number of suits filed.[114] But if the threat of litigation that gives force to a PAE's licensing demands becomes less credible because it cannot follow through with suing all firms that refuse to buy a license, then its leverage is reduced.

(...continued)

INVESTIGATIONS (2012) http://www.usitc.gov/press_room/documents/featured_news/337facts.pdf.

[109] Chien & Lemley, *supra* note 107, at 10–15.

[110] Chien, *supra* note 67, at 1579.

[111] See Lemley & Shapiro, *supra* note 101, at 2006.

[112] P.L. 112-29 at §19; 35 U.S.C. §299; *see also* Chandran B. Iyer & Ryan M. Corbett, *Joinder Limitations in the America Invents Act: Big Change?*, ABA INTELL. PROP. LIT. COMM., February 20, 2012, *available at* http://apps.americanbar.org/litigation/committees/intellectual/articles/winter2012-joinder-limitations-america-invents-act.html.

[113] *Id*.

[114] *See* Sheri Qualters, *'Trolls' Adapting to Limit on Multidefendant Cases,* 34 NAT'L L.J. 10 (2012).

Legislation in the 112th Congress

On August 1, 2012, Representatives Peter DeFazio and Jason Chaffetz introduced the Saving High-Tech Innovators from Egregious Legal Disputes (SHIELD) Act of 2012 (H.R. 6245). The bill would amend the Patent Act to provide authority for a court to award full litigation costs (including reasonable attorney's fees) to the defendant in a lawsuit alleging the infringement of a computer hardware or software patent (or in an action disputing the validity of such patent), if the court makes a determination that the patent holder "did not have a reasonable likelihood of succeeding" in the suit.[115] Although the bill provides definitions for "computer hardware patent" and "software patent," it also includes a "rule of construction" section that cautions that nothing in the SHIELD Act is to be "construed as amending or interpreting categories of patent-eligible subject matter."[116] Thus, the bill is not intended to settle the ongoing dispute over the extent to which computer hardware and software patents should or should not be eligible for patent protection.

The Patent Act currently provides a court with the power to award reasonable attorney fees to the prevailing party "in exceptional cases."[117] The SHIELD Act would make that power more generally available, in any case involving a computer hardware or software patent, whether it is a plaintiff's action alleging patent infringement or a potential defendant's declaratory judgment action challenging the validity of the patent. In either action, the patent owner would bear the burden of demonstrating to the court a "reasonable likelihood of succeeding" in the case to avoid potentially being required to pay the defendant's litigation costs. However, the SHIELD Act provides that a federal court "may" award such costs, thus leaving the judge discretion to award the costs to the defendant even if he or she finds that the plaintiff had no likelihood of success. In addition, nothing in the SHIELD Act refers specifically to PAEs and thus any patent holder in an action involving a computer hardware or software patent, whether a PAE or product-producing competitor, would be required to satisfy the new requirement.

As Representative Chaffetz explained in introducing the bill, "The SHIELD Act ensures that American tech companies can continue to create jobs, rather than waste resources on fending off frivolous lawsuits. ... This bill combats the problem of patent trolls by moving to a 'losers pays' system for software and hardware patent litigation."[118] Another observer has noted that by "shift[ing] the legal costs to the plaintiff," the legislation "would discourage [PAEs] from filing baseless lawsuits that would probably not hold up in court but could lead to a settlement payment."[119]

Some have criticized the SHIELD Act for not defining the key test under the bill: "reasonable likelihood of success." They note that the lack of a statutory definition means that courts will

[115] H.R. 6245, §2(a), adding new 35 U.S.C. §285A(a).

[116] *Id.,* §2(c).

[117] 35 U.S.C. §285.

[118] Press Release: DeFazio Introduces SHIELD Act to Protect American Innovation, Jobs, August 1, 2012, *at* http://defazio.house.gov/index.php?option=com_content&view=article&id=792:defazio-introduces-shield-act-to-protect-american-innovation-jobs&catid=69:2012-press-releases.

