



**Comments of the Korea Semiconductor Industry Association
On Patent Assertion Entity (PAE) Activities**

April 5, 2013

The Korea Semiconductor Industry Association (KSIA) welcomes the opportunity to submit these comments to the U.S. Department of Justice, Antitrust Division, and the U.S. Federal Trade Commission, regarding the activities of Patent Assertion Entities (PAEs). The KSIA hopes that these comments are helpful to the agencies' analysis of this important issue and respectfully requests that these comments be taken into account as policies are developed to address these serious concerns.

The KSIA is an industry association, based in Seoul, Korea, which represents more than 300 companies in the semiconductor manufacturing sector, involved in all aspects of semiconductor device manufacturing as well as semiconductor equipment, materials, and design. Many of its member companies are world leaders in developing advanced semiconductor technologies. The KSIA's primary objectives include promotion of its members' products and the further advancement of technological development in Korea's semiconductor industry. The KSIA is dedicated to providing opportunities for promoting cooperation among its members and members of international organizations in the areas of device, equipment and material suppliers.

The world's semiconductor industry, of which KSIA members are an important part, plays a vital role in the technological advancement and increased efficiency of nearly every facet of society. In addition to the well-known advances in computers, data storage, networks and mobile technologies, semiconductors today are driving new technologies that advance energy efficiency and safety in myriad

ways. New designs in semiconductors are at the heart of products that produce safety and energy savings across many important sectors: renewable energy (semiconductors are an enabling technology for solar photovoltaic panels and wind turbines); solid state lighting (new generation LED bulbs); advanced consumer electronics and household appliances; automobile safety and controls systems; server and data center systems; smart metering; and a wide variety of industrial applications that promote energy efficiency, systems controls and safety.

Semiconductor producers achieve these tremendous advances by devoting extraordinary efforts to innovation. Compared to most other industries, semiconductor producers invest a very high percentage of their revenues in research and development. The intellectual property that results from this investment is the lifeblood of these companies. Failure to adequately protect IP is damaging to the semiconductor industry and ultimately impedes the innovation and technological progress that has benefited consumers around the world. The rapid growth of non-practicing entities (NPEs) and PAEs, and the sometimes abusive litigation tactics that such entities pursue, likewise threatens to impede the innovation in semiconductor technologies that is vital to our industry and to countless downstream sectors and ultimate consumers.

KSIA member companies have observed in recent years the significant and growing costs that PAEs/NPEs¹ impose on innovation-driven industries such as the semiconductor industry. KSIA member companies' experience has tracked the experience of other high technology industries. We note that published research has found that NPE lawsuits were associated with \$500 billion of losses to defendants from 1990 through 2010. During the last four years the lost wealth has averaged over \$80 billion per year. These defendants are mostly technology companies, such as semiconductor producers, who invest heavily in R&D. One study found that PAE litigation in another technology industry caused sales to decline by

¹ In these comments the KSIA adopts generally the term "PAEs" as used by the Department of Justice and FTC in its workshop. We note that although the definitions of "PAE" and "NPE" given by various scholars and organizations has varied, for purposes of these comments we follow the FTC's description of PAEs as entities that purchase patents from existing owners and seek to maximize revenues by licensing the intellectual property to (or litigating against) manufacturers who are already using the patented technology.

one-third, due to “a lack of incremental product innovation during the period of litigation.”² To the extent that this litigation represents an unavoidable business cost to technology developers, it reduces the profits that these firms make on their technology investments. Accordingly, these lawsuits substantially reduce the industry’s incentives to innovate.³ And the problem is getting worse. Witnesses testifying at the December 2012 Justice Department/FTC Joint Workshop on PAE Activities cited data showing a dramatic rise in both absolute numbers of PAE lawsuits and their share of all patent enforcement activity in recent years. According to one prominent study, for example, PAE-initiated patent suits increased from 569 new cases in 2006 to 2544 new cases in 2012 through December 1; and from 19% of all new patent suits in 2006 to more than 60% of all new patent suits in 2012 through December 1. Before the International Trade Commission (ITC), there was a ten-fold increase between 2010 and 2011 in the number of Defendants named in PAE litigation.⁴ The KSIA agrees with former FTC Chairman Leibowitz’s focus on published studies that show “PAE-generated revenue cost defendants and licensees \$29 billion in 2011, a 400% increase from 2005” and that no more than 25% of that total flowed back to innovation. KSIA member companies agree with the Chairman’s concern: PAE activity may well be “driving us off a patent cliff.”

The KSIA further notes that a steady stream of scholarly studies since 2010 re-affirm the fact that PAE activities by and large fail to promote invention overall. One such study found that publicly-traded NPEs cost small and medium-sized firms more money than these NPEs could possibly transfer to inventors. This of course reduces the net amount that firms of any size have available to invest in

² Tucker, *Patent Trolls and Technology Diffusion*, Massachusetts Institute of Technology - Management Science Working Paper (March 26, 2013), <http://ssrn.com/abstract=1976593>.

³ Bessen, Ford & Meurer, *The Private And Social Costs Of Patent Trolls*, Boston University School of Law Working Paper No. 11-45 (Nov. 9, 2011).

⁴ *The International Trade Commission and Patent Disputes: Hearing Before the Subcommittee on Intellectual Property, Competition and the Internet*, 112th Congress (July 18, 2012) (Statement of Bob Goodlatte, Subcommittee Chairman).

innovation. One of the most recent studies, released late last year, analyzes detailed data on PAE activity during the five-year period 2007 through 2011 and reaches the following significant conclusions:⁵

- Lawsuits filed by PAEs have increased significantly over the five-year period. The sheer number of cases has increased, as well as the percentage of overall case filings represented by PAEs. In other words, lawsuits filed by PAEs are on the rise, while lawsuits filed by operating companies have fallen.
- Lawsuits filed by PAEs increased from 22% of the cases filed five years ago to almost 40% of the cases filed in the most recent year. In addition, PAEs were also heavily represented in the list of those who filed the greatest number of lawsuits. Of the five parties in the sample who filed the greatest number of lawsuits during the period studied, four were PAEs and only one was an operating company.
- The data also show that cases filed by PAEs were unlikely to advance very far in the trial process and often settled prior to a summary judgment decision.
- The data confirm in a dramatic fashion what many scholars and commentators have suspected: PAEs play a role in a substantial portion of the lawsuits filed today. The results are even more striking, given that the study examined only disputes that progressed to the courtroom. From all appearances, lawsuits filed are only the tip of the iceberg, and a major operating company may face hundreds of invitations to license for every lawsuit. Much of the bargaining, posturing, and payment concludes without any party filing suit. Thus, the findings likely understate the true impact of PAEs on the patent system, and on the economy, as a whole.

The KSIA shares the serious concern expressed by scholars and industry observers alike that the adverse impact of PAE activity on innovation is substantial and increasing. The FTC itself noted this

⁵ Jeruss, Feldman & Walker, *The America Invents Act 500: Effects Of Patent Monetization Entities on US Litigation*, 11 Duke Law & Technology Review 358 (2012).

concern in its March 2011 report on “The Evolving IP Marketplace.” The FTC devoted a substantial part of its study to the “the effect of increasing PAE activity and patent market complexity on innovation and competition and how patent policy should respond.”⁶ On this point, the FTC reached the following conclusion:

The effect of these developments, like the effect of ex post transactions generally, can be detrimental to innovation. Moreover, some of the asserted benefits of PAE activity appear, on closer inspection, ambiguous at best.⁷

KSIA member companies, whose focus on invention and innovation is the hallmark and lifeblood of their operations, are keenly aware of the significant costs and serious detriment to innovation that unchecked PAE activity creates in the semiconductor industry. In line with the increased scholarly focus on the impact of PAE activity on high technology industries in particular, the KSIA commissioned in 2011 a third-party study to address the effects of NPE patent litigation on the semiconductor industry specifically. This study was conducted by Dr. John R. Allison, the Spence Centennial Professor of Business Administration, and Professor of Intellectual Property, McCombs Graduate School of Business, University of Texas at Austin. Dr. Allison is the author of several previous landmark studies on the impact of patent litigation on certain high technology sectors.⁸

Dr. Allison’s study on the impact of NPE patent litigation on the semiconductor industry is attached in full.⁹ The KSIA notes that the analysis and conclusions of Dr. Allison track very closely to the other scholarly studies referred to above and in the testimony before the Department of Justice and

⁶ U.S. Federal Trade Commission, “The Evolving IP Marketplace: Aligning Patent Notice and Remedies with Competition” (March 2011) at 60-71.

⁷ *Id.* at 68.

⁸ See, e.g., John R. Allison, Mark A. Lemley, & Joshua Walker, *Patent Quality and Settlement Among Repeat Patent Litigants*, 99 *Geo. L. Rev.* 677, 701 (2011).

⁹ John R. Allison, *The Effects of NPE Patent Litigation on the Semiconductor Industry* (2012), attached.

FTC in their joint PAE Workshop.¹⁰ In particular, the KSIA points to the following key observations and conclusions by Dr. Allison:

- NPE litigation in the high technology industries represented 75% of all active litigation matters. More than half the executives surveyed in a recent study by Article One partners reported that NPE litigation increased over last year, with a median estimated increase of 22%.¹¹
- The number of patent litigations by NPEs against semiconductor companies increased dramatically between 2000 and 2011. After finding no NPE lawsuits filed in 2000, the number of these cases rose steadily from 2001 to 2006, and then accelerated dramatically from 2007 to 2009.¹²
- Of the 147 total cases, 108 cases had been terminated by the time of the study, and of those 98 were settled before the court decided the case. Only four were resolved by court judgments on the merits. Of these four court judgments, only one was a win by an NPE patent owner, and that win was at trial on both infringement and validity.¹³
- In summary, NPEs prevailed on the merits in less than 1 percent of the litigations that reached a conclusion (termination) during the 10-1/2 year study period.¹⁴
- The risk of incurring high litigation defense costs because of NPEs is extremely high. In its 2009 economic survey, the American Intellectual Property Law Association (AIPLA) reported that the

¹⁰ We note that Dr. Allison's study analyzes a particular variety of NPE, which he refers to as the "Type 7 NPE," defined as "individuals or companies whose only or primary business is buying patents from others for the purpose of licensing and litigating them." Allison, *supra* n.7, at 5. In general this version of the NPE definition tracks the description of "PAE" in the context of the Justice Department and FTC's PAE Workshop.

¹¹ Allison, *supra* n.7, at 67.

¹² *Id.* at 62.

¹³ *Id.* at 60.

¹⁴ *Id.*

median litigation costs per party in large patent infringement cases (stakes exceeding \$25 million) through the end of discovery was \$3 million. This was twice the amount it had been eight years earlier in 2001.¹⁵

- In a direct survey of world-wide semiconductor producers (not limited to KSIA member companies), Dr. Allison found that the respondents unanimously reported that U.S. patent infringement lawsuits by NPEs are a moderate or large problem for the semiconductor industry. All respondents also confirmed their experience that NPEs are abusing the litigation system, often asserting patents of questionable value, and threatening semiconductor companies' customers. Several of the respondents emphasized that defending against NPE litigation causes semiconductor firms to divert resources away from productive activities.¹⁶

The study commissioned by the KSIA also addresses one of the principal questions before the Justice Department and the FTC in its joint PAE Workshop: the antitrust implications from PAE activities. Dr. Allison's analysis follows closely on observations regarding the antitrust implications of PAEs seen in other recent studies, including that of the FTC itself. Dr. Allison concludes that, while the question of economic power in a given defined economic market is critical, a major investor in a PAE could in theory possess dominant economic power in a given market, and thus the PAE's patent activities might extend such power in an anticompetitive manner. Dr. Allison also discusses Section 5 of the Federal Trade Commission (FTC) Act, which prohibits "unfair methods of completion and deceptive trade practices," and the FTC's application of this in a manner that closely tracks U.S. antitrust laws, such as section 1 of the Sherman Act (contracts, combinations, and conspiracies in restraint of trade), section 2 of the Sherman Act (monopolization and attempted monopolization), and section 7 of the Clayton Act (corporate mergers and acquisitions that "tend to" create a monopoly or an unreasonable limitation on

¹⁵ *Id.* at 61.

¹⁶ *Id.* at 76-77.

completion). Dr. Allison's study examines possible NPE violations of Section 5 and concludes that although normal patent enforcement activities by NPEs would not normally violate section 5 of the FTC Act, it is possible that some unusual NPE behavior could do so.¹⁷

These analyses are borne out by the FTC's own consideration of the antitrust implications of PAE activity. As the FTC stated in its March 2011 report:

Increasing activity by patent assertion entities (PAEs) in the information technology (IT) industry has amplified concerns about the effects of ex post patent transactions on innovation and competition. The business model of PAEs focuses on purchasing and asserting patents against manufacturers already using the technology, rather than developing and transferring technology. Some argue that PAEs encourage innovation by compensating inventors, but this argument ignores the fact that invention is only the first step in a long process of innovation. *Even if PAEs arguably encourage invention, they can deter innovation by raising costs and risks without making a technological contribution.*

The clear benefits for innovation and competition stemming from ex ante patent transactions *contrast with the detrimental and ambiguous effects of ex post transactions*. An important goal in aligning the patent system and competition policy is to facilitate ex ante transactions while making ex post transactions less necessary or frequent.¹⁸

The KSIA believes that additional study and actions in this area are warranted. These should focus on the following important goals:

- i. Ensure that industry standards cannot be used to create patent "hold-up," for example by PAEs who refuse to license standards-essential-patents on FRAND terms;
- ii. Prevent PAEs from obtaining injunctions to prohibit the use of their patents in situations where damages and/or future royalty payments will redress any patent infringement;

¹⁷ *Id.* at 96.

¹⁸ U.S. Federal Trade Commission, *supra* n.4, at 8-9 (emphasis added).

- iii. Ensure transparency so that licensees can know the true owner of patents, whether they are legitimate, and the true scope of patent portfolios;
- iv. Consider litigation reforms, for example by requiring PAEs to pay attorneys' fees when their lawsuits are unsuccessful; and
- v. Encourage antitrust authorities to protect consumers and competition by ensuring that artificial market power held by PAEs is not abused to the detriment of licensees and/or the small businesses and individuals who rely on their innovative products. That should include both investigations into abusive conduct and review of the acquisition of patent portfolios.

The KSIA welcomes the focus by the FTC and the Department of Justice on the increasingly detrimental phenomenon of unchecked PAE activities. We encourage the agencies to develop policies and legal principles, including addressing the concerns listed above, that will help eliminate abusive PAE litigation that does nothing to make a technological contribution but instead deters sound and lasting investments in real innovation. Members of the semiconductor industry, who devote significant resources to the invention, design and manufacture of innovative and advanced technologies, deserve a patent enforcement system that encourages and protects such innovation, and that as a result benefits society as a whole.

The Effect of NPE Patent Litigation on the Semiconductor Industry

A Study for the Korean Semiconductor Industry Association

By John R. Allison *

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I. Purpose and Objectives of the Study

Lawsuits for patent infringement in the United States brought by so-called Non-Practicing Entities (NPEs) have become a matter of heightened concern for many manufacturers throughout the world, including semiconductor companies and the customers to which they sell.

This study seeks to shed more light on the U.S. NPE patent litigation phenomenon in the context of the worldwide semiconductor industry. The report that follows first defines and discusses what an NPE is, the kinds of NPEs that have and have not engaged in troubling patent enforcement behavior, and then provides detailed profiles of several NPEs that have been active in filing patent infringement cases against semiconductor firms and purchasers of their products. The report then delineates the scope of the problem by providing original statistics on these kinds of cases initiated in the U.S. since January 1, 2000. Statistics about NPE litigation from other sources are also reported, including those from a survey taken by Article One Partners, and from PatentFreedom LLC. Next, the report analyzes responses to a survey that was developed with the help of the Korean Semiconductor Industry Association (KSIA).¹ I also discuss several recent legal developments and attempt to show how these developments may help to alleviate the NPE litigation problem. The report then examines and evaluates strategies and other courses of action that might be useful in confronting the problem of NPE patent litigation.

II. What is an NPE?

The term “NPE,” or “Non-Practicing Entity” refers generally to an individual, company, or other entity that owns patents but that does not make products. The breadth of this definition obviously sweeps within its scope a wide variety of entities that may or may

¹ The response rate to the survey was disappointingly low, so any conclusions drawn from the survey must be viewed with caution.

not engage in abusive patent litigation practices. Sometimes the pejorative term “patent troll” is used, calling up a vision of a troll from fairy tales that hides under a bridge to accost travelers and demand payment before being allowed to cross the bridge. I prefer to not use the term “patent troll” because of its imprecision and unnecessarily negative connotation. Non-practicing entities also are sometimes referred to as “patent assertion entities (PAEs),” “patent aggregators,” “patent licensing shops,” and “patent holding companies.”

One of the most important differences between patent lawsuits instituted by NPEs and those brought by manufacturers is that NPEs by definition do not make, use, or sell products or provide services that might possibly infringe on one or more patents owned by the defendant. Consequently, an NPE does not confront the risk of becoming the target of a counterclaim for infringement asserted by the defendant. Thus, it may be less reluctant to sue even when it asserts relatively weak patents.

Patent-owning entities that do not make products or provide services can take a number of forms, and can be classified in a variety of ways. One reasonable way to classify them by type follows:

- (1) Independent inventors who have not assigned or exclusively licensed their patents to companies with manufacturing capabilities.
- (2) Start-ups and other small companies formed by the inventor.
- (3) Universities.
- (4) Companies that have been spun off from universities for the purpose of licensing patents.
- (5) Research foundations.
- (6) Patent owning subsidiaries of manufacturing companies.

(7) Individuals or companies whose only or primary business is buying patents from others for the purpose of licensing and litigating them. A few of these entities also develop some of their own patented technology, but most of their patents have been purchased.

Although any of these types of NPE may own “good” or “bad” patents, or both, and any type of NPE can engage in abusive patent litigation practices, it appears that (7) is the kind of NPE that is most likely to engage in the kind of behavior the merits the name “patent troll.” To differentiate this type of NPE from others, some observers refer to them as Patent Assertion Entities (PAEs).

Those that engage in the kinds of litigation activities that many people condemn are companies that do not engage in research and development, and do not invent, but instead simply acquire portfolios of patents for the sole purpose of asserting them against others in litigation and seeking license payments that they may be able to get just because of extremely high litigation defense costs. There can be a legitimate difference of opinion, however, about whether this makes the patent owner a “bad actor,” and if so, to what extent. Some observers argue that there is nothing wrong with such activity if the patents being asserted are good ones, i.e., if the patents cover novel and nonobvious inventions and thus were properly granted by the U.S. Patent & Trademark Office (PTO). The gist of this argument is that patents are simply assets, and if they are legitimate, the public has benefited from public disclosure of the details of the covered inventions, and there is nothing wrong with exploiting their economic value.

Many observers believe, however, that it is much more common for individuals or companies in category (7) to own and assert patents of doubtful validity. They are more likely to sue large numbers of unrelated defendants in the same lawsuit for allegedly infringing the same patent. When these patent owners sue large numbers of defendants in the same lawsuit, they are able to enjoy economies of scale in litigation,

and probably decrease the risk that their patents will be ruled invalid because there is only one decision maker. Regarding the last statement concerning reducing the risk of invalidity judgments, the reason is that there will not be many different judges and juries with a separate “bite and the apple.” There is no way to prove this proposition empirically, but it seems to be a logical assertion.

This category of NPE also appears more likely than other patent owners to engage in the practice of suing defendants for making, using, or selling products that have little to do with the claims in the NPE’s patents, and to use other litigation tactics that could be called abusive. They also seem to be more likely to file complaints with little or no detail in them, making it very difficult for defendants to answer, and forcing the defendants to engage in lengthy and very expensive pretrial discovery.

NPEs of type number (7) often have been able to profit from these activities even when their patents are probably not valid because many defendants will settle and pay license fees to avoid the huge costs required to defend against patent lawsuits. When NPEs do not achieve settlements, they usually lose their cases. However, they only have to “strike it big” occasionally for the strategy to pay off.