[119] Lisa Shuchman, *Congress Takes Aim at "Patent Trolls" With SHIELD Act,* CORPORATE COUNSEL, August 6, 2012, *available at* http://www.law.com/jsp/cc/PubArticleCC.jsp?id=1202566021859&Congress_Takes_Aim_at_Patent_Trolls_With_SHIELD_Act.

likely need to interpret the provision over the course of several years in order to develop a particular standard.[120] Other observers predict that while the bill could be "effective against plaintiffs who take the shotgun approach and sue everyone at once without doing proper due diligence," the bill is not likely to apply to a PAE that has a valid patent and a non-frivolous lawsuit.[121] Finally, one stakeholder argues that the SHIELD Act would harm small patent owners and independent inventors—and will be a boon for large technology companies—because "the very possibility of having to pay millions of dollars in defense costs will give a pause to many law firms before representing inventors on a contingency basis effectively denying these inventors access to justice."[122]

Other Legislative Options

Should Congress decide that additional legislation is desirable to address PAE activity, commentators have suggested a number of avenues.

IT-Specific Reform

It bears emphasis that PAE activity has been concentrated in the realm of IT, primarily on patents related to software, the Internet, and electronics.[123] Due to the component-driven and intangible nature of IT, as well as indications that patents are less essential to promoting innovation in IT than in other industries, such as pharmaceuticals, some observers urge Congress to undertake targeted reforms and leave the other realms of the patent system as they are.[124] This could entail distinctions based on type of patent or the industry area, an approach already taken by the SHIELD Act.

However, such precision may be precluded, or at least constrained, by an international agreement. Article 27.1 of the Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS"), administered by the World Trade Organization (WTO), requires that patents "be available and patent rights enjoyable without discrimination as to ... the field of technology."[125] But some observers have argued that this provision "does not strictly require a 'single level of IP

[120] Ryan Davis, *Patent Troll Bill May Be Too Vague, Narrow to Rein In Suits*, LAW360, August 8. 2012, *available at* http://www.law360.com/ip/articles/368023. However, it should be noted that the federal courts already are familiar with a possibly similar standard, "likelihood of success on the merits," which a party in a patent case must show in order to obtain a preliminary injunction. *See* Reebok Int'l v. J. Baker, Inc., 32 F.3d 1552, 1555 (Fed. Cir. 1994) ("Whether a preliminary injunction should issue turns upon four factors: (1) the movant's reasonable likelihood of success on the merits; (2) the irreparable harm the movant will suffer if preliminary relief is not granted; (3) the balance of hardships tipping in its favor; and (4) the adverse impact on the public interest."). In seeking the preliminary injunction against a defendant, a patent holder could satisfy the "reasonable likelihood of success on the merits" factor by showing that the patent is valid and has been infringed. *Id.* at 1555-56.

[121] *Id.*

[122] Alexander Poltorak, *Proposed SHIELD Law is Nothing But a Gift to Infringers,* THE HILL'S CONGRESS BLOG, August 10, 2012, *at* http://thehill.com/blogs/congress-blog/technology/243135-proposed-shield-law-is-nothing-but-a-gift-to-infringers.

[123] Suits over software patents comprise 62 percent of NPE litigation, Bessen et. al., *supra* note 14, at 34, and of the most litigated patents (those litigated 8 or more times), *94 percent* were software patents. *See* Allison et. al., *supra* note 7, at 696.

[124] *See, e.g.,* Posner, *supra* note 95.

[125] Agreement on Trade-Related Aspects of Intellectual Property Rights, art. 27.1 (1994).

protection for all technologies or industries.'"[126] In fact, a WTO panel "rejected a strict interpretation of Article 27.1 prohibiting any differentiation between fields of technology," and the "accepted view is that 'the pejorative concept of discrimination must be distinguished from differentiation for *legitimate reasons*.'"[127] Nevertheless, Congress may need to carefully examine whether any changes it desires to make to the patent system would be inconsistent with its international obligations.

Improving Notice

Improving notice where it currently fails is a relatively uncontroversial and high-priority goal of some patent reform advocates. The "fuzzy boundaries" of IT patents and the sheer number of them that are granted and incorporated in any given product make it difficult for firms to avoid infringement and, once faced with a PAE assertion, to know whether it is valid without going to court. There are also a number of disincentives and obstacles for product firms to find and clear patents ahead of time. Many scholars believe solving this notice failure would go far towards reducing the negative effects of PAEs while keeping the benefits and making the entire patent system work better.[128]

Among the most popular ideas is more robust use of §112's definiteness and disclosure rules to deny (at the PTO) or invalidate (in court) abstract or ambiguous IT patents,[129] which may entail legislatively overruling Federal Circuit standards that permit "substantial ambiguity" in IT patent claims.[130] Of course it is also an option to let the Federal Circuit sort these matters out itself.