It is also true that this type of NPE sometimes asserts questionable patents against smaller companies, and not just against large manufacturers. In such cases, the small company defendant often does not have the resources to defend against the lawsuit and challenge the validity of the patent. They are more likely to just pay license fees whether the patents are valid and infringed or not.

Finally, it is important to note that large companies, including manufacturers, are also capable of engaging in abusing the patent system. It has been alleged, for example, that some large companies have engaged in “patent bullying” by using their much greater resources.² Such activities are not, however, the subject of this report.

² See Ted Sichelman, *The Vonage Trilogy: A Case Study in Patent Bullying*, in PERSPECTIVES ON PATENTABLE SUBJECT MATTER (Michael Abramowicz, John Duffy, & F. Scott Kief, eds., 2011).

III. Recognition of the Problem

A. Study Ordered by Congress

In the America Invents Act (AIA) that was signed by President Obama on September 16, 2011, Congress identified patent infringement lawsuits by NPEs as presenting a significant enough problem for the U.S. economy that it order the General Accountability Office (GAO) to study the phenomenon in depth and report to Congress one year after the effective date of the AIA (i.e., by September 16, 2012). That provision of the AIA specifies the following:

STUDY OF PATENT LITIGATION.—

(1) **GAO STUDY.**—The Comptroller General of the United States shall conduct a study of the consequences of litigation by non-practicing entities, or by patent assertion entities, related to patent claims made under title 35, United States Code, and regulations authorized by that title.

(2) **CONTENTS OF STUDY.**—The study conducted under this subsection shall include the following:

(A) The annual volume of litigation described in paragraph (1) over the 20-year period ending on the date of the enactment of this Act.

(B) The volume of cases comprising such litigation that are found to be without merit after judicial review.

(C) The impacts of such litigation on the time required to resolve patent claims.

(D) The estimated costs, including the estimated cost of defense, associated with such litigation for patent holders, patent licensors, patent licensees, and inventors, and for users of alternate or competing innovations.

(E) The economic impact of such litigation on the economy of the United States, including the impact on inventors, job creation, employers, employees, and consumers.

(F) The benefit to commerce, if any, supplied by non-practicing entities or patent assertion entities that prosecute such litigation.

(3) REPORT TO CONGRESS.—The Comptroller General shall, not later than the date that is 1 year after the date of the enactment of this Act, submit to the Committee on the Judiciary of the House of Representatives and the Committee on the Judiciary of the Senate a report on the results of the study required under this subsection, including recommendations for any changes to laws and regulations that will minimize any negative impact of patent litigation that was the subject of such study.

The GAO will not be complete its congressionally ordered study until several months after my report is submitted, and it will be interesting to see the data and conclusions that the GAO produces. The GAO report will not focus on the semiconductor industry, but will presumably examine the effects of the NPE patent litigation contexts in all U.S. economic sectors. The study may very well provide information that is useful to the semiconductor industry because it is generally known that NPE activity has been much greater in the computer industry than in any other. Although semiconductor design and fabrication bears all of the hallmarks of an industry itself, it is reasonable to also include it within a broad definition of the computer industry. The reputation, experience, and resources of the GAO may enable it to obtain information through interviews and hearings that other investigators would might not.

It will be exceptionally difficult, however, for the GAO to obtain relatively complete and reliable data on NPE litigation going back twenty years. Although federal district courts have been nominally required for many years to report basic information on filed cases, including the subject matter (such as patent infringement), they have begun to do so in a majority of cases only in recent years. When information on federal court filings before, say, 2000, is sought, the results inevitably will be very incomplete. Indeed, federal courts still do not report on all of their cases, but the problem was much worse a few years ago. Case files, including docket sheets and documents filed in the case such as pleadings, motions, and orders are supposed to be available in the PACER electronic database,³ but the quality of those records is characterized by much variation, especially as one goes farther back in time. Even in recent times, there are many court documents that should be available in the .pdf file format but that are missing. The GAO has no special ability to gain access, because as the name implies, these records are available to the public. On the other hand, it can quickly become very expensive when one seeks information on large numbers of cases, and perhaps the GAO can obtain patent infringement case dockets and documents without the expense that someone else would have to incur.

The GAO also will encounter the same problems as any other investigator in acquiring information about settlement terms. They are confidential, and not even the GAO can gain access. As seen in the statistics that I developed for NPE patent litigation against semiconductor firms, most of these cases are settled, and there is simply no way to get a really good fix on the economic impact of these cases without access to settlement terms.

B. 2011 Federal Trade Commission Report

³ PACER is an acronym for Public Access to Court Electronic Records. <http://www.uscourts.gov/CourtRecords.aspx>

The Federal Trade Commission (FTC) issued a report in March 2011 titled “The Evolving IP Marketplace—Aligning Patent Notice and Remedies with Competition,” a report of more than 300 pages. Based on input from diverse participants received at public hearings, the report addresses a number of issues concerning the effects of patents and their enforcement on competition. More specifically, the FTC focuses on what it perceives as deficiencies in the patent system’s performance of the “public notice” function—the need to put the public and other companies on notice of the exact boundaries of the exclusive rights created by the patent grant. At several points, the FTC does discuss patent enforcement by NPEs, which the agency chooses to call PAEs (Patent Assertion Entities) to differentiate between the kinds of patent owners in my category (7) from other kinds of NPEs that appear to engage in abusive patent litigation less frequently. The agency characterizes some of the issues surrounding licensing and litigation by PAEs as resulting from a failure of the system to adequately perform the notice function.

The FTC states, quite correctly, I think, that the large backlog of applications in the PTO contributes to inadequate notice. There are far too many patent applications waiting for patent office action for too long while others who might infringe the patent after issuance do not know about it. In a very recent letter from David Kappos, head of the U.S. Patent and Trademark Office (PTO), to the Patent Advisory Council, the current annual backlog of applications is approximately 650,000 annually. This is the number by which new patent applications exceeds the number of application that are granted, finally rejected, or abandoned every year. Director Kappos reported to the Council that the current 2010-2015 strategic plan calls for reduction of the backlog to 329,500 by 2015, but that achieving this goal requires an even greater infusion of resources that will probably require further increases in fees for applicants.⁴

⁴ David J. Kappos, Under-Secretary of Commerce & Director, U.S. Patent & Trademark Office, http://www.uspto.gov/aia_implementation/uspto_transmittal_letter_to_ppac_7feb12_final.pdf . Although further fee increases may be inevitable, the development cannot be good for independent inventors, startups, or other small companies. On the other hand, the application backlogs that have been

The fact that most patent applications have been published eighteen months after filing in the U.S. since March 2001 decreases the problem of secret patent applications sitting in the PTO for long periods of time, it does not completely solve the problem because the language of patent claims can change significantly between the time that the application is published and the time that a patent is finally granted and published. Eighteen-month publication does help, of course, and it is a welcome development that the America Invents Act requires publication of all applications eighteen months after initial filing rather than just most of them.⁵

The FTC argues that that inadequate fulfillment of the notice function by the patent system leads too often to *ex post* licensing, or litigation caused by a failure to achieve *ex ante* licensing. When referring to *ex ante* licensing, the FTC is speaking of a situation in which the inventor licenses the patent to a manufacturer *before* that or any other manufacturer has invested in developing and commercializing the technology. When *ex post* licensing occurs—licensing that occurs after one or more manufacturers has already made such an investment—the manufacturer pays for a license in order to avoid infringement liability. It is almost certainly true that manufacturers pay more for a license in such situations because they already have substantial sunk costs and usually do not want to waste the investment they have already made by abandoning the technology. Whether manufacturers pay more for licenses in these situations is an empirical question, and only anecdotal information is available to support the hypothesis. Systematic data sufficient for sophisticated statistical analysis is not available. However, economic theory based on the sunk cost theory supports the proposition that *ex post* licensing is more costly for manufacturers. Sunk cost theory also suggests strongly that manufacturers facing *ex post* licensing pay more on average

accumulating during the past several years have been interfering with the ability of many startups to obtain adequate financing.

⁵ Congress amended U.S. patent law in 1999 to require publication eighteen months after original filing of all patent applications except those covering inventions for which the applicant agreed that it would not seek patent protection in other countries. Actual publication then began occurring in March 2001.

than they would with *ex ante* licensing. Accused infringers are likely to pay even more for *ex post* licenses when the patent being asserted covers a technology that is only one part of a defendant manufacturer's product, and when circumstances do not lead courts to use damage apportionment instead of the entire market value rule for calculating damages and royalties. Apportionment and the entire market value rule are discussed later in this report.

Although the FTC is undeniably correct, it is difficult to conceive of a remedy for the problem because potential remedies would impose other kinds of substantial costs on invention and innovation. In a recent exchange between Professors Mark Lemley and Samson Vermont in the *Michigan Law Review*,⁶ the authors debated the wisdom of creating a defense to a patent infringement claim for defendants that independently developed the technology rather than copying it. These papers showed that there is no evidence of copying in most patent infringement cases.⁷ The primary advantage of an independent inventor defense is that it would eliminate most patent litigation by Type (7) NPEs and greatly reduce the amount of *ex post* licensing.

Professor Lemley observes that an independent invention defense could seriously undermine innovation in situations where R&D costs are very high, as in the pharmaceutical business. He posits that those at a company are relatively sure that they will be able to ultimately achieve success, such as producing a needed pharmaceutical drug, but know that the development costs will be very high, are likely to be dissuaded from pursuing the project because of a meaningful chance that a competitor might independently develop the same drug. This situation is contrasted

⁶ Mark A. Lemley, *Should Patent Infringement Require Proof of Copying?*, 105 MICH. L. REV. 1525 (2007); Samson Vermont, *Independent Invention as a Defense to Patent Infringement*, 105 MICH. L. REV. 475 (2006).

⁷ Of course, the penalties for infringement can potentially be greater in cases of copying if the patent owner can prove willful infringement, but such proof requires more than just evidence of copying.

with one in which there is much uncertainty about possible success but where the costs are not nearly as high.⁸

Some theorists believe that one of the important objectives of patent and other intellectual property laws is to place ownership of the creative effort in specific hands so that coordination of the development of the creation will be easier, thus increasing the probability that the products of create efforts will be more efficiently utilized. They believe that such coordination is more efficient than competition among those who have produced creative products such as inventions. These theorists would oppose an independent invention defense because it would increase the chances that more than one independent inventor would have ownership rights to an invention.⁹ According to Lemley, to the extent that such theories may reflect reality, they are more likely to apply only in certain industries such as pharmaceuticals and in certain contexts such as university inventing.¹⁰ Lemley argues, on the other hand, that an independent invention defense may make good economic sense in the information technology industries.¹¹ On a continuum between those industries and situations in which an independent invention defense may be good economic policy (such as pharmaceuticals and university inventing) and those in which it may not be (such as software), it is likely that semiconductor technology other than software would fall somewhere in the middle. The mere fact that an independent invention defense is likely to have major effects on innovation that are quite different in different industries and situations argues against the enactment of such a defense. If different patent rules apply to different types of

⁸ Lemley, *Should Patent Infringement Require Proof of Copying?*, *supra* note 7, at 1528-29. With regard to the costs imposed on manufacturers by *ex post* licensing, Lemley also points to economic evidence that there can be important benefits to society from "over-investment" in R&D, even when some of that "excess" R&D leads to costs for investors such as manufacturers that do not obtain patent rights. In other words, R&D that is "wasteful" for an individual company may be offset at least partially by economic benefits to the larger society. *Id.* at 1529 n.19.

⁹ See, e.g., Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & Econ. 265, 275-80 (1977); F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 Minn. L. Rev. 697, 707-12 (2001). Such theorists also would probably oppose the separate ownership rights in inventions (patent plus trade secret) allowed by the prior user rights defense discussed below.

¹⁰ Lemley, *Should Patent Infringement Require Proof of Copying?*, *supra* note 7, at 1530-31.

¹¹ *Id.* at 1531.

technologies or to different categories of patent owner, inventive entities and their patent attorneys will know this in advance. When a significant cost or premium is placed upon patent applicants because of how the technology or the owner is defined or classified, the distinctions made will inevitably be between overinclusive and underinclusive simultaneously, and applicants and their attorneys are greatly tempted to game the system by strategic patent drafting to opt into or out of a particular definition or classification. Such behavior will not always work, but it will work often enough to encourage patent applicants and their attorneys to continue the practice. Consequently, differences in patent rules of this kind are likely to be fruitless and even counterproductive because they will not work very well and may increase average costs for applicants caused by tortuous patent drafting.¹²

An independent invention defense could also have undesirable effects on patent licensing markets, even in the case of *ex ante* licensing, by reducing the ability of inventors to guarantee exclusivity to potential licenses. Reduced *ex ante* licensing activities and reduced licensing values may be the result.¹³

A development that may bode well for reducing the costs of *ex post* licensing is the prior user rights provision of the America Invents Act (AIA). Subject to certain limitations, prior user rights create a personal defense for an infringer who independently developed the later-patented technology and used it commercially for a significant period of time before the plaintiff acquired its patent. Congress adopted prior user right in 1999 that applied only to software-implemented “business method” patents, but the defense was never litigated, perhaps because “business method” is practically impossible to define.¹⁴ In the AIA, Congress amended the Patent Act¹⁵ to

¹² See, e.g., John R. Allison & Starling D. Hunter, *On the Feasibility of Reforming Patent Quality One Technology at a Time: The Case of Business Methods*, 21 BERKELEY TECH. L.J. 729 (2006)

¹³ Lemley, *Should Patent Infringement Require Proof of Copying?*, *supra* note 7, at 1531-32.

¹⁴ See, e.g., Allison & Hunter, *On the Feasibility of Reforming Patent Quality One Technology at a Time: The Case of Business Methods*, *supra* note 13, at .; John R. Allison & Emerson H. Tiller, *The Business Method Patent Myth*, 18 BERKELEY TECH. LJ 987 (2003).

¹⁵ 35 U.S.C. § 273.

provide a prior user rights defense for defendants accused of infringing patents covering any kind of technology. If the defendant had independently developed a machine or process that it had used secretly within its business (in a way that did not create prior art that would invalidate the asserted patent) to manufacture a product that was sold at least one year before the patent owner's original filing date, there is a defense to the infringement claim. This is a defense that only this particular infringer can use against this particular patent, and the prior development and use does not affect the validity of the asserted patent. One can see from the requirements for asserting the defense that not all defendants that have independently developed their technology will be able to employ the defense, such as defendants whose first commercial use was made less than one year before the patent owner's original application filing date. This means that innocent infringers are much less likely to be in a position to avail themselves of the defense in cases involving patents issuing after a lengthy chain of continuation (or continuation-in-part or divisional) applications to which much earlier priority can be traced for the asserted patent claims. Prior user rights should bring some relief to innocent infringers, however, and is probably as close as U.S. patent law will come to an independent inventor defense.

Separately, the FTC report acknowledges the arguments made by some observers that the enforcement activities of PAEs can help to promote invention by providing a mechanism for compensating inventors. The FTC's response was to note that invention is just the first step in the innovation process, and that PAE lawsuits can impede innovation by raising costs for manufacturers that make products or provide services based on the patented technology.¹⁶ Not noted by the FTC is that fact that the argument concerning the encouragement of invention by compensating inventors, to the extent that it may be true, clearly does not apply to technology originally invented by employees of a corporation such as a manufacturer that obtained patents and then later sold them to a PAE. It is possible that the inventor compensation argument could

¹⁶ FEDERAL TRADE COMMISSION, *THE EVOLVING IP MARKETPLACE—ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION* 8-9.

have some merit, that is, that enforcement by PAEs might encourage innovation by compensating inventors when they otherwise might not receive any recompense for their work, with respect to independent inventors and to inventors who have substantial ownership interests in their company. If the argument does have any merit, one would expect such innovation encouragement in the case of smaller companies that have been formed by inventors. Moreover, the report fails to mention that, if a patent owner seeks to enforce a patent against a manufacturer that had independently developed the same technology, the defendant's costs of production will be increased even if the patentee is a manufacturer or any other category of patent owner. If the patent owner filing lawsuit is a manufacturer, of course, there is a greater probability that the plaintiff and defendant can negotiate a settlement that has at least some "win-win" characteristics, whereas a settlement with a PAE accomplishes only wealth redistribution.

IV. Profiles of Some Active NPEs

There are is no way to determine precisely how many Type (7) NPEs there are, but there probably close to 200 or perhaps more.¹⁷ I have identified several NPEs that have been especially active in suing companies in the semiconductor industry and their customers, and have developed profiles of them. These profiles follow.

A. Acacia Research Corporation

1. Patent Details

As of December 31, 2010, Acacia and its operating subsidiaries owned or controlled the rights to over 171 patent portfolios, which include the United States patents and foreign counterparts covering technologies used in a range of industries, including Aligned

¹⁷ As will be seen in a later section of this report, I used a list of approximately 180 NPEs that had been active in pursuing infringement claims in the computer software and hardware area. I obtained the confidential list from an academic colleague who had spent countless hours developing it.

Wafer Bonding, Audio Communications Fraud Detection, Audio Storage and Retrieval System, Audio Video Enhancement & Synchronization, Biosensor, Camera Support, Database Access, Facilities Operation Management System and Gemstone Grading. During 2002-2010, this NPE has been directly involved in at least 137 patent lawsuits.

2. History¹⁸

Acacia Research Corporation, incorporated in January 1993, through its operating subsidiaries, acquires, develops, licenses and enforces patented technologies. The Company's operating subsidiaries generate revenues and related cash flows from the granting of rights for the use of patented technologies, which its operating subsidiaries own or control. Its operating subsidiaries assist patent owners with the prosecution and development of their patent portfolios, the protection of their patented inventions from unauthorized use, the generation of licensing revenue from users of their patented technologies and, if necessary, with the enforcement against unauthorized users of their patented technologies. As of December 31, 2010, it had licensed over 960 license agreements executed, across 91 of its technology license programs. As of December 31, 2010, its operating subsidiaries owned or controlled the rights to over 171 patent portfolios. In August 2010, one of its wholly owned subsidiaries became the general partner of the Acacia Intellectual Property Fund, L.P. (the Acacia IP Fund), which was formed in August 2010.

The Company's partners include individual inventors and small technology companies who have limited resources and/or expertise to address the unauthorized use of their patented technologies, and also include research laboratories, universities, and large companies seeking to monetize their portfolio of patented technologies. In a partnering arrangement, its operating subsidiary acquire a patent portfolio or acquire rights to a patent portfolio, and in exchange, its partner receives: an upfront payment for the purchase of the patent portfolio or patent portfolio rights; a percentage of its operating

¹⁸ <http://www.reuters.com/finance/stocks/companyProfile?symbol=ACTG.O>

subsidiary's net recoveries from the licensing and enforcement of the patent portfolio, and a combination of the two. It executes patent licensing and rights arrangements with users of its patented technologies through willing negotiations without the filing of patent infringement litigation, or through the negotiation of a patent license, intellectual property rights and settlement arrangements in connection with the filing of patent infringement litigation.

3. Acacia Technologies Group in Securities & Exchange Commission" Records¹⁹

The Acacia Technologies group, a division of Acacia Research Corporation, develops, acquires, licenses and enforces patented technologies. The Acacia Technologies group currently owns or controls the rights to 77 patent portfolios, covering technologies used in a wide variety of industries.²⁰ The Acacia Technologies group is primarily comprised of certain of Acacia Research Corporation's wholly owned subsidiaries and limited liability companies including:

- Acacia Global Acquisition Corp.
- Acacia Media Technologies Corp.
- Acacia Patent Acquisition Corp.
- Acacia Technologies Services Corp.
- Automated Facilities Mgmt. Corp.
- AV Technologies LLC
- Broadcast Data Retrieval Corp.
- Broadcast Innovation LLC
- Computer Acceleration Corp.
- Computer Cache Coherency Corp.
- Computer Docking Station Corp.
- Contacts Synchronization Corp.
- Creative Internet Advertising Corp.
- Credit Card Fraud Control Corp.
- Information Technology Innovation LLC
- InternetAd LLC
- IP Innovation LLC
- KY Data Systems LLC
- Location Based Services Corp.
- Micromesh Technology Corp.
- Microprocessor Enhancement Corp.
- Mobile Traffic Systems Corp.
- New Medium LLC
- Parallel Processing Corp.
- Parking Security Systems Corp.
- Peer Communications Corp.
- Priority Access Solutions Corp.
- Product Activation Corp.

¹⁹ http://www.sec.gov/Archives/edgar/data/934549/000101968707002404/acacia_10q-063007.htm

²⁰ Note that this SEC filing is dated June 2007 so the different number of patents with previously mentioned number of patents in December 2010 is due to different dates.

- Database Structures Inc.
- Data Encryption Corp.
- Data Innovation LLC
- Diagnostic Systems Corp.
- Digital Security Systems Corp.
- Disc Link Corp.
- Email Link Corp.
- Financial Systems Innovation LLC
- Fluid Dynamics Corp.
- High Resolution Optics Corp.
- Hospital Systems Corp.
- Refined Recommendations Corp.
- Remote Video Camera Corp.
- Resource Scheduling Corp.
- Safety Braking Corp.
- Screentone Systems Corp.
- Secure Access Corp.
- Soundview Technologies LLC
- Spreadsheet Automation Corp.
- TechSearch LLC
- Telematics Corp.
- VData LLC

4. Management²¹

Paul Ryan, Chairman & CEO. Ryan has served as a Director since August 1995, as Chief Executive Officer since January 1997 and as Chairman since April 2000. He also served as President of the Company from January 1997 until July 2000. Prior to being named Chief Executive Officer, he was Executive Vice President and Chief Investment Officer of Acacia Research from 1996 through 1997 and Vice President, Capital Management, of Acacia Research from 1995 through 1996. He was formerly co-founder and general partner of the American Health Care Fund, L.P., held positions with Young & Rubicam, Ogilvy & Mather, and Merrill Lynch and was a private venture capital investor. Ryan holds a B.S. from Cornell University and attended the New York University Graduate School of Business.

Robert L. Harris, Director & President. Harris has served as a Director since April 2000 and as President since July 2000. Prior to joining Acacia, Harris founded Entertainment Properties Trust (NYSE: EPR) and was President and Director from 1997 to July 2000. From 1993 to 1997 Harris led the International Division and served as Senior Vice President of AMC Entertainment. From 1984 to 1992 Harris served as President of Carlton Browne and Company, Inc., a holding company and trust with

²¹ http://www.acaciaresearch.com/aboutus_board.htm

assets in real estate, insurance and financial services. He also serves on the Board of Directors of True Religion Brand Jeans.

William S. Anderson, Director. Anderson has served as a Director since August 2007. He is the Chairman and CEO of National Beverage Properties, Inc. and is also a Director of 1st Century National Bank and Topa Insurance Company. Anderson is a Board Advisor to new Belgium Brewing Company and sits on the Advisory Boards of PGP Capital Advisors, LLC and Lineage Capital Partners. He is the former Executive Vice President of Topa Equities, Ltd. and President of Topa Properties Ltd. and Vice-Chairman of the Board of Southland Title Company, a former Director of Mellon First Business Bank and a former Trustee of the Provident Investment Counsel of Mutual Funds and was an attorney with O'Melveny & Myers in Los Angeles. Anderson received his B.A. from Bowdoin College, a Master's from Boston University, and a J.D. from the UCLA School of Law.

Fred A. De Bom, Director. De Boom has served as a Director since February 1995. de Boom has been a principal in Sonfad Associates since June 1993. Sonfad Associates is a Los Angeles-based investment banking firm that is involved in mergers and acquisitions, private debt and equity placements, strategic and financial business planning, leveraged buy-outs and ESOP funding, bank debt refinance, asset based and lease financing, and equity for debt restructuring. Previously, he was employed as a Vice President of Tokai Bank for five years and as a Vice President of Union Bank for eight years. De Boom received his B.A. degree from Michigan State University and his M.B.A. degree from the University of Southern California. Edward W. Frykman, Director. Frykman has served as a Director since April 1996. Frykman has been an Account Executive with Crowell, Weedon & Co. since 1992. Previously, Frykman served as Senior Vice President of L. H. Friend & Co. Both Crowell, Weedon & Co. and L.H. Friend & Co. are investment brokerage firms located in Southern California. In addition, Frykman was a Senior Account Executive with Shearson Lehman Hutton where he served as the Manager of the Los Angeles Regional Retail Office.

Louis Graziadio III, Director. Graziadio has been a Director since February 2002. Since 1990, Graziadio has held the positions of Chairman and Chief Executive Officer of Second Southern Corp., the managing partner of Ginarra Partners, L.L.C., a California company engaged in a wide range of investment activities and business ventures. He also serves as a director of Graziadio Development Company, California Rice Bran Co., Inc., Beachcliff Real Estate, Inc., Boss Holdings, Inc. and Boss Manufacturing, Co.

B. Alliacense Limited

1. Patent Details

The company owns five Portfolios of patents²²:

- Chip Scale™ Portfolio: Used in “wafer level packaging” (WLP) with applications such as image sensors.
- CORE Flash™ Portfolio: Used in Flash and other memory technologies deployed in various popular media formats.
- Fast Logic™ Portfolio: Used in high-speed memories and high-performance transistor design.
- MMP™ Portfolio: Includes building blocks of modern microprocessor architecture and implementation.
- 3D ART™ Portfolio: Includes two core technologies, Adaptive Real Time Tessellation™ (ART) and Rapid Zippering™, both of which are components of graphics systems.

Alliacense has been involved in at least six patent cases beginning in 2009.

²² <http://www.alliacense.com/licensing.aspx>

2. History

Alliacense Limited was founded in 1988. According to its website²³, this Silicon Valley-based company is a TPL Group Enterprise with a lengthy track record in delivering a complete suite of intellectual property management services. In addition to optimizing IP portfolio value and protecting assets from infringement, the company is also well versed in converting portfolio value into a maximum cash return for its owner(s). Through Alliacense, the TPL Group manages IP Licensing Programs across a broad array of industries.

3. Management²⁴

Mac Leckrone, President. Leckrone is an Intellectual Property management and licensing specialist. Prior to joining Alliacense in 2004 he served with Dolby Laboratories most recently as Director of Intellectual Property Licensing Strategy. During his eight-year tenure with Dolby, he was responsible for the firm's Consumer Electronics, PC, Automotive, Telecom and Broadcast sector licensing transactions as Dolby prevailed as the dominant digital audio codec format. Prior to Dolby, he served as a Licensing Executive for The TPL Group where he was instrumental in the development and commercialization of an IP portfolio encompassing video signal processing technology, including the licensing of Picture-in-Picture technology to the Consumer Electronics and Broadcast sectors.

Mike Davis, Senior VP, Licensing. Davis is an experienced IP licensing executive and joined Alliacense in 2004. Davis came to Alliacense from Ascent Media Group where he was VP, New Products Group responsible for developing the media services in the emerging video-on-demand industry. Before that, he served as VP of Business Development at DIVA Systems Corporation, a major video-on-demand provider with over 100 U.S. and foreign patents. Chief among his accomplishments was the

²³ <http://www.alliacense.com>

²⁴ http://www.alliacense.com/Management_Team.aspx

successful conclusion of licensing and development agreements with seven of the world's top ten media companies. Earlier in his career, Davis served seven years at Orion Pictures Corporation, most recently as VP of Domestic Television Distribution, responsible for North American licensing and distribution of the company's entertainment assets.

Bruce Sanderson, VP, Licensing. Sanderson formerly served as Sr. VP of Licensing for IPVALUE Management, a private equity firm funded by Goldman Sachs, General Atlantic Partners and Boston Consulting Group. During his four-year tenure, he led efforts to close over 20 deals generating more than \$100 million revenue. During his four-year tenure at Lucent Technologies, most recently serving as subsidiary president of the Licensing Division, he generated several hundred million dollars in revenue from the technology assets of Bell Labs including a portfolio of 26,000 patents. Over the course of his 13-year tenure with AT&T, he led a corporate-wide multifunctional team to establish a holding company subsidiary and the transfer of IP assets valued at \$30 billion, which resulted in \$25 million tax savings annually. While at AT&T, he evaluated 40 technologies and implemented licensing programs resulting in tens of millions of dollars in royalties.

Andre-Pascal Chauvin, VP, Licensing. Chauvin is primarily responsible for all Alliacense licensing programs in Europe. Chauvin spent his prior 18 years with Alcatel Group (now Alcatel-Lucent), most recently as VP of Global IPR Strategy and Valorization for seven years. Chauvin refocused the IP Group on business value, generated substantial licensing revenue, and also engaged several strategic litigations benefiting Alcatel. Previously, he was Secretary General of Alcatel Labs, the French subsidiary of Alcatel Telecom. He also served as CFO for three subsidiaries of the Alstrom Group and as Deputy Director for SPIE–Batignolles Civil Engineering. A former Labour Court Magistrate in the Paris area, he holds degrees in Finance and Economy from Institut Études Politiques de Paris.

Roy Maharaj, VP, Licensing. Roy Maharaj had more than 15 years of experience managing business development, technology licensing and sales before coming to the company. Most recently, he was at Mistletoe Technologies for two years as VP of Business Development and Sales. Previously, he served as VP of Global Business Development and Sales at SafeNet, where he was instrumental in completing IP licensing agreements with major companies including AMD, Cisco, AMCC, Samsung and Texas Instruments, while tripling Silicon IP design wins and revenue year to year. Roy's seminal technology licensing experience was with IBM Corporation as Manager of Technology Licensing and Business Development. He earned his Juris Doctor degree from Santa Clara University, and an MBA from San Jose State University.

Joe Minville, VP, Licensing. Minville came to Alliacense from Flextronics International where he served in key business development positions for the past seven years. While at Flextronics, Joe focused on the global automotive industry segment, establishing a business unit that nearly tripled sales over a three year period, and leading development and manufacture of consumer and automotive-grade satellite digital audio receivers. Previously at Solectron, he assisted start-up of a manufacturing operation in Massachusetts, and was an Account Manager. Earlier he held positions at Digital Equipment Corporation, Dennison Manufacturing and Acumeter Laboratories. Minville holds both an MBA and BA degrees (cum laude, Phi Beta Kappa) from Clark University in Worcester, Massachusetts.

Carl Silverman, VP, Licensing. Silverman came to Alliacense from a successful start-up that was recently acquired by Abbot Diabetes Care. Prior to that, he spent 17 years at Intel, most recently as Group General Counsel for Intellectual Property, which he established and led. Earlier, Carl managed the IP group at Fairchild Semiconductor, and also held IP management positions with GE and RCA. Active among IP professionals, Silverman has served as AAA arbitrator/mediator in handling IP disputes and on the Executive Committee of the Board of Directors of IPO. He is a member of the Licensing Executives Society as well as the California, New York and Patent Bars. Silverman holds

a BS in Physics from City University of New York and a JD degree from Brooklyn Law School.

C. FlashPoint Technology, Inc.

1. Patent Details

The company holds more than 80 issued U.S. patents and has 100 U.S. patents pending.²⁵ In 1998, FlashPoint introduced Digita®, a solution combining an in-camera intelligence platform with wireless technology and the Internet. Today, Digita® is used in products from Pentax, Hewlett-Packard, Eastman Kodak, Minolta, Epson, and others. Since 2003, FlashPoint has been focused on innovating in the digital content ecosystem. At the core of this effort is [KinectUs](#), a modular hybrid P2P sharing platform²⁶. The company is relatively focused on digital cameras and networking and the majority of the patents it holds are in those areas. It has filed at least 15 patent lawsuits in past decade most of which are against major companies active in the digital imaging industry such as Minolta, Ricoh, Epson, etc.

2. History²⁷

FlashPoint Technology, Inc. develops technology and intellectual property solutions for the convergence of the Internet and digital image, video, and music related content. It offers KinectUs, a hybrid P2P sharing platform to select content providers and partners. Its KinectUs Platform comprises components, such as KinectUs Client that manages the sharing of resulting content in the background; and KinectUs Server that manages Internet connections between the user's computer and guests wishing to view content. It serves digital content providers. The company was founded in 1996 and is

²⁵ http://www.flashpoint.com/corporate_info.html

²⁶ <http://www.flashpoint.com/history.html>

²⁷ <http://investing.businessweek.com/research/stocks/private/snapshot.asp?privcapId=28571>

headquartered in Peterborough, New Hampshire. FlashPoint Technology, Inc. is a former subsidiary of Apple Inc.

3. Management²⁸

The management team consists of two founders who have been with the company for 15 years and a CFO who joined the company in 2003. The board of directors has four members, including Stanley Fry, who is also a founder and the CEO of the firm. He holds multiple patents and allegedly developed the first commercially available scanner.

D. General Patent Corporation

1. Patent Details²⁹

GPC owns more than 180 patents in a variety of fields from auto industry to semiconductors. Since 1996, GPCI (now GPC) has been actively licensing and enforcing a portfolio of "smart connector" patents. In 1997, GPCI filed two patent infringement suits against IBM and U.S. Robotics in the Southern District of New York and Against Hayes and seven modem manufacturers in the Central District of California. In 1998 GPCI sued Motorola. All defendants settled by taking a license under the patents. In 2000, GPCI spun off the "smart connector" business into a wholly owned subsidiary, Acticon Technologies LLC. To date, after winning patent reexamination proceeding at the USPTO and successfully litigating 26 patent infringement lawsuits, GPCI licensed the Acticon "smart connector" patents to more than 150 companies. GPCI successfully represented Moen Technologies LLC in its litigation against The Coca-Cola Company and PepsiCo; Forward Technologies LLC vs. SBC Communications; Scieran

²⁸ <http://www.flashpoint.com/management.html>

²⁹ http://en.wikipedia.org/wiki/General_Patent_Corporation .

Technologies, Inc. vs. Bausch & Lomb; Tronson Automation LLC vs. Yaskawa et al., Leighton Technologies LLC vs. Oberthur, and many other patent infringement cases. The idea incubator was spun off in 2000 as IP Holdings LLC, which later became the financial arm of GPC. In the 2007-2009 period, AT&T, Sony Ericsson, Nokia, LG, Motorola, T-Mobile, and Samsung all settled patent infringement lawsuits and agreed to license a key cell phone patent from Digital Technology Licensing LLC a subsidiary of GPC.

2. History³⁰

General Patent Corporation (GPC) is an intellectual property firm headquartered in Suffern, New York that provides patent licensing and enforcement on a contingency basis. GPC also provides IP advisory services including strategy, audit, IP valuation management, patent portfolio mining, patent triage, patent licensing, assertive licensing, technology transfer, and other IP-related services. According to Steven M. Cherry from the IEEE Spectrum, GPC is perhaps one of the oldest and most successful patent enforcement companies. The company remains privately held since 1987 when it was founded by Alexander Poltorak to assist inventors and IP owners in licensing and enforcing their IP rights. The company was incorporated in 1989.

The company was founded by Alexander Poltorak in 1987 as Poltorak Associates Inc., which engaged in patent licensing and technology transfer. It was incorporated in 1989 as General Patent Corporation, which became a full service intellectual property management firm. GPC was selected by Marketing Computers Magazine as one of “Nine for the Nineties” – one of nine most promising technology companies for the 90s. The contingency IP enforcement business was spun off as a separate company, General Patent Corporation International (GPCI), in 1996. In 2008, the consulting business of

³⁰ http://en.wikipedia.org/wiki/General_Patent_Corporation

GPC was merged into the patent licensing company, GPCI, reuniting them into a single business entity called General Patent Corporation.

GPC has the following subsidiaries:

- Advanced Card Technologies LLC
- Advanced Video Technologies LLC
- Digital Technology Licensing LLC
- Trounson Technologies LLC
- Leighton Technologies LLC
- Ryogen LLC
- IP Holdings LLC

3. Management³¹

Alexander I. Poltorak, Chairman and CEO. Alexander I. Poltorak is the Founder, Chairman and the CEO of General Patent Corporation (GPC), an intellectual property (IP) firm focusing on intellectual property strategy and valuation, IP licensing and enforcement. He also serves as the Managing Director of IP Holdings LLC (IPH), an IP-centric merchant banking boutique providing IP-focused financial, brokerage and advisory services, and operating an idea incubator.

Prior to establishing GPC in 1987, Alex Poltorak was President and CEO of Rapitech Systems, Inc., a computer technology company that he had founded in 1983 and took public in 1986. Before that, he served as Assistant Professor of Biomathematics at the Neurology Department of Cornell University Medical College. He also served as Assistant Professor of Physics at Touro College. Poltorak has published numerous papers in scientific journals. Alexander Poltorak taught business law as Adjunct Professor at the Globe Institute of Technology. He is a regular guest-lecturer on intellectual property law and economics at the Columbia University School of Business.

³¹ <http://www.generalpatent.com/about/our-management-team>

Alexander Poltorak is the Founder and President of a non-profit association, American Innovators for Patent Reform. He is a Certified Licensing Professional. He was among the first licensing professionals to be awarded this certification by the Licensing Executives Society (LES) of US and Canada. He was also included in the 2010 IAM Strategy 250, a list of the world's leading IP strategists compiled by Intellectual Asset Management magazine.

Poltorak emigrated from the former U.S.S.R. in 1982, where he was awarded a graduate degree in Theoretical Physics equivalent to a Ph.D. in 1980. As a political dissident, he was stripped of his degrees for anticommunist activities.

He has co-authored two books with Paul Lerner:

- Essentials of Intellectual Property (John Wiley & Sons Publishers, Inc., 2002)
- Essentials of Licensing Intellectual Property (John Wiley & Sons Publishers, Inc., 2003).

Poltorak has authored and co-authored numerous articles on intellectual property, including:

- Regular contributions to General Patent Corporation's newsletter Wealth of Ideas®
- "Thar's Gold in Them Thar Patents," (University Business, October 2009)
- "Who Needs Patents?" (Patent Strategy & Management, March 2009)
- "Protecting The Interests Of American Inventors" (Washington Watch, 2009)
- "First-to-File vs. First-to-Invent" (IP Today, April 2008);
- "U.S. can't afford to mar innovation: Proposed patent reforms mean less protection for the underdog." (Christian Science Monitor, January 28, 2008);
- "The Supreme Court Take the Middle Ground in the eBay Case" (Patent Strategy & Management, v.6, No.12, July 2006);
- "'Patent Trolls' and Injunctive Relief" (Patent Strategy & Management, v.6, No. 12, May 2006);

- "Industrywide Patent Enforcement Strategies" Part One and Part Two (Patent Strategy & Management, Oct. and Nov. 2005);
- "What You Need to Know About Patents and Their Value" (Technology.Review.com, April, 2005);
- "A 'Real World' Risk-Adjusted Patent Valuation Model" (Patent Strategy & Management, November 2004 and January 2005);
- "Valuing Patents as Market Monopolies" (Patent Strategy & Management, September 2003);
- "Valuing Individual Patents Comprising a Portfolio" (Patent Strategy & Management, October 2003);
- "Everything You Ever Wanted to Know about Intellectual Property Law but Couldn't Afford to Ask" (American Venture magazine, August 2003);
- "Are Patents Bad for the Economy?" (New York Business Focus, August 2002);
- "Introducing Litigation Risk Analysis" (Managing Intellectual Property, May 2001);
- "Corporate Officers and Directors Can Be Liable for Mismanaging Intellectual Property" (Patent Strategy & Management, May and June 2000);
- "Grain, Grain, Go Away" (Intellectual Property Worldwide, February, 2000); and
- "Patent Enforcement: To Sue or Not to Sue?" (Inventors' Digest, November/December 2000 and January/February 2001).

Poltorak gave lectures and taught workshops on

- "Patent Valuation" at the 3rd Patent Strategies conference in New York, 2007
- "Fundamentals of Assertive Licensing" at the LES 2006 Annual Meeting in New York
- "Patent Valuation" at the LES 2004 Annual Meeting in Boston
- "Patent Valuation" at the LES Silicon Valley Chapter in 2003
- "Patent Valuation" at the LES Connecticut/Westchester Chapter in 2002

He was a speaker at the following events:

- IP Finance and Valuation Conference in New York, 2009
- National Association of Patent Practitioners in Alexandria, VA, 2008
- IP Finance and Valuation Conference in New York, 2008
- IP Finance and Valuation Conference in New York, 2007
- Chaired a session and presented at the "Calculating & Proving Patent Damages" Conference in Philadelphia, 2006
- The Patent Strategy – 2006 Conference in New York
- The IPO Conference in March 2005 in Washington, DC
- The AIPLA meeting in May 2005 in Philadelphia
- "Life after Rembrandts – New Development in IP Strategy" seminar in August 2005 in Chicago.
- Maximizing Returns on Intellectual Property Conferences in New York, 2005

Poltorak was profiled in a New York Times feature article (Teresa Riordan, "Trying to Cash in on Patents," June 10, 2002) and by IP Investor Magazine ("He Wrote the Book," Apr. 2007).