For definiteness, Congress might consider amendments that point the Federal Circuit to a test that "weeds out claims reasonably susceptible to multiple interpretations," which the FTC says "could reduce ambiguity and improve notice in a broad range of settings."[131] Many observers want a test that weeds out more claims than the "insolubly ambiguous" standard adopted by the Federal Circuit in 2001.[132] Others believe current doctrine is adequate but underenforced.[133]

Several reform proposals address the issue of patent applicants keeping claims hidden at the PTO by filing continuations. The most common among them involve reforms of continuation practice, which currently "allows patent owners to hide the true nature of their invention until late in the process" and extend the time during which other companies might unknowingly begin using the patented technology.[134] There have also been many calls for the PTO to make pending applications more open to the outside world so that there are no surprises and more assurance for diligent companies that do search for existing patents.

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[126] Maria Victoria Stout, *Crossing the TRIPS Nondiscrimination Line: How CAFTA Pharmaceuticals Patent Provisions Violate TRIPS Article 27.1*,14 B.U.J. SCI. & TECH. L. 177, 181–82 (2008).
[127] *Id*. (collecting sources).
[128] Scholars have concluded that the "patent troll business model only makes economic sense when there is [substantial] inadvertent infringement." Bessen et. al., *supra* note 13, at 34.
[129] FTC Report, *supra* note 4, at 95, 102; Bessen & Meurer, *supra* note 9, at 23; Posner, *supra* note 95.
[130] FTC Report, *supra* note 4, at 95.
[131] FTC Report, *supra* note 4, at 11.
[132] FTC Report, *supra* note 4, at 101–02. The current test allows invalidation only if a claim is "insolubly ambiguous" and not subject to narrowing constructions. *Id*.
[133] FTC Report, *supra* note 4, at 102.
[134] *See* Lemley, *supra* note 12, at 630.

Finally, some scholars propose eliminating what they view as a disincentive for firms to search existing patents in advance. The "willfulness doctrine"[135] is said to boost PAE bargaining power and has the "perverse effect of causing people to try avoid learning of patents."[136] Congress might consider legislation that would delay the ability to even plead willfulness until there has been a finding of infringement.[137] Proponents argue this would preserve the doctrine's deterrent and punitive functions while improving notice and removing a tool PAEs use to raise defendants' costs and risk, as well as their own bargaining power.[138]

Reducing Leverage, Hold-Up, and Settlement Pressure

The leverage PAEs can exert by threatening an injunction from a federal court has diminished since the Supreme Court decided *eBay* in 2006, but commentators now indicate that PAEs have replaced it with the "Damocles sword" derived from credibly threatening to get an ITC exclusion order on the import of defendants' products.[139] Congress recently heard testimony urging it to prevent the ITC from issuing exclusion orders for PAEs and is currently considering action to that effect.[140] As noted above, PAEs play a smaller role in the growth of ITC complaints than reformers seem to believe,[141] *but* it is possible that PAEs have extracted royalties by threatening ITC import bans and rarely needed to actually file.

Other procedural changes that shift more of the burdens and costs of litigation onto PAEs could also reduce their bargaining leverage over defendant product companies. Some scholars have called upon Congress to eliminate the presumption of validity, now given to patents out of deference to the PTO.[142] Rebuttable only by "clear and convincing evidence," the presumption increases costs for defendants and leverage for PAEs.[143] It might also extend the life of an invalid patent and the number of defendants a PAE can assert it against.

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[135] The doctrine provides for "enhanced" damages and attorney's fees when a plaintiff shows that the infringer "acted despite objectively high likelihood that its actions constituted infringement of a valid patent." *In re* Seagate Tech., LLC, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (en banc).

[136] *See* Lemley, *supra* note 12, at 631.