He has been often interviewed on CNN, CBS, Tokyo TV, CFO Magazine, InstitutionalInvestor.com, WallStreetReporter.com, Industry Week, EE Times and Bloomberg Radio. He serves on the advisory editorial board of Patent Strategy & Management. Tokyo TV Ch. 12 featured a documentary about Poltorak and his company in May of 2002.

Poltorak is a member of the Licensing Executives Society (LES), the Association of University Technology Managers (AUTM), Intellectual Property Owners Association (IPO), the New York Academy of Science, the American Physical Society, International Society for General Relativity and Gravitation, and the American Association for the Advancement of Science. He was a U.S. co-chairman for the Subcommittee on Information Exchange of the US-USSR Trade and Economic Council.

Poltorak personally holds seven U.S. patents.

Anthony Amaral, Chief IP Counsel. Anthony Amaral is Chief IP Counsel. Prior to joining General Patent Corporation, Mr. Amaral spent more than 25 years in private practice at both intellectual property boutiques and large general practice law firms where he was engaged in all aspects of Intellectual Property Law. His primary area of legal expertise is Patent Law, including procurement, litigation, licensing and counseling. Over the years he has been involved in dozens of patent infringement cases covering a wide area of technologies and has participated in all aspects thereof including pre-trial discovery and motion practice, trial practice before U.S. District Courts nationwide, and appellate practice before the U.S. Court of Appeals for the Federal Circuit.

Amaral earned B.S.E.E. and M.S.E.E. degrees from Polytechnic Institute of Brooklyn (now Polytechnic Institute of New York University) where he also completed all the required Ph.D. level coursework in Electrical Engineering. In addition, he received J.D. and LL.M. (Trade Regulation) degrees from St. John's University School of Law and New York University School of Law, respectively. He is a member of the Bar of the State of New York and is registered to practice before the U.S. Patent and Trademark Office.

Kathlene Ingham, Director of Licensing. Kathlene P. Ingham is the Director of Licensing at General Patent Corporation (GPC). She has been with the company since 1999. During this time, she personally negotiated well over 100 patent license agreements. Before joining GPC, Ingham held several management and consulting positions in the legal profession and the hotel industry.

Ingham's education includes a B.A. in the Humanities from Pace University, Pleasantville, New York, and two years of graduate study in Clinical Psychology at Pace University, New York, New York. She has completed two courses in the Intellectual Asset Management Program of the Licensing Executives Society Professional Development Series. She is a member of the LES.

E. Graphic Properties Holdings

1. Patent Details

Graphics Properties Holdings, Inc. (GHI) was formerly known as Silicon Graphics International.³² It focuses on delivering clustered computing and storage solutions, high-performance computing and storage solutions, eco-logical datacenter solutions, and software and services. The company provides HPC and data management; develops a line of mid-range and high-end computing servers, data storage, and visualization systems, as well as differentiating software; sells data center infrastructure products purpose-built for large-scale data center deployments; and offers customer support and professional services related to its products. It caters to federal government, defense and strategic systems, weather and climate, physical sciences, life sciences, energy, aerospace and automotive, Internet, financial services, media and entertainment, and business intelligence, and data analytics. The company developed eco-Logical data center design with technologies in the areas of chassis and cabinet design, power distribution techniques, and hardware-based remote management capabilities. Its data center products include ICE Cube, a modular data center that augments or replaces traditional brick-and-mortar facilities; CloudRack C2 for breakthrough density and configurability for cluster computing; and MobiRack for mobile, all-in-one data center capabilities for field deployments. The company also provides a standard Linux operating environment combined with its differentiated Linux extensions.

On November 10, 2010,³³ GHI sued Apple for allegedly infringing on their patent regarding floating point rasterization. The case apparently is still pending. GHI recently

³² <http://www.sgi.com>

³³ <http://www.patentlyapple.com/patently-apple/2010/11/former-sgi-files-patent-infringement-lawsuit-against-apple.html>

filed another patent infringement suit against Apple, Sony, HTC Corp, LG Electronics, Inc., and Samsung Electronics Co. in the U.S. District Court in Delaware.³⁴ The patent at issue relates to a computer graphics process that turns text and images into pixels to be displayed on screens.

According to the lawsuits, the defendants' infringing devices include Apple's [iPhone](#) and the HTC EVO4G, LG Thrill, Research in Motion Torch, Samsung Galaxy S and Galaxy S II, and Sony Xperia Play smart phones.

GHI also recently sued Blackberry maker RIM, also in the federal district court in Delaware, claiming infringement of a patent for on a method for changing text and images into pixels.³⁵

2. History

Silicon Graphics, Inc. (SGI) was founded in 1981 and maintained its headquarters in Sunnyvale, CA. It developed many kinds of high-end graphics chips over the years, with one of its primary focuses being on graphic chips, including those for 3D movies. Its technology played an important role in several popular motion pictures. In part because Intel had continued to gain ground in this submarket, SGI went into Chapter 11 bankruptcy in 2009. Most of its assets were sold to Rackable Systems, Inc., which took on the name Silicon Graphics International. What remained, including a substantial patent portfolio, became Graphics Properties Holdings, Inc. (GHI). The remaining operations under the GHI name are based in New Rochelle, New York, and are owned by private investment firms and other investors.³⁶ It is unclear whether there

³⁴ <http://www.foxbusiness.com/technology/2012/03/27/apple-sony-4-others-sued-by-graphics-properties/>

³⁵ <http://n4bb.com/graphics-properties-sues-rim-alleged-patent-infringement-turns-text-images-pixels> .

³⁶ <http://www.foxbusiness.com/technology/2012/03/27/apple-sony-4-others-sued-by-graphics-properties/>

is a relationship between Silicon Graphics International and GHI. It is unclear whether any relationship remains between GHI and SGI.³⁷

3. Management

According to the Business Week's "Investing" website,³⁸ GHI's management team consists of the following individuals.

Ronald D. Verdoorn, Chairman of the Board and Interim Chief Executive Officer.

Bradley Scher, President.

Jennifer Rosenfeld W. Pileggi, Senior Vice-President.

Anthony E. Carrozza, Executive Vice President of Field Operations.

F. Gregory Bender

1. Patent Details

Gregory Bender is an inventor holding US Patent # [5,103,188](#) on "Buffered Transconductance Amplifier." The application for this patent was filed on Aug 4, 1989 and was issued on Apr 7, 1992. The patent follows from only this one application, and does not trace its origin to any ancestor applications. The patent's abstract begins: "An electrical circuit for amplifying complex, wideband signals, preferably audio and servo/robotic signals, comprises a first input buffer in an emitter-follower configuration or in a source-follower configuration. A bias current rail traverses the first buffer." Bender apparently does not own any other patents.

³⁷ Business Week's "Investing" website for Graphics Holdings Properties lists the company's web site as that of Silicon Graphics International.

<http://investing.businessweek.com/research/stocks/private/snapshot.asp?privcapId=34343>.

³⁸ *Id.*

2. History

Bender filed two lawsuits in the Eastern District of Texas in 2006 and filed 25 more lawsuits later in 2009 in the Northern District of California, months before the expiration of the patent.³⁹ He has claimed that his invention has been used in most of consumer electronics, including computers, cell phone, DVD players, etc and has sued many high tech companies. One week later in 2009, Bender filed eight more suits in the Northern District of California. His targets that time included IBM, Agilent, Cirrus Logic, Siemens, Nokia, Sony, Motorola, and ST Microelectronics. He had previously sued companies such as Freescale, National Semiconductor, and AMD.⁴⁰ Shortly thereafter, Bender added three more lawsuits nine additional defendants: AT&T, AT&T Mobility, Sony-Ericsson Mobile, Panasonic, Samsung Semiconductor, Toshiba America, Hitachi America, Seagate Technologies and Western Digital.⁴¹ Some of his cases were dismissed because his infringement assertions were not sufficiently specific.⁴²

David Kuhn was Bender's lawyer for all 25 cases filed in 2009 against major high tech companies. So far, Bender has shied from publicity. His lawyer responded to questions from media about Bender: "He is a private person," and "He does not want publicity."

G. Intellectual Ventures⁴³

Intellectual Ventures (IV) is among the largest patent holders in the U.S. and worldwide. Knowledge of the true nature and scope of its patent portfolio is very

³⁹ http://thepriorart.typepad.com/the_prior_art/2009/03/the-week-in-patent-litigation-march-1620.html.

⁴⁰ http://thepriorart.typepad.com/the_prior_art/2009/04/week-in-patent-litigation-march-2327.html.

⁴¹ http://thepriorart.typepad.com/the_prior_art/2009/04/gregory-bender-patent-lawsuits.html.

⁴² <http://www.techdirt.com/blog.php?tag=greg+bender&edition=techdirt>.

⁴³ My discussion of IV relies heavily on the findings of "The Giants Among Us" by Ewing & Feldman: "2012 STAN. TECH. L. REV. 1, <http://stlr.stanford.edu/pdf/feldman-giants-among-us.pdf>

incomplete because of the company's non-public status, its large number of subsidiaries and affiliated companies, and its admittedly intentional secrecy regarding its portfolio.⁴⁴

However, Ewing & Feldman⁴⁵ have done extensive research on IV's activities using the publicly available sources. "These sources include the patent assignment records of the United States Patent and Trademark Office (USPTO); the USPTO's PAIR database, which includes the file histories of patents; the USPTO's patent and application database; government records for key states—including Delaware, Nevada, Washington, and California—Internal Revenue Service filings for non-profit entities; Securities and Exchange Commission data from 10Q and 10K filings by corporations; the Federal Register; filings made in dozens of litigations; and press releases and other publications from various entities."⁴⁶

According to IV, "invention" is the main product of the company and they refer to their activities as "Invention Capitalism" defined as "applying concepts from venture capital and private equity to develop and commercially exploit new inventions"⁴⁷

1. Patent Details

According to Ewing & Feldman, "the company has reported that it holds some 35,000 "invention assets." The company does not define the term, but we assume that this phrase refers not only to patents but also to patent applications, non-filed invention disclosures, design patents, trademarks, and any trade secrets owned or licensed by the company." They estimate that, as of May 2011, IV had a worldwide patent portfolio of between 30,000 and 60,000 patents and applications. Patent Freedom estimates

⁴⁴ See Victoria Slind-Flor, *The Goodfellas: Detkin and Myhrvold on Patents, Trolls & IV*, 19 INTELL. ASSET MGMT. 28, 34 (noting that IV will not reveal how many patents it has or the entities to which it has licensed technology, and, quoting IV founder Nathan Myhrvold's response, "We're a private company. We don't disclose our investment plans any more than Warren Buffet does.")

⁴⁵ Ewing & Feldman.

⁴⁶ Ewing & Feldman, p. 6.

⁴⁷ <http://hbr.org/2010/03/the-big-idea-funding-eureka/ar/1> .

that IV owns between 10,000 and 15,000 "patent publications," which I assume includes patents and published patent applications.⁴⁸

Ewing & Feldman identify 1,276 shell companies associated with IV, noting that they do not believe that they have found all of the shells and that their estimates of the numbers of IV's patents and applications could be substantially low or substantially high. These include 1,201 patent holding shells, one trademark holding shell, 51 asset management shells, and 24 executive and investment shells. They indicate that the 954 shell companies that have patents recorded under their names have an average of 8.5 patents and 3.2 patent applications per company. Assuming that the other 242 shell companies contain unrecorded transactions, and applying these averages would yield another 2057 patents and 774 applications. Adding these missing patents and applications to our totals would yield roughly 10,000 patents and 3700 applications.

According to its website, "IV has been actively inventing since August 2003. The company has filed thousands of patent applications in more than 50 technology areas and has thousands of ideas under consideration. The first patents were issued in November 2005, and IV currently ranks in the top 50 among companies who file patents worldwide."

IV-owned inventions span a broad range of areas, including computer software and hardware, user interface design, semiconductors, biomedical devices, advanced medical procedures, digital imaging, nanotechnology, nuclear energy, and advanced particle physics. According to its web site, "We are currently pursuing invention partnerships in a variety of business development areas including energy and climate change, medical technologies, and information and computing technologies."⁴⁹

The company claims to be developing inventions in the following fields:

⁴⁸ <https://www.patentfreedom.com/about-npes/holdings/>.

⁴⁹ <http://www.intellectualventures.com/OurInventions.aspx>.

- Agriculture
- Automotive
- Communications
- Computer Hardware
- Construction
- Consumer Electronics
- eCommerce
- Energy
- Financial Services
- Health Technologies
- Information Technology
- Life Sciences
- Materials Science
- Medical Devices
- Nanotechnology
- Physical Sciences
- Security
- Semiconductors
- Software

2. History⁵⁰

IV was founded in 2000 by Nathan Myhrvold and Edward Jung, both of whom formerly served in high-level positions at Microsoft. Peter Detkin also played a key management role in developing IV. In one of patent law's great ironies, Detkin coined the derogatory term "patent troll" during his tenure as the chief intellectual property officer at Intel. The company acquired a handful of intellectual property portfolios in its early years of operation. However, it started mass aggregation of patents after 2004 or 2005.

⁵⁰ Ewing & Feldman.

3. Management⁵¹

According to the IV website, their staff team is a mix of scientists, technologists, business leaders, strategists, engineers, mathematicians, programmers, attorneys, IP experts, and support staff. The management team consists of four founders and three other officers.

Nathan Myhrvold, Founder and CEO.⁵² Nathan Myhrvold founded IV after retiring from his position as chief strategist and chief technology officer of Microsoft Corporation. At IV, Myhrvold is focused on a variety of business interests relating to the funding, creation and commercialization of inventions. During his 14-year tenure at Microsoft, Dr. Myhrvold held various positions within the company and was responsible for founding Microsoft Research and numerous technology groups that resulted in many of Microsoft's most successful products. He has extensive experience successfully linking research to product development and commercialization.

In 1986, Myhrvold's company Dynamical Systems was acquired by Microsoft. Prior to that, he was a postdoctoral fellow in the department of applied mathematics and theoretical physics at Cambridge University and worked with Professor Stephen Hawking on research in cosmology, quantum field theory in curved space time, and quantum theories of gravitation. Dr. Myhrvold personally holds hundreds of patents and has hundreds pending.

Dr. Myhrvold earned a doctorate in theoretical and mathematical physics and a master's degree in mathematical economics from Princeton University. In 2005, in recognition of his distinguished career, Princeton awarded Dr. Myhrvold the James Madison Medal, the university's top honor for alumni. He also has a master's degree in geophysics and space physics and a bachelor's degree in mathematics, both from UCLA. Currently, he serves on the Advisory Board for the Department of Physics at the University of

⁵¹ <http://www.intellectualventures.com/WhoWeAre/OurTeam.aspx>.

⁵² http://www.intellectualventures.com/WhoWeAre/OurTeam/Bio/Nathan_Myhrvold.aspx.

Washington. He is also an affiliate research associate of paleontology at the Museum of the Rockies where he funds and participates in paleontological research and yearly expeditions.

Edward Jung, Founder and Chief Technology Officer. Edward Jung co-founded IV after leaving Microsoft Corporation where he was chief architect and advisor to executive staff. At IV, Jung also serves as the chief technology officer, setting strategic technology direction for the company.

During his ten years at Microsoft, Jung managed projects relating to web platforms, semantic web technology, intelligent operating systems, adaptive user interfaces and artificial intelligence. Jung co-founded many Microsoft teams including Windows NT, Microsoft Research, mobile and consumer products, and web services. Before joining Microsoft in February 1990, he ran the Deep Thought Group, working on neural network chips for learning and parallel computation. He also consulted on and wrote software for NeXT Computer, Apple Computer and its Advanced Technology Group, and the Open Software Foundation.

An active inventor, Jung holds more than 200 patents worldwide and has more than 1,000 patents pending. His issued patents are in a variety of areas, including biomedical research instruments and neural networks, as well as several fundamental patents in object technology, distributed operating systems, and semantic data analysis. His biomedical research work in protein structure and function has been published in several journals, including the Proceedings of the National Academy of Sciences and the Journal of Biochemistry.

Currently, Jung is a strategic advisor to Harvard Medical School, the Fred Hutchinson Cancer Research Center, and the Institute for Systems Biology where he advises on future synergies between biology and information technology. He is also personally involved in several non-profit projects involving technology and science education, and he consults for the Asia Pacific Federation, the Aspen Institute, the China Academy of

Sciences, the National Academy of Sciences, the World Economic Forum, and the World Health Organization.

Peter N. Detkin, Founder and Vice-Chairman.⁵³ Peter N. Detkin is a founder and vice-chairman at IV where he focuses on a variety of projects relating to intellectual property and invention. Prior to joining IV, Detkin spent eight years at Intel Corporation where he was a vice president and assistant general counsel. As assistant general counsel, Mr. Detkin was responsible for managing the Intel patent and licensing departments, including all aspects of prosecution and claims management. In addition, he managed the litigation and competition policy departments (including antitrust).

Before he joined Intel, Detkin was an intellectual property partner at the law firm of Wilson, Sonsini, Goodrich and Rosati in Palo Alto, Calif. He was the first patent lawyer hired at the firm and helped to create their highly-successful intellectual property practice. While at Wilson Sonsini, he had lead or second chair responsibility for a number of high profile litigations, including the seminal computer copyright case *Lotus v. Borland*.

Detkin received his B.S.E.E. with honors in 1982 from the University of Pennsylvania's Moore School of Electrical Engineering and a J.D. in 1985 from the University of Pennsylvania Law School. He is a member of the California and New York bars, and is registered to practice before the United States Patent and Trademark Office.

Greg Gorder, Founder and Vice Chairman. During his almost twelve years with IV, Gorder has served in various capacities, including COO, CFO and general counsel, prior to leading the company's efforts to recruit and hire the current executive team. . Gorder continues to provide ongoing guidance and counsel across the company, in areas including operations, investor relations, finance, legal, corporate development, licensing, human resources, and marketing. He leads a variety of IV's long-term

⁵³ http://www.intellectualventures.com/WhoWeAre/OurTeam/Bio/Peter_N_Detkin.aspx.

strategic projects, fundraising, and new product development, and also advises the company's senior leaders.

Prior to joining IV, Gorder was partner at the law firm of Perkins Coie LLP, where he specialized in high-technology, corporate and securities law, and provided business and legal counsel to early stage technology companies. During his legal career, Gorder led dozens of initial and follow-on public offerings, acquisitions and divestitures for clients and closed over 100 venture capital and private equity financings. He has represented both companies and investors in emerging technology companies in the software, telecommunications, networking and biotechnology industries.

Gorder holds a bachelor's degree in business administration from Washington State University and is a graduate of the University of Washington School of Law. Following law school, he clerked for Judge Eugene Wright of the United States Court of Appeals for the Ninth Circuit. Adriane Brown, President and Chief Operating Officer. According to IV's website, with nearly 30 years of management experience from the factory floor to the boardroom, Brown has learned firsthand that a company's success begins with its people. Her leadership expertise and business acumen serve as the cornerstone for building strong, global performance at IV.

David Kris, General Counsel. Kris recently joined IV as general counsel, after nearly twenty years' experience in both the private sector and the United States Department of Justice. As general counsel for IV, he is responsible for overseeing legal and government affairs matters for the company.

Russell L. Stein, Executive Vice President & Chief Financial Officer. Russell L. Stein joined IV as executive vice president and chief financial officer, bringing with him 19 years of experience at financial institutions including Merrill Lynch and Morgan Stanley. In his role as chief financial officer, Mr. Stein is responsible for directing the company's financial strategy and overseeing investor relations.

H. OPTi Inc.

1. Patent Details

The company owns at least 37 patents on personal computer chipset technologies that it developed in the early 1990s while it was engaged in research, development, and manufacturing.

2. History⁵⁴

OPTi Inc. was a semiconductor vendor that sold chipsets for the personal computer markets. The company was founded in 1989 and was based in Milpitas, California and is now engaged in licensing its intellectual property for use by personal computer (PC) manufacturers and semiconductor device manufacturers.

During the early 1990s, OPTi was one of the major producers of core logic chipsets as well as audio controllers that accompanied IA-32 processors on PC motherboards. The company had an initial public offering in 1993, and has current market capitalization of \$19.3 million.

As Intel began to dominate the core logic chipset market in the late 1990s, the company unsuccessfully tried to migrate to products for the laptop computer market. In 2002, the company sold all manufacturing and marketing assets to OPTi Technologies (a separate company). Currently, the company is trying to license its intellectual property in chipset design. OPTi Inc has become a non-manufacturing patentee and has been suing chip producing companies for patent infringement. The company has brought numerous lawsuits against well-known companies in an effort to gain licensing agreements, settlements, and/or jury awards for alleged infringement of its patents.⁵⁵

⁵⁴ http://en.wikipedia.org/wiki/OPTi_Inc.

⁵⁵ <http://seekingalpha.com/article/251736-OPTi-inc-a-patent-troll-in-decline>

OPTi has had significant success, winning several multimillion dollar damage awards settlements.

On August 3, 2006, the Company entered into a license and settlement agreement with NVIDIA Corporation (NVIDIA). Under the License Agreement, the Company agreed to dismiss its patent infringement lawsuit against NVIDIA and license certain patents to NVIDIA. On February 5, 2007 the Company announced that it received a letter from NVIDIA stating that NVIDIA has discontinued the use of the Predictive Snooping technology that it had licensed from the Company pursuant to the terms of the License Agreement. On April 30, 2010, the Company entered into a settlement and license agreement with Advanced Micro Devices, Inc. (AMD). Under the license agreement the company agreed to dismiss its patent infringement lawsuit against AMD and licensed certain patents to the defendant.

3. Management⁵⁶

Bernard Marren, Chairman, President, and CEO. Marren was elected as a director in May 1996, and has headed the company since May 1998. . He also founded and was the first president of SIA (the Semiconductor Industry Association). Mr. Marren is currently a director at several privately held companies. Mr. Marren also served as a director at Infocus Corporation, until its sale in 2009, and Microtune, Inc. until its sale in 2010. The company believes that Mr. Marren is qualified to sit on the company Board because he is the President and Chief Executive Officer of the Company and has served in that role for the past twelve years.

Michael Mazzoni, Chief Financial Officer and Secretary. Mazzoni has served as Chief Financial Officer since December 2000. Mr. Mazzoni also served with the Company from October 1993 to December 1999. The last two years prior to his departure Mr. Mazzoni served as the Company's Chief Financial Officer. Mr. Mazzoni also served as

⁵⁶ <http://www.reuters.com/finance/stocks/companyOfficers?symbol=OPTI.OB>.

Chief Financial Officer of Horizon Navigation, Inc., a privately held, car navigation company, from January 2003 to June 2005. Prior to rejoining the Company, Mr. Mazzone was Chief Financial Officer of Xpeed, Inc., a startup in the Digital Subscriber Line CPE business, from January 2000 to November 2000. Mr. Mazzone has over twenty five years of experience in the accounting and finance area for technology companies and has been with the Company for seventeen years. In that time Mr. Mazzone has accumulated knowledge of the Company's intellectual property and licensing activities.

Stephen Diamond, Independent Director. Diamond has been an independent director since September 4, 2003. He is currently an Associate Professor of Law at the Santa Clara University School of Law where he teaches securities regulation, corporation and international business transactions law. From 1995 to 1999 he was an associate at Wilson Sonsini Goodrich & Rosati where he represented high technology companies including OPTi and investment banks in corporate transactions, including debt and equity offerings, venture capital investments, and intellectual property rights. Mr. Diamond holds a B.A. from the University of California at Berkeley, a Ph.D. and M. Phil. from the University of London, and a J.D. from Yale Law School. The company believes that Mr. Diamond's experience in securities regulations and business transactions provides strategic guidance to the Company and the Board.

Kapil Nanda, Independent Director. Nanda has been an independent director since May 1996. Mr. Nanda is currently President of InfoGain Corporation, a software and development consulting company, which he founded in 1990. Mr. Nanda holds a B.S. in Engineering from the University of Punjab, India, an M.S. in Engineering from the University of Kansas, and an M.B.A. from the University of Southern California. Mr. Nanda's years of management experience with technology companies provide the Company and the Board demonstrated senior level management ability and critical industry and technology insights.

William Welling, Independent Director. Welling has been an independent director since August 1998. He is currently Chairman and CEO of @Comm Corporation, a telecommunications software company. In August 2001, @Comm Corporation filed for protection under Chapter 11 of the Federal Bankruptcy Code. Mr. Welling also serves as a director on the boards of several private companies. The Company believes that Welling's management experience with technology companies makes him an excellent member of the Board.

I. Round Rock Research

1. Patent Details

Round Rock Research is among the top NPEs with approximately 3,500 issued patents.⁵⁷ All of its patents have been acquired from Micron Technology in 2009 and collectively represented roughly 20% of Micron's total patent assets. The company was incorporated in Delaware nearly a year before it was publicly announced that John Desmarais, a prominent U.S. patent litigator, would lead the company. It was also formed nearly a year before the 3,500 patents were transferred from Micron to Round Rock.⁵⁸

Ewing and Feldman have identified potential connections between Round Rock Research and Intellectual Ventures. For example, Desmarais has served as a patent litigator for Intellectual Ventures in a number of cases. Nothing further is known about any IV and Round Rock relationships.

⁵⁷ <https://www.patentfreedom.com/about-npes/holdings/>

⁵⁸ Ewing & Feldman; *see also* <https://www.patentfreedom.com/about-npes/holdings/>.

2. History

The Round Rock Research website provides no information about the company's history. However, the firm was incorporated in late 2008 or early 2009.⁵⁹ Ewing and Feldman report that all of Round Rock Research's patents were acquired from Micron Technology in December 2009. They also indicate that: "Round Rock is to some extent the successor to Keystone Technology Solutions, LLC. Keystone was closely tethered to Micron and may well have been wholly owned by Micron. Many of Round Rock's patent assets began as Micron properties, were transferred to Keystone, transferred back to Micron, and then transferred to Round Rock. Keystone does not appear to have had any employees who were not also Micron employees."

3. Management

The Round Rock Research website provides no specific information about the management team and the firm's strategies. The only available information consisted of the names and contact information for three executives:

John M. Desmarais, President.⁶⁰ Desmarais, the founding partner of Desmarais LLP, is a prominent patent litigator. From 1999-2009, he was a partner at Kirkland & Ellis LLP and served as a member of Kirkland's Firm Management Committee from 2004 to 2009. Desmarais received a degree in Chemical Engineering from Manhattan College and a law degree from New York University. After practicing in the area of intellectual property litigation and counseling for several years, he left private practice to serve as an Assistant United States Attorney in the Southern District of New York, where for three years he prosecuted federal criminal cases. After leaving the government,

⁵⁹ The transfer of patents from Micron to Round Rock Research took place in December 2009, one year after the company had been formed, according to Ewing & Feldman.

⁶⁰ <http://desmaraisllp.com/lawyers/john-m-desmarais>.

Desmarais returned to private intellectual property litigation, and later joined Kirkland's New York office. He is a member of the bars of New York and Washington, D.C., the U.S. Supreme Court, the Federal Circuit Court of Appeals, and various other federal district courts and courts of appeal. Desmarais is also registered to practice before the United States Patent and Trademark Office. His \$1.5 billion win for Alcatel-Lucent against Microsoft was one of the largest plaintiff's jury verdicts in patent infringement litigation history.

Gerard A. deBlasi, Vice President, Licensing.

James E. Burris, III, Vice President, Sales & Marketing.

J. Saxon Innovations LLC

1. Patent Details

Saxon Innovations is a Dallas-based IP licensing company that currently controls over 180 U.S. patents covering a variety of consumer electronic devices and other electronics, which include the following:⁶¹ (a) Bluetooth-enabled devices; (b) camcorders; (c) cameras; (d) cellular telephones; (e) copiers; (f) cordless telephones; (g) data storage devices; (h) desktop personal computers; (i) home entertainment electronics; (j) laptops; (k) PDAs; (l) portable mp3 players; (m) printers; (n) speech recognition technology; (o) WiFi-enabled devices; and (p) work stations. These patents were originally owned by AMD and its spin-off, Legerity

In 2009, HTC purchased a license to this portfolio of patents. LG Electronics and Nokia Corporation are also among the recent license holders.

2. Management⁶²

⁶¹ <http://www.saxoninnovations.com/PatentedTechnology.html>.

⁶² <http://www.saxoninnovations.com/ManagementTeam.html>.

William Marino, CEO. Marino has extensive patent litigation and licensing. He has successfully litigated patents, trademarks and other intellectual property cases in U.S. District Courts. Prior to joining Saxon, he was an attorney at Robins, Kaplan, Miller & Ciresi, and at Mintz, Levin, Cohn, Ferris, Glovsky & Popeo. Marino has served in lead litigation roles on cases covering a range of technologies including computer hardware, microprocessors, sub-sea oil drilling equipment, medical devices and pharmaceuticals. His last two lawsuits resulted in settlements of \$275 million. He earned his degree in biochemistry from the University of Massachusetts, Amherst, and received his J.D., cum laude, from Suffolk University School of Law.

Anthony Grillo, Senior Vice President of Licensing. Mr. Grillo brings a strong combination of legal and business experience. Most recently, he served as Vice President of Licensing for IPVALUE Management Inc. where he lead and managed patent assertion, sale and licensing activities for various clients. Prior to joining IPVALUE, Mr. Grillo was the Vice President of Intellectual Property for Agere Systems where he led a team that generated \$140 million in annual revenue from the company's patent portfolio. During his tenure at Agere, Anthony was responsible for all aspects of intellectual property including licensing, patent assertion, patent litigation, and patent prosecution. Prior to Agere, Anthony worked at Lucent Technologies where he was responsible for patent prosecution and licensing matters. Anthony has held positions at various law firms and has also served as an officer in the US Air Force. Anthony holds an undergraduate degree in electrical engineering from the University of Delaware and a Juris Doctor from Villanova University. He is registered to practice at the U.S. Patent and Trademark Office.

Joe Peterson, Senior Vice President of Engineering. Peterson has extensive technical and management expertise. He has a BSEE degree from Texas Tech University and a MSEE degree from the University of Texas in 1978. He worked for Rockwell's Collin's Radio Group before attending graduate school. After graduation, he

worked for Motorola's Semiconductor group in Austin specializing in analog circuit design for automotive and telecommunications IC's. He moved to AMD when AMD opened their Austin design group in 1984. At AMD he worked on telecom IC's including modems, ISDN transceivers, digital telephone sets, telephone line interface chips, ADSL, and cordless telephone chips. Peterson was an Engineering Fellow at AMD and was included in AMD's spinoff of its telecom division to Legerity. At Legerity, he was involved in telecom IC development and was a Senior Fellow and manager of the systems development group at Legerity when it was acquired by Zarlink in 2007.

K. Townshend Intellectual Property, LLC

1. Patent Details

Brent Townshend, whose inventions are the foundation for 56-Kbps modems, was issued the U.S. patent # 5,801,695 for the technology in 1998. This patent, titled "High speed communications system for analog subscriber connections,"⁶³ which covers pulse-code modulated, or PCM-based client modems. He received four additional patents for related technologies, and also was awarded several other patents related to computers and electronic communication, but the most important one remains to be the modem patent which seems to have represented a dramatic change in the field of communications. In 2002, Townshend filed suit against four modem manufacturers: Intel Corp., Cisco Systems Inc., Analog Devices, and Agere Systems Inc. These cases were consolidated, along with a previously pending case against ESS Technology Inc. Companies receiving a license from Townshend include 3Com Corporation, Conexant Systems, Inc., Lucent Technologies, Inc., UTStarcom, Inc., IBM, Motorola, Inc., PCTEL, Inc., and Analog Devices, Inc.⁶⁴

⁶³<http://patft1.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnetacgi%2FPTO%2Fsrchnum.htm&r=1&f=G&l=50&s1=5801695.PN.&OS=PN/5801695&RS=PN/5801695>.

⁶⁴<http://www.design-reuse.com/news/exit/?id=6766&url=http://www.eetimes.com/story/OEG20031203S0006>.

Most of these cases have settled, and Townshend is said to have made a substantial fortune in licensing fees since 56K modems hit the worldwide market in 1997. In 1998, the V.90 standard that incorporates Townshend's algorithm was ratified by the International Telecommunications Union. That standard was later updated as the V.92 standard.⁶⁵

2. History

At an early time, Townshend approached U.S. Robotics with his concepts; later, 3Com Corp., which had acquired U.S. Robotics, negotiated exclusive licenses to his patents. However, a number of companies allegedly began using technology credited to Townshend without licenses for doing so, and he was subsequently embroiled in several high-profile legal battles, most notably with Analog Devices, Cisco Systems, Intel, ESS Technology, and Agere Systems.

Townshend earned a PhD in electrical engineering from Stanford University in 1987 with expertise in signal processing, computer system design, and statistical modeling. He worked as a principal investigator for Bell Labs from 1987 to 1990 where he studied speech recognition and low-bit-rate speech encoding. The Toronto native then moved to Montreal where he established Townshend Computer Tools and developed Dat Link, a signal processor for making high-quality audio recordings.

In 1993 he moved Townshend Computer Tools to Menlo Park, Calif., and began working on MusicFax, an appliance for downloading music from servers via direct-dial telephone connections. It was while working on this project that he came up with his idea for a better modem (which stands for modulate/demodulate), in an attempt to

⁶⁵ <http://web.mit.edu/invent/iow/townshend.html>.

solve the problem of getting high-speed data from a digital server to multiple analog destinations.⁶⁶

His assertions of patent infringement date at least back to 1997 when Townshend Intellectual Property filed claims against 3Com company.⁶⁷ 3Com stated that it had acquired exclusive rights to Brent Townshend's intellectual property in 1995 and has paid him millions of dollars for it.

Management⁶⁸

Townshend Intellectual Property, LLC apparently focuses only on enforcing Townshend's patent rights and is not otherwise an active firm. Townshend serves as the president of this company. The company does not have a website.

L. Wi-LAN Inc.

1. Patent Details

WiLAN owns a large portfolio of patents—up to 1,400 issued or pending—related to wireless communications and electronics. It licenses patented inventions in the following technology areas:⁶⁹

Wireless technologies: Includes inventions that were developed by WiLAN over 15 years ago and subsequently used in products manufactured by WiLAN.

Wireline technologies: Includes patented inventions that cover power conservation, rate conversion, timing control, IPTV systems, as well as crosstalk and noise reduction.

⁶⁶ <http://web.mit.edu/invent/iow/townshend.html>.

⁶⁷ http://www.networkworld.com/archive/1997/97-09-08_com.html.

⁶⁸ <http://www.design-reuse.com/news/exit/?id=6766&url=http://www.eetimes.com/story/OEG20031203S0006>

⁶⁹ <http://www.wi-lan.com/Licensing/default.aspx>

V-Chip technologies: Based on a technology that allows users of digital television receivers to filter out programming that they consider inappropriate.

WiLAN has licensed patents to companies that sell products utilizing the technologies, such as wireless fidelity (Wi-Fi), Worldwide Interoperability for Microwave Access, Inc. (WiMAX), LTE, code division multiple access (CDMA), direct subscriber line (DSL), data over cable service interface specification (DOCSIS), Mesh, multi-mode wireless, Bluetooth and V-Chip.⁷⁰

2. History

WiLAN, is a Canadian firm based in Ottawa, Canada founded in 1992. According to its website: "WiLAN is a leading technology innovation and licensing company. WiLAN has licensed its intellectual property to over 250 companies worldwide. Inventions in our portfolio have been licensed by companies that manufacture or sell a wide range of communication and consumer electronics products including 3G cellular handsets, Wi-Fi-enabled laptops, Wi-Fi/DSL routers, xDSL infrastructure equipment, WiMAX base stations and digital television receivers. The company is listed on the Toronto Stock Exchange and has a market capitalization of around \$800 million."⁷¹

3. Management⁷²

Jim Skippen, Chairman of the Board, President, CEO, and Chief Legal Officer.

Skippen is responsible for all operations at WiLAN, including the development and implementation of the company's strategic and operating plans. Since assuming this position in June 2006, he has assembled a licensing team and strengthened WiLAN's balance sheet from less than one million dollars approximately \$190 million cash on hand. Skippen has overseen a more than forty-fold increase in the size of WiLAN's patent portfolio as well as the broadening of the portfolio's technology and geographic

⁷⁰ <http://www.reuters.com/finance/stocks/companyProfile?symbol=WIN.TO>.

⁷¹ <http://www.reuters.com/finance/stocks/companyOfficers?symbol=WIN.TO>.

⁷² <http://www.wi-lan.com/company/Management/default.aspx>.

coverage. Since he joined WiLAN, its market capitalization has increased from approximately \$25 million to over \$800 million, making it Ottawa's most valuable public company. In addition, Skippen has led WiLAN's licensing efforts, which have generated record revenues and patent licensing agreements with over 250 companies, including agreements with technology leaders Broadcom, Fujitsu, Intel, LG, Motorola Mobility, Nokia, Panasonic, RIM and Samsung.

An experienced licensing executive, Skippen has managed several large and complex patent licensing negotiations and litigations. Prior to joining WiLAN, he held a number of senior management positions, including Senior VP for Patent Licensing and General Counsel at MOSAID Technologies. While leading the patent licensing program at MOSAID, he closed deals worth hundreds of millions of dollars. Skippen is a member of the Governing Council of the Canadian Advanced Technology Alliance. He is a frequent speaker at conferences and has delivered many papers and articles concerning topics such as management of intellectual property, patent licensing and technology law.

Shaun McEwan, CFO. McEwan is responsible for all financial and fiscal management aspects of WiLAN's operations including business planning, accounting, budgeting and financial reporting efforts. He has more than 20 years' experience in finance and executive leadership positions in public and private high technology companies. Prior to joining WiLAN, he held the position of Chief Financial Officer at BreconRidge Manufacturing Solutions, where he was responsible for overall financial management. His many accomplishments while at BreconRidge included leading private placement transactions that raised more than \$40 million and completing numerous corporate acquisitions.

Prior to BreconRidge, McEwan served in increasingly senior positions at Calian Technologies Ltd, first as Chief Financial Officer and then President and Chief Executive Officer. During his tenure at Calian, he was responsible for all financial affairs of this publicly traded company, completed several corporate acquisitions and divestitures,

assisted in growing revenues to more than \$125 Million and served as corporate secretary and as a director. He also held senior executive positions at Microstar Software Limited and led the company's Initial Public Offering on the Toronto Stock Exchange in 1993.

Andrew Parolin, Senior Vice President, Licensing. Parolin is Senior Vice President of Licensing at WiLAN. He is responsible for the licensing of WiLAN's portfolio of Wireless, Wireline, V-Chip and other technologies. Since assuming his prior role of Vice President, Wireless Technologies, in November 2007, the business unit negotiated license agreements with over 95 companies including global technology leaders ASUSTek, RIM, Sharp and Samsung. Prior to joining WiLAN, Parolin worked at SiGe Semiconductor, a fabless semiconductor company specializing in next-generation integrated circuit designs, where he served as Director of Wireless Data Products. He has an MBA from the University of Ottawa, a Master of Applied Science from Queen's University, and a Bachelor of Engineering from the Technical University of Nova Scotia. He is a member of the Licensing Executive Society.