[137] Congress has considered legislation that would only permit plaintiffs to plead willfulness in situations where the patent "is not invalid, enforceable and has been infringed by the infringer." *See* Emily M. Van Vliet, *Patent Reform: Addressing Patent Trolling in the IT Industry While Balancing Innovation and Intellectual Property Rights*, 10 J. ENG. & PUB. POL'Y 13 (2006).

[138] The calculated risk is higher due to the enhanced damages.

[139] *See* ITC House Hearing, *supra* note 2 (statement of Connie V. Chien).

[140] *Id*.; ITC Senate Hearing, *supra* note 2.

[141] *See* U.S. INTERNATIONAL TRADE COMMISSION, *supra* note 100.

[142] *See* Doug Lichtman & Mark A. Lemley, *Rethinking Patent Law's Presumption of Validity,* 60 STAN. L. REV. 45 (2007). Scholars say the rule has backfired and stems from an unrealistic trust in the PTO:

> The theoretical justification is that patent examiners have expertise when it comes to questions of patent validity, and if patent examiners have decided that a given invention qualifies for protection, judges and juries should not second-guess the experts. But the reality is that PTO expertise is brought to bear under such poor conditions that any advantages associated with expertise are overwhelmed by the disadvantages associated where information is a natural product of the adversarial process, and where financial constraints are reduced because only a tiny fraction of all issued patents end up sufficiently valuable and contentious to warrant litigation." *Id*.

[143] 35 U.S.C. §282. For more information on the "clear and convincing evidence" standard, *see* CRS Report R41994, *The Supreme Court Decision in Microsoft v. i4i: Implications for Innovation Policy*, by John R. Thomas.

Another common suggestion is to change royalty calculation rules, which often provide damages "disproportionate" to the contribution of the infringed patent as a portion or component of the overall product.[144] Critics posit that in the IT sector, "if every patented portion of an invention was licensed at the same rate as the infringed patent, the inventor would face a net loss."[145] The 110th and 111th Congresses considered legislation to address this issue, but nothing was passed.[146] Observers indicate that IT interests support such changes due to the many components in each of their products while pharmaceutical, biotechnology, and NPE or PAE interests have opposed it.[147] Congress could consider IT-specific royalty reforms.

Escalating Costs or Diminishing Rights Over Time

Many changes proposed by scholars target the practice of sitting on a patent until infringement and/or lock-in to a plausibly infringing technology have occurred and only then notifying targets of the patent and offering them licenses. One idea that has been floated is to decrease the patent period for IT patents, which are quickly outdated yet litigated aggressively through the end of their 20-year terms.[148] A forthcoming study by Brian J. Love shows that it may be that a shorter term would primarily harm PAEs:[149]

> Product companies predominately enforce their patents soon after they issue and complete their enforcement activities well before their patents expire. NPEs,[150] on the other hand, begin asserting their patents relatively late in the patent term and frequently continue to litigate their patents to the verge of expiration. Indeed, I find that the average product-company patent has been shelved by its owner before the average NPE patent has even been asserted.[151]

NPEs account for the majority of suits brought in the final three years of the patent term,[152] and the product firms that litigate late in the term are "a unique group of companies that . . . blur the line between practicing entities and trolls."[153] Love's study also finds that high-tech patents represent an outsized portion of patents litigated in the last three years of their terms, comprising 86 percent for NPEs and 72 percent for product firms, even though most 18- or 20-year-old software patents are likely outdated.[154]

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[144] *See* Lemley, *supra* note 12, at 630–31.
[145] *Id*., at 631; Emily M. Van Vliet, *Patent Reform: Addressing Patent Trolling in the IT Industry while Balancing Innovation and Intellectual Property Rights*, 10 J. ENG. & PUB. POL'Y 15 (2006).
[146] *See* CRS Report R40481, *Patent Reform in the 111th Congress: Innovation Issues*, by Wendy H. Schacht and John R. Thomas (discussing H.R. 1260 §5(a); S. 515 §4(a); S. 610 §4(a)); CRS Report RL33996, *Patent Reform in the 110th Congress: Innovation Issues*, by John R. Thomas and Wendy H. Schacht (discussing H.R. 1908 §5(a); S. 1145 §4(a)).
[147] *Id*.
[148] Love, *supra* note 34.
[149] *Id*. at 3.
[150] "Notably, NPEs' domination of late-term litigation is almost completely attributable to firms that do nothing more than hold patents." *Id*. In other words, the "NPEs" referred to here are essentially all PAEs.
[151] *Id*.
[152] *Id*.
[153] *Id*.
[154] *Id.*

An alternative to shortening the patent term would involve changes to the maintenance fees that patent holders pay at certain points in the patent term to keep their rights in force.[155] Fees could escalate over the life of the patent or increase with each renewal and apply across the board or just for inactive patents, entities with big portfolios, or IT-related patents. Another possibility is cost- and burden-shifting in the latter half of the patent term.

Consequences for Dormancy

Under other variations, patent owners could face repercussions if they neglect to engage in bona fide use, development, or licensing of their patents for a set number of years.[156] The conditions triggering such effects might be modeled after that for trademark "abandonment" under the Lanham Act: non-use with the intent not to use in the reasonably foreseeable future.[157]

Not practicing a patent for a number of years could be prima facie evidence of abandonment that patent owners would have to rebut before any infringement suit could proceed. Evidence of efforts to develop, commercialize, or license the patent would rebut the prima facie assumption as long as they are both bona fide—not taken "merely to reserve a right"—and done in good faith. Ex post licensing would not qualify as a use, and availability through a designated clearinghouse of some kind might be required.[158]

As for the effect triggered by the period of non-use, options range from cancellation to the shifting of costs and burdens onto PAEs, diminishing their leverage and increasing their costs. Other ideas include removing the presumption of validity, subjecting plaintiffs to heightened pleading and production requirements, or freezing until the patent owner begins to use it.

Patent Market

A leading scholar and a leading PAE have partnered to advocate consideration of another reform: requiring publication of patent assignment and license terms.[159] Mark Lemley of Stanford Law School and Nathan Myhrvold of Intellectual Ventures point out that patents currently exist in an

[155] *Id*. at 43 n. 156.
[156] *Id*. (citing Janice M. Mueller, *The Tiger Awakens*, 68 U. PITT. L. REV. 491, 593–97 (2007)).
[157] Marks are deemed "abandoned" under 15 U.S.C. §1127 if either of the following occurs:

> (1) When its use has been discontinued with intent not to resume such use. Intent not to resume may be inferred from circumstances. Nonuse for 3 consecutive years shall be prima facie evidence of abandonment. "Use" of a mark means the bona fide use of such mark made in the ordinary course of trade, and not made merely to reserve a right in a mark.
>
> (2) When any course of conduct of the owner, including acts of omission as well as commission, causes the mark to become the generic name for the goods or services on or in connection with which it is used or otherwise to lose its significance as a mark. Purchaser motivation shall not be a test for determining abandonment under this paragraph.

[158] This would make it easier for defendants to find relevant patents and then actually license them, which would address the issue of PAEs using shell companies and other tactics to make their patents difficult to find and license. *See* Ewing & Feldman, *supra* note 44, at 3–8.
[159] Mark A. Lemley & Nathan Myhrvold, *How to Make a Patent Market*, 20 HOFSTRA L. REV. 101 (2009).

inefficient blind market.[160] The publication requirement would not solve the uncertainty and notice issues, but:

> [I]t will permit the aggregate record of what companies pay for rights to signal what particular patents are worth and how strong they are, just as derivative financial instruments allow market to evaluate and price other forms of risk. It will help rationalize patent transactions, turning them from secret, one-off negotiations into a real, working market for patents. And by making it clear to courts and the world at large what the normal price is for patent rights, it will make it that much harder for a few unscrupulous patent owners to hold up legitimate innovators, and for established companies to systematically infringe the rights of others.[161]

Lemley and Myhrvold anticipate concerns that patent holders would not license their patents if they had to disclose the licenses but suggest that this is a less a problem than people might think, concluding that "[t]he only people who stand to lose from mandatory disclosure of licenses are those who are taking advantage of the current state of ignorance."[162]

Author Contact Information

Brian T. Yeh
Legislative Attorney
byeh@crs.loc.gov, 7-5182

Acknowledgments

This report was originally prepared by Melanie Kiser, former Law Clerk in the American Law Division, under the supervision of Brian T. Yeh.

[160] *Id*.
[161] *Id*. at 102.
[162] *Id*. at 103.