Paul Lerner, Senior Legal Counsel. Prior to joining WiLAN, Lerner was Senior Vice President and General Counsel of General Patent Corporation ("GPC"), a leading patent licensing and enforcement firm, founded in 1987. During his 11 years with GPC, He led licensing activities for hundreds of inventor-owned patents. He is also co-author of two books, *Essentials of Licensing Intellectual Property* (John Wiley & Sons, 2004) and *Essentials of Intellectual Property* (John Wiley & Sons, 2002). Before joining GPC, Lerner was a partner in the Hartford, CT business law firm of Pepe & Hazard LLP. He has led IP law departments at Olin Corp., Black & Decker Corp., and multi-national electrical construction company Asea, Brown, Boveri, Inc. Lerner's education includes a B.S. in Aeronautical Engineering from Purdue University, an M.B.A. from Loyola University, a J.D. from DePaul University, and post-graduate legal studies at John Marshall College of Law.

Daniel Henry, Vice President, Business Development. In his role as Vice President for Business Development, Henry focuses on building WiLAN's business by leading acquisitions of intellectual property (IP) assets and developing new business initiatives. Before joining WiLAN, He held the position of Senior Vice President with ICAP Patent Brokerage where he advised clients on the sale and acquisition of valuable IP assets. Prior to ICAP, he was a Partner with Altitude Capital Partners where he conceived and executed the business development program as well as the firm's strategic relationships with corporate IP holders and other IP professionals. He has additional experience as an IP litigation specialist with Baker Botts LLP, Darby & Darby and Fitzpatrick, Cella, Harper & Scinto.

Matt Pasulka, Vice President, Patent Litigation. Pasulka has over 14 years' experience in corporate and intellectual property law in both private sector corporations, law firms and the U.S. military. At WiLan, he manages the company's patent litigations and provides licensing support. He also assists the negotiation and drafting of patent acquisition and licensing agreements. Prior to joining WiLAN, Pasulka held the position of Senior Counsel at St. Jude Medical / AGA Medical Corporation where he managed complex patent litigations in U.S. and foreign jurisdictions. Pasulka also served in senior legal positions at Sikorsky Aircraft Company and with Martin Marietta Materials, Inc. where he was responsible for all aspects of the company's IP including the negotiation and drafting of licenses, identification of patentable technology and the management of outside law firms.

He received a B.S. in Civil Engineering from the U.S. Military Academy, obtained his law degree from the George Mason University School of Law, and is a registered U.S. Patent Attorney. He also holds a B.S. in Electrical Engineering degree from Fairfield University.

Rob Scott, Vice President, Patent Administration. In his role of Vice President, Patent Administration, Mr. Scott is responsible for managing the group that oversees preparation and prosecution activities relating to WiLAN's expanding international

patent portfolio and R&D operations. He will also support licensing and litigation activities and provide senior level insights concerning due diligence efforts in patent acquisition matters. Scott is a Registered U.S. Patent Attorney and has over 15 years of international patent law and practical engineering experience.

He came to WiLAN from ATMD, Bird & Bird, an international full-service law firm where he managed patent group activities and substantial patent portfolios in the firm's Singapore offices. He has also served in senior prosecution, litigation and management roles with high profile in-house patent operations and law firms in the United States, Japan and elsewhere in Asia.

Scott received a J.D. degree with a Patent Track specialty from George Mason University School of Law, and an Electrical Engineering degree with emphasis on network architecture and protocols from GMU's Volgeneau School of Information Technology and Engineering.

Prashant Watchmaker, Vice President, Corporate Legal, and Corporate Secretary. Watchmaker oversees all of WiLAN's corporate and securities legal requirements and assists with licensing and other commercial matters. He practiced corporate, securities, and technology law and tax litigation with the Ottawa law firm of LaBarge Weinstein PC for ten years, developing extensive experience and negotiating many significant transactions for clients in Canada, the US and the United Kingdom. Watchmaker has also practiced banking law as Legal Counsel with the Canadian Payments Association. He holds a BA and LLB from the University of Ottawa and an MA from the University of Toronto. He is a member of the Law Society of England and Wales as well as the Law Society of Upper Canada.

Christian Dubuc, Vice President, Licensing Technologies. Dubuc oversees the technical analysis required for WiLAN's acquisition, licensing and litigation of patents. Prior to joining WiLAN in 2007, Dubuc held different positions in engineering, sales and product management with multiple companies developing products in the area of

wireless technologies. He led Nortel's proposal of the 4th-Generation (4G) evolution in the 3rd-Generation Partnership Project (3GPP) that resulted in the creation of the Long-Term Evolution (LTE) standard. He is a named inventor on several Nortel 4G patents. Dubuc holds a B.Eng. in Electrical Engineering from Université de Sherbrooke, an M.Eng. in Systems and Computer Engineering from Carleton University, and an MBA from the University of Ottawa. He is a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), a member of the Ordre des Ingénieurs du Québec, and a member of the Licensing Executives Society (LES).

V. The Scope of the Problem

To develop data for estimating the scope of the NPE-semiconductor patent litigation problem, we first found a list of the top 171 semiconductor firms in the world. The list was last updated in March 2011, and appears to be reliable. Other lists I was able to locate were substantially older. We then conducted a thorough search of several databases to locate patent infringement cases involving semiconductor firms from the list, and found 1,220 cases filed between 1-1-2000 and 7-18-2011 involving semiconductor companies.

A relatively comprehensive list of 180 NPEs that had sued firms in the high tech industries during approximately the last ten years was obtained from an academic colleague. Matching the two lists of companies, we found that 147 out of 1,220 patent infringement cases, or 12.1%, filed against semiconductor companies involved NPEs.⁷³ Thus, one out of every eight patent infringement lawsuits filed against semiconductor

⁷³ As discussed later, in most of these cases NPEs filed infringement claims against semiconductor firms and their customers, but a few were declaratory judgment actions filed by semiconductor firms against NPEs seeking a judicial ruling of invalidity and noninfringement. In these declaratory judgment actions, however, the NPEs always counterclaimed against the semiconductor companies for infringement, so these cases are also treated as involving patent claims against firms in the semiconductor industry.

companies between January 1, 2000 and July 18, 2011 involved the assertion of a patent owned by an NPE.⁷⁴

We studied the federal court docket sheets for these 147 NPE-semiconductor cases to determine their outcomes.⁷⁵ Because some of these cases were filed in 2009 and later, several of them are still pending, i.e., several have not yet been resolved. Although the original data on filed cases was collected during June and early July of 2011, and thus reflected only cases that had been filed by July 18, 2011, we updated the analysis of outcomes in January 2012. This enabled us to determine outcomes for several cases that had still been pending at the earlier time. As of January 24, 2012, 108 cases had terminated and 39 were still pending. Thus, outcomes could be determined for 108 NPE-semiconductor cases. Of the 108 cases that terminated, 98 were settled before the court decided the case, and only four were resolved by court judgments on the merits. Of these four court judgments, only one was a win by an NPE patent owner, and that win was at trial on both infringement and validity. One case resulted in a “consent judgment” (a court judgment on terms agreed to by the parties) after a significant ruling by the judge on infringement in favor of the semiconductor defendant, and should be counted as a win for the defendant. Semiconductor defendants won two cases on summary judgment before trial, both on the grounds of non-infringement. There was one other semiconductor defendant win at trial for reasons of both non-infringement and invalidity—this was a trial without a jury (because only an injunction was being sought, and not monetary damages), and was affirmed on appeal. In summary, only four out of 108 cases were resolved by a decision on validity or infringement, and the NPE won only one of these for a win rate of less than 1%. Thus, the evidence we gathered does not show any meaningful risk that defendants in the semiconductor industry or their customers will pay damages or royalties to an NPE because of an actual judgment by the court that the NPE’s patent is valid and infringed.

⁷⁴ In actuality, we found no such cases instituted in 2000, so our data on NPE suits against semiconductor companies begins in 2001.

⁷⁵ This is a task that requires much experience and the exercise of knowledgeable judgment, because the entries in these docket sheets often are not completely clear and must be interpreted.

Just taking court judgments into account is obviously very misleading. Recall that 98 of the cases we found were settled out of court. Because of the confidentiality of the terms of settlement agreements, we cannot evaluate the risk of substantial payouts by semiconductor firms in settlements. In general, most settlement agreements in patent infringement cases involve a payment of some amount. In settlements of cases brought by NPEs, however, there are probably payments of money in damages and/or royalties 100% of the time, because there is nothing but money to bargain over in settlement negotiations with an NPE. Thus, in the NPE-semiconductor cases I found, the risk that the semiconductor (or semiconductor customer) defendants o the risk of having to pay at least some amount to an NPE is relatively high.⁷⁶ Moreover, given that more that 12% of all patent infringement cases against defendants in the semiconductor industry were instituted by NPEs, the risk of incurring high litigation costs because of NPEs is very high. In its 2009 economic survey, the American Intellectual Property Law Association (AIPLA) reported that 398 law firms had responded to its request for data on patent infringement litigation costs for cases with stakes exceeding \$25 million, and that the median cost per party through the end of discovery in such cases was \$3 million.⁷⁷ This was twice the amount it had been eight years earlier in 2001.⁷⁸ Furthermore, the number of law firms reporting in the economic survey had increased by 59% over this eight-year period (from 251 to 398), supporting an inference that many more law firms had become involved in patent infringement litigation.⁷⁹

Recent research by Allison and others shows that a larger number of defendants significantly reduces the odds that a case will settle out of court.⁸⁰ When cases do not settle, however, the same research reveals a significantly greater chance that the

⁷⁶ John R. Allison, Emerson H. Tiller, & Samantha Zyontz, *Patent Litigation and the Internet*, 2012 STAN. TECH. L. REV. at 38 n. 88.

⁷⁷ AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, REPORT OF THE ECONOMIC SURVEY 2009, at I-129.

⁷⁸ AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, REPORT OF THE ECONOMIC SURVEY 2001, at 85.

⁷⁹ *Id.*

⁸⁰ John R. Allison, Emerson H. Tiller, & Samantha Zyontz, *supra* note 40.

accused infringers will win.⁸¹ Both of these results confirmed findings in previous research by Allison and others.⁸² Although this research seems to show that the practice of suing many defendants for infringement in the same case had mixed and complex consequences, most manufacturers and other potential defendants probably will welcome the AIA's restrictions on the practice. These restrictions are discussed later in the report along with other recent legal developments.

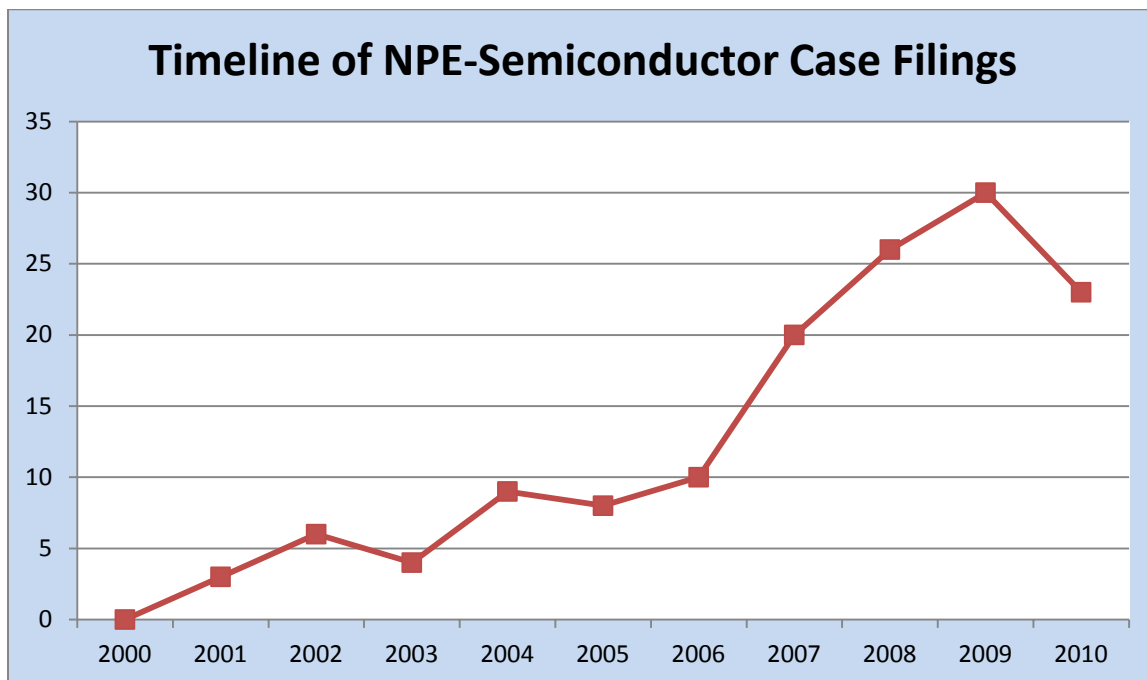
Time trends in case filings by NPEs were also studied. Because we discovered no cases filed by NPEs against semiconductor firms in 2000, the trend line begins in 2001. The number of these cases rose steadily from 2001 (we found no cases filed during 2000) to 2006, and then accelerated dramatically from 2007 to 2009. There was a significant drop-off from 2009 (30 new cases) to 2010 (23 new cases). The litigation data was collected in July 2011, and is therefore incomplete for that year. However, it appeared that the downward trend that began in 2010 continued into 2011. There were eight new NPE-semiconductor cases filed during the first 6.5 months of 2011. We do not have an explanation for the downward trend beginning in 2010, but if this trend is a real one that continues during the next several years, it appears that the semiconductor industry will enjoy some relief from NPE litigation. However, one of the respondents to our survey reported knowing of a much larger number of NPE cases so far in 2011 than I found in the data. Our list of NPEs, although large at 180, may not be complete, and our data may be conservative. The trend is shown in the chart and graph below.

⁸¹ Allison, Tiller, & Zyontz, *id.*

⁸² John R. Allison, Mark A. Lemley, & Joshua Walker, *Patent Quality and Settlement Among Repeat Patent Litigants*, 99 *Geo. L. Rev.* 677, 701 (2011)..

Year and Frequency of NPE-Semiconductor Lawsuits

Year	Frequency
2000	0
2001	3
2002	6
2003	4
2004	9
2005	8
2006	10
2007	20
2008	26
2009	30
2010	23
2011	8
Total	147



I also investigated the number of semiconductor defendants sued in each of the 147 cases. These defendants were either companies in the worldwide semiconductor industry or companies that used semiconductor components in the products that they made or sold, such as smart phone makers and sellers. Usually, semiconductor makers and purchasers of their products as components were named in the same cases. We did so because one of the problems faced by companies in the semiconductor industry and other industries is that NPEs have often sued large numbers of alleged infringers of the same patents in one case, even though those defendants often have little or no connection with each other. This can lower the average cost per case for NPE's, and may reduce the risk that the NPE-owned patents will be invalidated. That is, in a case with many defendants, there will be a just one court ruling on the validity of the NPE patent rather than the many different courts that might be ruling on patent validity if the NPE had filed a large number of cases with one defendant in each case. It only takes one court ruling of invalidity to completely kill a patent, and the chances of this happening may be greater when many different courts look at the same patent. Having multiple defendants in one case may be more efficient for the judicial system if the defendants make or sell the same product, or are related in some way, but judicial efficiency is less likely to be served when a large number of defendants are unrelated and sell different products. If multiple defendants are able to work together to share prior art and split some of the costs, being one defendant among many could be advantages. We know of anecdotal evidence that it is often quite difficult for multiple defendants to work together. Those who responded to our survey voiced different opinions about whether being one of many defendants in the same case presented advantages and disadvantages. In any event, the phenomenon of multiple unrelated defendants seems to affect the defense of these cases, for better or worse. For this reason, it is best that we have the most accurate estimate possible of the number of semiconductor defendants typically sued by NPE's in the same case.

The average number was 14.4, but the number was artificially inflated in about 30% of the 147 cases because two or more affiliated defendants were named separately as

defendants. In the approximately 30% of cases in which the number of defendants is artificially inflated, the average degree of inflation is approximately 25%. This means that the initial estimate of 14.4 defendants per case is approximately 7.5% too high, and that the real average is 13.4 defendants per case. This estimate does not, however, present the most accurate picture.

To obtain a more realistic estimate, one must differentiate between those patent infringement cases filed by NPEs, and those in which threatened or potential infringers initiated actions seeking declaratory judgments of non-infringement and invalidity. When an NPE or other patent owner is a defendant in a declaratory judgment action, it will always file a counterclaim for patent infringement. Thus, the case ends up in the same position as a patent infringement action, the main difference being that the semiconductor firm or its customer has the first chance at selecting the federal district in which the case is decided. For our purposes, however, it is important to understand that the number of accused infringers who are plaintiffs in declaratory judgment actions (and who become counterclaim defendants) will necessarily be smaller on average than the number of accused infringers named as defendants in infringement suits filed by patent owners. The reason is that it is unlikely that a large number of companies will commonly join together as plaintiffs to file a declaratory judgment action against an NPE. In other words, the average number of accused infringers will be much larger in suits by patent owners for infringement than in declaratory judgment actions. If we average them all together, the number will be artificially low. Of the 147 NPE-semiconductor cases, 118 were infringement actions filed by NPE patent owners, and 29 were declaratory judgment actions filed by semiconductor firms or their customers. The average number of semiconductor and semiconductor-related companies in declaratory judgment actions filed against NPEs was 2.4, or 2.2 when discounted by 7.5%. If we exclude these declaratory judgment actions and look only at patent infringement cases filed by NPEs, the average number of defendants per case was 16.8, or 15.6 when discounted by 7.5%. An average of 15.6 is the most accurate estimate

we can make of the average number of semiconductor defendants sued by NPEs per case during the period beginning in 2000 and ending in July 2011

In a 2011 study, Allison, Lemley, and Walker found that plaintiffs who sued many times (at least eight times between 2000 and 2009) for infringement of the same patent also named multiple defendants in the same cases. However, those patent owners named an average of about 5.2 defendants per case. In a comparison data set of plaintiffs who had sued for infringement of particular patents only once during the same time period, it was found that these patent owners named an average of 2.1 defendants per case.⁸³ Thus, NPEs who sued semiconductor companies for infringement named a far greater number of defendants per case than other kinds of patent owners.⁸⁴

A recent survey by Article One partners reported by Gene Quinn in his excellent blog IP Watchdog provides newer but somewhat less scientifically acquired information about NPE litigation against companies in the high technology industries of which semiconductor companies are a part.⁸⁵ According to IP Watchdog:

- Participants responding to the survey included companies in the computer, Internet, telecommunications, software, media and entertainment, semiconductor, energy, and retail sectors, including 10 of the top 30 Non-Practicing Entity (NPE) targets. To get a sense of their IP litigation docket, attendees were asked how many active patent litigation matters their companies are currently handling. The number varied widely among the group. Forty percent reported less than 10 active litigation matters, while over one-third reported more than 50.

⁸³ John R. Allison, Mark A. Lemley, & Joshua Walker, *Patent Quality and Settlement Among Repeat Patent Litigants*, 99 Geo. L. Rev. 677, 701 (2011).

⁸⁴ In the group of patent owner that litigated their patents many times, there certainly were some NPEs, but also many manufacturers. The group of patent owners that litigated their patents only once, almost all were product manufacturers rather than NPEs.

⁸⁵ More information about Article One Partners is available later in the section of this report on various strategies and responses semiconductor firms may wish to consider when confronted by an NPE lawsuit.

- NPE litigation in the high technology industries represented 75% of all active litigation matters. More than half the executives surveyed reported that NPE litigation increased over last year, with a median estimated increase of 22%.
- NPE lawsuits were reported to settle more quickly, in an average of 6 months or less 62% of the time, as compared to only 6% for all matters. The majority of overall patent litigation matters take a year or more to settle, with 27% taking more than two years.
- More than 80% of IP legal budgets are used for litigation defense activities.
- The majority of overall patent litigation matters take a year or more to settle, with 27% taking more than two years.
- It cost companies an average of \$1.1 million to defend a single NPE lawsuit.⁸⁶

VI. Statistics from Patent Freedom

Recognizing the extreme difficulty of developing reliable statistics on the scope of the NPE-semiconductor litigation phenomenon, I also examined data from PatentFreedom LLC in addition to the statistics developed from my own research and those reported by Article One Partners from its recent survey.

PatentFreedom LLC is an on-line community of companies that share information about NPEs. Membership is restricted to companies that have more than \$100 million in sales per year, exclusive of any income they themselves earn from patent licensing. It was founded in May 2008. It operates as a membership organization to which

⁸⁶ Gene Quinn, *Patent Litigation Study Discusses Dealing with NPEs*, IPWatchdog.com (Apr. 17, 2012), available at http://www.ipwatchdog.com/2012/04/17/patent-litigation-study-discusses-dealing-with-npes/id=24230/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+Ipwatchdog+%28IPWatchdog.com%29 .

members pay annual dues and have access to information provided by other members about NPEs who are asserting patents. Its members hope that the sharing of information will help them reduce their exposure to patent infringement lawsuits.⁸⁷

Membership is restricted to companies that have over \$100 million per year in revenue, exclusive of any revenue they themselves earn from licensing patents. PatentFreedom has electronic dossiers on at least 560 entities and 1500 subsidiaries that hold more than 35,000 U.S. patents and applications, and that have been involved in 5,700 patent litigations against 22,700 companies.

PatentFreedom was spun off from ThinkFire, Inc., a leading intellectual property strategy and transactions firm. The former CEO of ThinkFire, resigned from that firm in May 2008 to take over the newly created PatentFreedom LLC as its chairman.⁸⁸ An article by McCurdy in late 2008 or early 2009 revealed interesting statistics that PatentFreedom had compiled up to that point.⁸⁹ McCurdy states:

From October 1, 1994 through September 30, 2002, 527 patent lawsuits were filed by or against the 219 NPEs currently identified and tracked by PatentFreedom. This represented 2.7 percent of patent lawsuits filed in the United States during that eight-year period. From October 1, 2003 through September 30, 2007, there were 1,210 lawsuits filed by or against these entities, representing approximately 8.4 percent of all patent lawsuits filed in that period, and exceeding 10 percent in 2006 and 2007. Over the past year—from October 1, 2007 through September 30, 2008—

⁸⁷ <http://en.wikipedia.org/wiki/PatentFreedom>.

⁸⁸ Joff Wild, *McCurdy Leaves ThinkFire to Become Chairman of Anti-Patent Troll Online Venture*, Intellectual Asset Magazine, May 11, 2008, available at <http://www.iam-magazine.com/blog/Detail.aspx?g=b1d47395-63e6-468e-aba0-468d4b3d80ef>; Dan McCurdy Will Leave ThinkFire to Direct PatentFreedom LLC, IP Front Line, May 13, 2008 <http://www.ipfrontline.com/depts/article.aspx?id=18956&deptid=8#>.

⁸⁹ Daniel P. McCurdy, *Patent Trolls Erode the Foundation of the U.S. Patent System*, SCIENCE PROGRESS 78 (Fall/Winter 2008/2009), <http://www.scienceprogress.org/wp-content/uploads/2009/01/issue2/mccurdy.pdf>.

389 litigations were filed involving the PatentFreedom-tracked NPEs, compared with 297 in the prior year. Today, 219 patent trolls boast more than 800 subsidiaries or perhaps as many as 1,500 if all of the subsidiaries of the largest NPE, Intellectual Ventures, were known. Combined, all of these subsidiaries have more than 12,500 active and pending U.S. patents in their holdings.

Although the PatentFreedom statistics reported by McCurdy are illuminating and quite helpful, it bears mentioning that these data relate to all NPE enforcement activities and not just those against semiconductor companies. A great many NPE actions have not involved semiconductor companies, but have instead targeted entertainment, telecommunications, and software firms, as well companies in a variety of other industries. The data developed by PatentFreedom and my data also covered different time periods. Finally, although I am sure that PatentFreedom did a good job of collecting and analyzing data, I cannot know about the soundness of its methods.

VII. A Survey of Semiconductor Firms

To gain an appreciation for the extent of knowledge within the semiconductor industry about the NPE issue and the amount of concern about the issue, we developed a survey and distributed it as widely as possible throughout the industry.⁹⁰ Accompanying the survey instrument were a cover letter explaining the purpose of the survey as part of this study and a signed confidentiality agreement providing assurance that the names and affiliations of respondents. The response rate was quite low, with only seven survey responses received. We received worthwhile information, however, from those responses that we did receive. Following are the fourteen survey questions followed

⁹⁰ The survey was developed with valuable input from KSIA and Michael House. We were not able to secure the degree of cooperation we had hoped for from some portions of the worldwide industry, but nevertheless were able to accomplish a relatively wide distribution.

by summaries of the responses. At several points, I also comment upon and discuss some of the matters raised by respondents.

1. Do you have knowledge about patent infringement litigation in the U.S. against companies in the semiconductor industry?

All seven respondents answered that they did have knowledge of the issue.

2. If your answer to question 1 was "No," you may stop here.

a. If your answer to question 1 was "Yes," please tell me how you acquired that knowledge.

The responses to this question varied somewhat. One respondent stated that his company conducts weekly sessions on news about the semiconductor industry, and two others said that they individually kept up with relevant business news pertaining to the industry. The respondent from two companies said that their company is currently involved in U.S. patent infringement litigation, and one other person said that he actively works in IP licensing for his firm. Yet another said that his knowledge about NPE litigation came from colleagues.

2. b. If your answer to question 1 was "Yes," please tell me what kind of information you have.

Two people wrote that they just had general news information about the NPE issue. One reported having all information regarding his company's litigations from 2010 to the present, and the two who were actively involved in their company's litigation with NPEs reported having detailed knowledge about patent claims, litigation documents, and communications among attorneys, customers, suppliers, contractors, and other parties. One other respondent related that he had information about many aspects of U.S. patent litigation and disputes before the International Trade Commission, and one other said that he had learned about the very expensive nature of U.S. patent litigation and defensive strategies that can be employed, about the plaintiff reputation of the federal court in the Eastern District of Texas.

2. c. If your answer to question 1 was “Yes,” please tell me how reliable you believe that your information is: (1) Very reliable; (2) Somewhat reliable; (3) Not very reliable. Please explain why you answered the way you did about reliability.

I received six responses to this question; one respondent did not answer this question. One person responded that his information was very reliable because he managed defensive patent matters for his company. Two others also believed that their information was very reliable because their companies had been involved in several instances of patent litigation in recent years. The other three respondents stated that their information was somewhat reliable because they depended on various news sources and information from colleagues within the company.

3. Has your own company been sued for patent infringement in the U.S.? If so, do you know what type of patent owner sued your company—was it

a. An NPE? If so, please describe the type of NPE (for example, (1) a company that just buys patents from others, (2) an individual inventor, (3) a company that the actual inventor created, (4) a university or a research foundation owned by a university, (5) a research center that is not part of a university, or (5) other. If “other,” can you state what it was?

b. Another semiconductor company, or

c. Some other kind of company?

d. Please tell me anything you know about the individual or company that sued your company.

Because of the nature and complexity of this question, the answers were quite complex. One respondent stated that his company had not been sued for patent infringement in the U.S., but the other six said that their companies had indeed been sued for patent infringement in U.S. courts. Because of the detail and complexity of their answers, I believe it to be best to simply quote them. Summarizing these responses does not work very well. Specific names of companies have been replaced by ****.

(1) Yes, 19 suits filed since 2010. a, b, c and d.

- a. Yes, for 13 of the 19 suits.
- b. Yes, for 4 of the 19 suits.
- c. Yes. 2 of the 19 suits were brought by a company that obtains over 90% of its revenue from licensing patents, which are either bought from others or obtained from its own technology research & development (which technology R & D is for the primary purpose of creating patents).
- d. The NPEs (3a above) that have sued our company since 2010 are: ****.

The semiconductor companies (3b above) that have sued our company since 2010 are: ****. The other kind of company (3c above) that sued our company since 2010 is: ****.

Information about these companies can be obtained by way of a subscription to the website www.PatentFreedom.com and from the Internet.

- (2) a, b, c and d.
 - a. All of above.
 - b. Yes.
 - c. "Patent Privateers" who acquired patents from operating company subject to profit sharing
 - Others: Patent brokers, Contingency base law firms,
 - d. Refer to above.
- (3) Yes, a, b, c and d.
 - a. We have been sued for patent infringement in the U.S. by NPEs, which are either (1) a company that just buys patents from others, or (2) a company that the actual inventor created.
 - b. Yes, also by another semiconductor company.
 - c. Yes, also by companies other than the semiconductor company.
 - d. They sued us because of business competition, or for monetary reasons.

(4) Variety of entities including companies that just buys patents from others, individual inventors, companies that the actual inventor created, universities or research foundation owned by universities, research centers that are not part of any university and other semiconductor companies. Due to internal security policy, I'm not allowed to provide any other detail level of related information.

(5) Yes,

a. (6) other: a company does research and buy patents as well. Our company has been sued by NPEs (type No. (1) and No. (6)).

d. We have been sued for patent infringement in the U.S. by NPEs and other semiconductor companies. Detailed descriptions are as below.

1) NPE: (1) **** buy patents from open market and sue other companies for patent infringement to collect royalties.

(2) ****: More like research centers though some of them supply their own products. Their patents may be from their inventions and/or the patent open market. They license its portfolio of patented inventions to semiconductor companies who use these inventions in the development and manufacture of their own products.

3) Other semiconductor companies: **** --- competitors or memory related semiconductor companies.

(6) Yes,

a. (5) Other – a company that puts all its patents in a division and the sole purpose of the division is to act like an NPE.

b. Had been sued by a competitor too.

4. If your company has been sued for patent infringement in the U.S., what was the outcome?

a. The case was settled before a trial.

b. The case was settled during the trial or after the trial was finished.

- c. The patent owner won a judgment from the court.
- d. Your company won a judgment from the court
- e. The case ended for some technical reason—not a “win” or a “loss.”
- f. The case has not ended—it is still active.

I received six responses to this question. One respondent reported that nine of nineteen cases were settled before trial, nine are still active, and one was dismissed. The other five respondents reported that their companies had experienced all or most of the different possible case resolutions, but settlements were the most commonly reported outcome. One person emphasized the well-known fact that a company usually cannot pursue the defensive strategy of filing an infringement counterclaim against an NPE because NPEs don't do things that might constitute infringement of the defendant's own patents.

5. If your company has been sued for patent infringement in the U.S., do you believe that the outcome of the case was affected by the type of patent owner that filed the lawsuit? In other words, did the fact that the patent owner that sued your company was either an NPE, another semiconductor company, or some other type of patent owner have an effect on the outcome of the case?

Four out of the six who responded to this question reported that being sued by an NPE did affect their companies' defense strategies, mainly because they can't file a counterclaim for infringement of the defendants' patents. One other person wrote that the type of patent owner did not affect his company's defensive strategies, and one said that he had no idea whether it did or not.

6. If your company has been sued for patent infringement in the U.S., did the patent owner name only your company in the suit, or did the patent owner also sue other companies in the same lawsuit? If the patent owner sued more than one company, approximately how many companies were sued in the same case (if you know):

- a. 2 companies

- b. 2~5 companies
- c. 6-10 companies
- d. 11-50 companies
- e. More than 50 companies

All six of those responding to this question stated that their companies had been sued by NPEs in cases in which there were multiple defendants. They reported that they had been sued in cases involving numbers of defendants between two and 50, but no one said that they had been involved in cases with more than fifty defendants.

7. If your company has been sued for patent infringement in the U.S., and if the patent owner sued more than one company in the same lawsuit,

a. Do you believe that having other companies as defendants in the same lawsuit had an effect on your company's ability to defend itself against the lawsuit? If your answer is Yes, please state why you think that there was an effect, and what that effect was.

Of the six respondents who answered this question, two said that having other defendants in the case has sometimes been an advantage because the defendants can share attorney's fees, share work, and develop joint strategies. One reported that the effects were a mixture of positive and negative because, even though costs and defense strategies can be shared, they sometimes have to make compromises that they don't like in order to work together. Another stated that coordinating with other defendants has mostly negative effects because of the difficulty of coordinating with the other defendants. One said that being one of multiple defendants had no effect, and another said he had no idea.

7.

b. Do you believe that having other companies as defendants in the same lawsuit had an effect on your company's ability to settle the case with the patent owner, or an effect on the terms of the settlement? If your answer is Yes, please state why you think that there was an effect, and what that effect was.

Six respondents answered this question. One of them answer that the type patent owner who had sued them had no effect on their ability to reach and settlement or the settlement terms that they had been able to negotiate, and another respondent wrote that he had no idea whether there had been any such effects. Of the remaining four, two reported mostly positive effects in the form of allowing them to combine resources and present a common front that gives them additional bargaining leverage. One wrote that forming joint defense groups could provide an advantage by allowing the sharing of information, tasks, responsibilities, and costs, but that if any of the defendants opts out of the group at a critical time, it can suddenly become more difficult to achieve their joint objectives than if they had not joined together in the first place. Finally, one reported that the main effect on settlement was that his company had to remain very watchful to determine what the other defendants were doing in trying to achieve a settlement with the plaintiff.

8. Do you believe that patent infringement lawsuits in the U.S. by NPEs are a problem for your own company or organization? If not, why not? If yes, how big a problem are they, and why are they a problem? Please be as specific as possible regarding the magnitude of the problem, and please provide figures where possible.

Unsurprisingly, all seven responded that U.S. patent infringement lawsuits by NPE are a moderate or large problem for the semiconductor industry. Six of the seven reported that such cases were also a problem for their own companies, the answers again ranging from a characterization of the problem as moderate to large. Almost all respondents stated that many of the patents asserted by NPEs are weak, but that it is nevertheless very costly to defend against them. They stated that, when NPEs assert several patents against them in the same lawsuit, it is more difficult and costly to figure out which ones are weak and which ones might be stronger. One person emphasized his belief that NPEs contribute nothing to technological advancement, and another noted what he believed were problems with the jury system in patent cases. Another said that having to deal with such cases seriously distracted them from running their business.

9. Do you believe that patent infringement lawsuits in the U.S. by NPEs are a problem for the semiconductor industry as a whole? If not, why not? If yes, how big a problem are they, and why are they a problem? Please be as specific as possible regarding the magnitude of the problem, and please provide figures where possible.

All seven respondents answered this question, and all believe that NPE patent litigation in the U.S. is a big problem for the semiconductor industry as a whole. Many of them stated essentially the same reasons for this belief as they had given for their particular company in the previous question. All of them believe that NPEs are abusing the litigation system, often asserting patents of questionable value, and threatening semiconductor companies' customers. One said that there was an additional negative effect on the industry because the litigation activities of NPEs were even causing some semiconductor companies to form their own NPEs for the purpose of collecting royalties. Two respondents emphasized that defending against NPE litigation causes semiconductor firms to divert resources away from productive activities.

10. Have you personally been involved in any way in a patent infringement lawsuit by an NPE against a semiconductor company? If so, what was the nature of your involvement?

One respondent answered that he had not had any such personal involvement, and another reported having had only minimal involvement by attending meetings for status updates. One said "no comment." Four respondents wrote that they had very heavy involvement in NPE litigation against their companies: one said that he was head of the patent licensing team, another is leader of the business group whose product has been the target of NPE infringement litigation, a third wrote that he was a member of the in-house legal staff that worked on NPE patent infringement cases, and a fourth reported more generally that his job does require him to be involved in all aspects of patent infringement lawsuits brought against his company.

11. Do you have any knowledge about the amount of money paid in damages, settlement payments, or royalties to an NPE by a semiconductor company?

Two respondents answered "No," and three answered "Yes". One said "No comment." One responded that he had no such knowledge that is specific to a particular semiconductor company, but sent two charts from PricewaterhouseCoopers ("PwC") 2011 Patent Litigation Study showing estimates of total monetary damages paid by companies in various industry sectors. Although I already had a copy of this report, I did appreciate this respondent calling specific attention to some of the summary statistics that I had not yet had time to analyze. The PWC study does not have a separate category for the semiconductor industry. It does identify "Computer Hardware and Electronics" as a category, and "Telecommunications" as another. Semiconductor products obviously could be placed in more than one category because they have so many uses in so many different kinds of products, including Computers and Telecommunications. Moreover, its estimates separated by industry did not distinguish between the types of patent owners as product companies or NPEs. For all industries combined, the PWC study separated damage estimates for the 1995-2010 period between patent owners that were NPEs and those that were product-producing companies. It also should be noted that the PWC estimates only purport to reflect monetary awards in the form of court judgments, for the obvious reason that terms of settlement agreements are almost always confidential.

The study estimated that, during 1995-2012, the median damage award in patent infringement actions by all types of patent owners against companies that it placed in the Computer Hardware and Electronics industry was approximately \$12 million; for defendants that PWC identified as being in the Telecommunications industry, the median award during this period was approximately \$25 million. Combining all defendant industry categories, PWC estimated that the median infringement damage award between 1995 and 2000 in cases brought by product manufacturing companies was \$4.2 million, and the median damage award in cases brought by NPEs was \$5.2 million. For the period 2001-2005, the median for NPE cases was \$10.2 million, and for product company cases was \$5.2 million. During 2006-2010, the two medians were \$7.0 million and \$3.5 million. The summary chart follows.

Chart 2a. Patent holder median damages awarded: 1995 to 2010

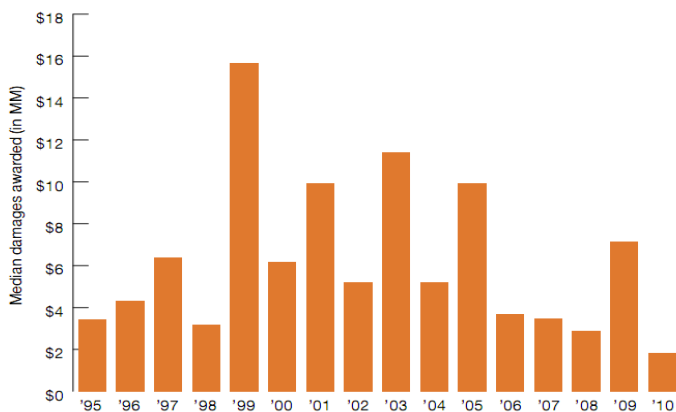


Chart 2b. Patent holder median damages awarded: Nonpracticing entities vs. practicing entities

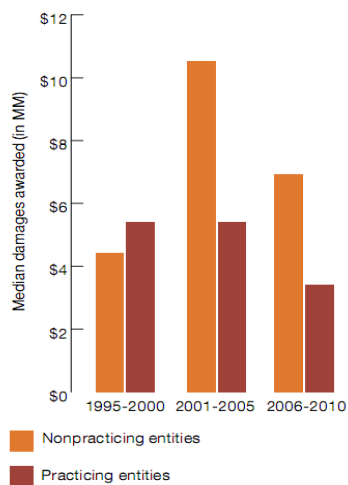
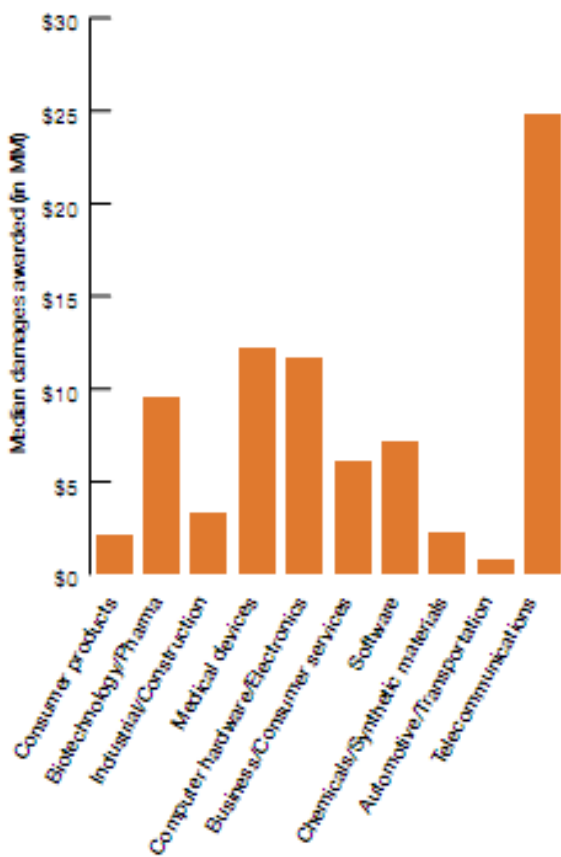


Chart 6c. Patent holder median damages awarded: Top ten industries, 1995 to 2010



12. If you answered Yes to question 11, please explain what information you have. Please be as specific as possible. Where possible, please itemize and quantify the expenses by range as follows:

- a. Damages and/or settlement fees (including royalties)
 - (i) USD 0~5 million, (ii) 5~10 million, (iii) 10~100 million, (iv) over 100 million
- b. Internal expenses
 - (i) USD 0~5 million, (ii) 5~10 million, (iii) 10~100 million, (iv) over 100 million
- c. Attorney's fees
 - (i) USD 0~5 million, (ii) 5~10 million, (iii) 10~100 million, (iv) over 100 million

Of the seven responses, one referred to the PWC study, and two stated that company policy did not allow them to answer the question. Of the remaining four, one responded generally that, for any patent infringement litigation, attorney fees were at least \$5 million to get to trial. It appears that this respondent's company has experienced extremely complex patent litigation, because this amount is far higher than the amount reported by the latest economic survey conducted by the American Intellectual Property Association. Three respondents provided relatively detailed answers. One reported that his company was willing to answer the question only for patent infringement cases filed on or after January 1, 2010; he reported that internal expenses had been between \$5 million and \$10 million, and attorney fees had been between \$10 million and \$100 million. These appear to be aggregate numbers since 1-1-2010, and not averages or medians per case. The second respondent to provide answers in some detail reported that, in total (with no date parameters specified), their company had spent over \$100 million in damages and settlements combined, less than \$5 million in internal expenses, and over \$100 million in attorney fees. The fourth stated that their total damages, settlements, and royalty payments had been below \$5 million, and that their internal expenses been and attorney fees had each had been below \$5 million.

13. Please provide any comments you may have on legal and regulatory strategies for defending against patent infringement claims brought by NPEs against semiconductor companies.

I received five responses. The first recommended that patent owners should be required to prove that the infringement is causing substantial harm to its own practice of the technology. This would, of course, eliminate suits by NPEs by adding a requirement that the patent owner must reduce the invention to practice and commercialize before suing for infringement. I personally have given a lot of thought to the consequences of requiring that patent infringement plaintiffs be required to have at least reduced the invention to practice. I also have discussed this with a number of academic experts and experienced legal practitioners. Creating such a requirement would certainly eliminate actions by NPEs; however, it would at the same time do great harm to universities and other legitimate research and development entities. This would not be good for innovation, and innovation is the primary driver of the economy.

A second respondent stated quite correctly that the best defense strategies depend on the circumstances. He suggested that defendants immediately attack the NPE's choice of venue when there is any possible basis for doing so, and quickly attack any possible deficiencies in the plaintiff's complaint. These strategies may at least increase the NPE's costs. As I observe elsewhere in this report, several decisions since 2008 by the U.S. Court of Appeals for the Federal Circuit make it somewhat easier for a patent infringement to convince the district court to transfer the case to another federal district when the evidence shows that trying the case in another district would be significantly more convenient for witnesses and where it would be easier and less expensive for the defendant to produce evidence.

Another respondent recommended that plaintiffs be required to refer in their complaints to specific evidence that points toward possible infringement by the defendant. This is indeed a major problem, and I discuss it at greater length in another section of this report where I offer several suggestions for legal and non-legal strategies that semiconductor companies should consider.

One person observed that the American Invents Act does add a new impediment to abusive litigation practices by NPEs by allowing a patent owner to sue more than one defendant in the same case only if the allegedly infringing activities of those defendants arise from the same transaction or occurrence or series of transactions or occurrences, a requirement that in many situations will increase the litigation costs of NPEs. This is an important new development that I discuss elsewhere in this report. The respondent also suggested that Congress study how to carefully amend the Tariff Act so as to deny jurisdiction to NPEs at the International Trade Commission (ITC). The ITC cannot award damages, but has the power to block importation of infringing products. The reasoning is that, because NPEs should not be entitled to injunctions under the Supreme Court's eBay ruling, analogous rules should apply to the power of the ITC. This is a very astute analogy, and may be worth some investment in a lobbying effort by semiconductor firms and other manufacturers.

Yet another person suggested that the law be changed so that a successful patent owner can never receive an injunction. I can personally say that such a change in the law will never occur, and I do not believe that it should occur. If injunctions against patent infringement are never available as a remedy, the value of patents owned by semiconductor companies and other manufacturers would be substantially diminished. This respondent also recommended that patent infringement damages be limited to actual damages only; although I am not certain, this suggestion may refer to the fact that damages up to three times the amount of actual damage can be recovered if the patent owner proves "willful infringement." Although so-called "enhanced damages" are quite uncommon because of the difficulty of proving willful infringement, semiconductor companies may wish to join a lobbying effort to urge Congress to make such a change. Finally, this respondent recommended that courts be allowed to award royalties based only on the contribution of an infringing semiconductor device to the final product, and not based on the value of the final product. Many observers have made this recommendation during the past several years, and it has been much debated. A provision requiring this type of "damages apportionment" was in several versions of so-called "patent reform" bills debated in Congress between 2005 and 2011,

but the provision was not enacted as part of the 2011 America Invents Act because it continued to be a source of substantial controversy. The debate over the “entire market value rule” and “damages apportionment” that focuses only on the infringing component of a final product is so important, controversial, and nuanced that it deserves further comment. The Morgan Lewis law firm provides a very worthwhile summary of the current state of the law in a Power Point presentation available on the Internet.⁹¹

Morgan Lewis’s conclusions from studying a large number of federal cases on the point are that there are a number of factors in cases that favor application of the “entire market value rule” to the calculation of damages and royalties, including the following:

- (1) The entire marketed product or system are covered by the claims of the asserted patent.
- (2) The patented component is integral to the overall performance of the entire product or system including unpatented components.
- (3) It is the industry standard or it is required to sell the unpatented components with the patented component as an entire product or system.
- (4) The patented component is the basis for customer demand or the basis for increased sales of the entire product or system in which it is incorporated.
- (5) The patented invention was the motivation for the infringer’s decision to go forward with manufacturing and selling products or systems incorporating the patented invention.
- (6) The patentee and the infringer are direct competitors.
- (7) It was reasonably foreseeable that the patentee would have made sales of the unpatented products “but for” the infringement.

⁹¹ <http://www.morganlewis.com/pubs/AssessingPatentInfringementDamages.pdf>, slides slides 36-38.

On the other side, according to Morgan Lewis, factors favoring the apportionment of damages so that the based for calculating damages and royalties is limited to only the contribution of infringing component include the following:

- (1) The patented component or product operates independently of the unpatented component or product.
- (2) The unpatented component or product serves a useful purpose independent of the patented component or product.

14. Please make any other comments you may have about NPEs, about patent infringement litigation in the U.S. against semiconductor companies, or about anything else that could be relevant to this study.

The only response I received to this question emphasized that NPEs cause many consumer goods to be more expensive because manufacturers must pass along the costs added by NPE patent infringement litigation.

VIII. Relevant Recent Legal Developments

A. Forum Shopping and the Venue Issue

We investigated “forum shopping” and the venue issue—the common practice of NPEs filing of patent infringement actions in federal districts thought to be more favorable to patent owner-plaintiffs and with which defendants may have little actual connection. The U.S. Court of Appeals for the Federal Circuit has made substantial progress in solving this problem since 2008, rendering several decisions making it easier for semiconductor firms and their customers to have patent infringement cases against them transferred from districts (such as the Eastern District of Texas) where they had little connection other than that some of their products may have been sold there. A very recent decision (December 2, 2011) by the Federal Circuit in *In re Link_a_Media*

Devices Corp.⁹² involved a patent infringement action filed against Link_a_Media Devices (LAMD) by Marvell International, Ltd, a patent holding company based in Bermuda. Marvell filed the action in the District of Delaware, where LAMD was incorporated but with which LAMD had no other connection. LAMD's principal place of business was in the Northern District of California (NDCA). The district court in Delaware refused LAMD's request to transfer the case to the NDCA. The main patent appeals court—the U.S. Court of Appeals for the Federal Circuit—reversed and restated its earlier holdings that district court's should not give much weight to the plaintiff's choice of venue, especially when that chosen venue is not the plaintiff's principal place of business. The court also reiterated its earlier holdings that considerable weight should be given to evidence showing where most of the evidence and witnesses are likely to be located, and particularly to the convenience of probable witnesses. The Federal Circuit issued a writ of mandamus order the district court to transfer the case to the NDCA because the lower court had abused its discretion in not doing so.

Some of the bills that had been introduced in Congress that ultimately became the America Invents Act originally included provisions that had the aim of reducing the amount of forum shopping by patent owners, but such a provision was not included in the version that later was enacted. Certain key members of Congress apparently became convinced that the Court of Appeals for the Federal Circuit had adequately addressed the problem.

Although “forum shopping”—filing cases in federal districts perceived to be more “friendly” to patent owners—has not ended, the series of rulings by the Federal Circuit should make it easier for defendants to have cases transferred to federal districts that are more convenient for them.

B. The America Invents Act and Multiple Defendants

⁹² 662 F.3d 1221 (Fed. Cir. 2011).

The America Invents Act, which took effect on September 16, 2011, makes it more difficult for patent owners to sue multiple defendants in the same case for allegedly infringing the same patent, but it will not end the practice altogether. The legislation allows a patent owner to sue two or more defendants in the same suit only when the infringement allegations are based on the same transaction or occurrence, or the same series of transactions or occurrences, and when a common issue of fact or law will arise in the case. The law probably still permits a patent owner to pursue an infringement claim against a manufacturer and its distributors or retailers in the same suit, possibly a component maker and manufacturers and sellers of the end product containing the component. It will take time for us to fully understand the effects of the AIA on the ability of NPEs to sue large numbers of defendants in the same case. We do not yet know exactly how courts will interpret and apply the multiple-defendants provision of the AIA. We will not know for quite some time whether it may actually reduce the amount of NPE litigation or whether it will simply result in a larger number of cases against a smaller number of defendants per case. Even if the latter situation is the result, however, it should benefit manufacturing defendants such as semiconductor firms.

C. Injunctions Are No Longer Automatic in Patent Infringement Cases

Type (7) NPEs (or “patent assertion entities” or “patent trolls”) often used the threat of an injunction to “hold up” manufacturers. Product companies who lost infringement suits brought by these entities were faced with stopping production and possibly removing products from the market unless they bought a license for a fee much greater than if they were not facing such potentially catastrophic consequences. This happened in the case against RIM, the maker of the Blackberry, which led it to settle for \$612.5 million, an amount assuredly greater than if it had faced the threat of a permanent injunction. Such cases exemplified the problems with *ex post* licenses, identified by the FTC, in a highly amplified way. Lower federal courts, including the U.S. Court of

Appeals for the Federal Circuit, had routinely grant injunctions as a remedy for patent infringement with little or no analysis of the rules that have always been applied in other contexts as part of the common law of remedies.

In 2006, however, the U.S. Supreme Court decided *eBay, Inc. v. MercExchange, LLC*, in which the Court decided that an injunction should not be automatically granted upon a finding of patent infringement, as courts had typically done.⁹³ The Court also held that an injunction should not be denied solely for the reason that the plaintiff does not practice the patented invention. Instead, the Court ruled, district courts should apply the traditional analysis from other legal contexts for determining whether an injunction should be granted. This analysis requires courts to apply a four-factor test when deciding if an injunction is merited. For instance, to win a permanent injunction, patent holders must prove that they suffered irreparable harm and that remedies available at law, such as monetary damages, are not adequate compensation. Although this ruling does not foreclose NPEs, including those that might deserve the “patent troll” appellation, it certainly will make obtaining such a remedy more difficult for them. If the threat of an injunction is diminished, the problems associated with ex post licenses will still exist, but not in the same extreme way that they occurred when defendants were faced with automatic permanent injunctions.

In *Intellectual Property Today*, Ernest Grumbles, III, Rachel C. Hughey, & Susan Perera recently reported on their review of 67 cases decided after eBay that involved the issue of whether a permanent injunction should be granted as a remedy for patent infringement.⁹⁴ Their findings are summarized as follows:

We have reviewed 67 patent cases resulting in a final decision regarding permanent injunctive relief since the *eBay* decision. Of the cases reviewed, the

⁹³ 547 U.S. 388 (2006).

⁹⁴ Ernest Grumbles, III, Rachel C. Hughey, & Susan Perera, *The Three Year Anniversary of eBay v. MercExchange: A Statistical Analysis of Permanent Injunctions*, INTELLECTUAL PROPERTY TODAY,

district courts granted permanent injunctions approximately 72% of the time (48 permanent injunctions granted for 67 cases reviewed). In a large majority of the cases where the court granted a permanent injunction, the parties were direct competitors (41/48 of the cases).

But the parties do not need to be competitors for a permanent injunction to issue. The Federal Circuit has recognized, quoting *eBay*, that "patent owners that license their patents rather than practice them 'may be able to satisfy the traditional four-factor test for a permanent injunction.'" For example, district courts have found that even if an infringer is not a direct competitor, the patentee can still establish irreparable injury if it demonstrates it will be harmed in its competition with other research facilities. In some of the cases where the courts granted permanent injunctions and the parties were not direct competitors, the parties were indirect competitors, or the patentee was a licensor or a research organization.

In 28% of the cases reviewed, the district court denied the request for a permanent injunction. This is a radical departure from past rulings where injunctive relief was almost never denied. As the district courts continue to apply *eBay*, trends in the number of injunctions granted will become visible and could result in a new reason to forum shop for the most favorable court. Surprisingly, the Eastern District of Texas, which is known for its pro-patentee judgments, is following the national statistics closely, denying 3 of 13 permanent injunctions (23%) since the *eBay* decision. However, the Central District of California has granted almost all requests for permanent injunctions in its court (4/5 of the cases), as has the District of Minnesota (3/4 of the cases).

Courts are not just denying injunctions in the case of non-practicing patent owners. In the cases where the district court denied a permanent injunction, the parties were competitors in approximately two-thirds of the cases (12/19 of the cases). Going forward it will be important in all infringement disputes to

consider the factors for injunctive relief early and prepare to address them in litigation.

The Federal Circuit reviews the district court's decision to grant or deny a permanent injunction for abuse of discretion, which requires a showing that the court made a clear error of judgment in weighing relevant factors or exercised its discretion based upon an error of law or clearly erroneous factual findings. After *eBay*, the Federal Circuit has generally affirmed the district court decisions granting permanent injunctions. Of the district court decisions granting permanent injunctions, three were affirmed on appeal to the Federal Circuit and one was vacated and remanded. In that case, the Federal Circuit concluded that the jury's damages award contemplated future sales—pursuant to the patentee's request. The court explained that "this factor greatly outweighs the other *eBay* factors in this case." While it is appropriate in some circumstances to award an ongoing royalty for patent infringement in lieu of an injunction, the court reasoned that injunctive relief is not punitive and should not to act as a form of "extra damages" to compensate for litigation costs.

The Federal Circuit has also determined that the district courts have abused their discretion in denying permanent injunctions. Of the district court decisions denying permanent injunctions, one was affirmed on appeal and one was vacated and remanded. In that case, the Federal Circuit vacated the district court's decision not to grant a permanent injunction because, it explained, the district court failed to consider any of the *eBay* factors and failed to make any factual findings regarding those factors.⁹⁵

One can see that product companies found liable for patent infringement still face the hold-up problem created by Type (7) NPEs in some cases, but the injunction issue is being dealt with by courts in a more sensible way.

⁹⁵ Grumbles, Hughey, & Perera, *The Three Year Anniversary of eBay v. MercExchange: A Statistical Analysis of Permanent Injunctions*, *id.* at § IV.

IX. Some Possible Courses of Action for Semiconductor Companies

A. The Possibility of Using an Antitrust Law Defense

Some observers have suggested that those accused of patent infringement by NPEs might be able to assert defenses under the U.S. antitrust laws. Any possible uses of antitrust law as a defense against patent infringement actions is not limited to suits brought by NPEs, but applies to cases brought by any patent owner. As with any lawsuit, the potential success of the plaintiff's or defendant's assertions depends completely on the highly particular facts related to the claim or defense.

The most important of the U.S. antitrust laws is the Sherman Act. Its two main provisions are Section 1, which prohibits "contracts, combinations, and conspiracies in restraint of trade." Thus, Section 1 applies only to concerted action among two or more separate entities. At an early time, the U.S. Supreme Court interpreted this section as outlawing only those agreements or conspiracies that "unreasonably" restrain trade. In other words, the law only bans arrangements among firms that have a substantial negative effect on competition. To have such an effect, the firms involved must have, as a group, a substantial amount of market power. This means that the group, when acting together must have the ability raise prices or limit output without losing their customers to others. Over time, courts in the U.S. also identified certainly kinds of collusive behavior among two or more firms that is "per se" illegal, that is illegal without having to prove harm to competition. The U.S. Supreme Court has shortened the list of "per se" violations in recent years, and the two primary per se offenses today are price fixing and market division among competitors.

We have found no evidence that NPEs have acted together in any way in their patent infringement actions or in their other activities. In addition, filing lawsuits is protected under the First Amendment to the U.S. Constitution as a form of "petitioning the

government for redress of grievances," and as an exercise of political speech. Immunity from the antitrust laws for such activity, even if it has the purpose and effect of restricting competition, has been recognized under the "Noerr-Pennington Doctrine. The name comes from two Supreme Court cases, *Eastern Railroad Presidents Conference v. Noerr Motor Freight, Inc.*, 365 U.S. 127 (1961), and *United Mine Workers v. Pennington*, 381 U.S. (1965). The Court later expanded on the doctrine in *California Motor Transport Co. v. Trucking Unlimited*, 404 U.S. 508 (1972). The Court has recognized an exception to this immunity from the Sherman Act, however, in the case of "sham litigation." For sham litigation to exist, a lawsuit must be "objectively baseless in the sense that no reasonable litigant could realistically expect success on the merits." If a defendant proves that the lawsuit is "objectively baseless," it then must prove a second requirement—that the plaintiff's subjective motivation in filing the objectively baseless lawsuit was an attempt to interfere with the business of a competitor rather than to actually receive a legal remedy such as damages.⁹⁶ Thus, if two or more NPEs acted together to initiate an infringement lawsuit, or if a single NPE initiating patent litigation possessed monopoly power, there could be a violation of Section 1 ("contracts, combinations, or conspiracies" that unreasonably restrain trade) or Section 2 ("monopolization") of the Sherman act only if the patent owner(s) knows or reasonably should know that its patent is invalid, not infringed, or unenforceable so as to render the litigation a "sham."⁹⁷

In addition to the prohibition of anticompetitive collusive behavior, Section 2 of the Sherman Act prohibits monopolization and attempted monopolization by a single firm. To be a monopolist under Section 2, a company must have "overwhelming market power" such that, on its own, it can control prices and exclude competition. According to modern legal theory, a monopolist violates Section 2 of the Sherman Act if it also commits monopolistic acts by engaging in predatory behavior—behavior specifically aimed at using its monopoly power to harm competition.

⁹⁶ *Professional Real Estate Investors, Inc. v. Columbia Pictures Industries, Inc.*, 508 U.S. 49 (1993).

⁹⁷ *Handguards, Inc. v. Ethicon, Inc.*, 743 F.2nd 1282 (9th Cir. 1984).

A dominant market share is required for a firm to be a monopolist under U.S. law, and I have not found any evidence that, at present, any single NPE has this kind of economic power. It is rare for a patent to actually cause its owner to monopolize a properly defined economic market.

One could argue that, if a major investor in a patent aggregator such as Intellectual Ventures possesses dominant economic power in a given market, the aggregator's patent activities might extend such power in an anticompetitive manner. This is an untested theory, however, and likely would face even more difficulty than do established antitrust law theories in the modern era in which federal courts employ the theories of the Chicago School of Economics. The federal courts are the final arbiters of the antitrust laws' application.

Even if an NPE had such power, the filing of patent infringement lawsuits would be protected by the Noerr-Pennington doctrine unless the litigation met the requirements to qualify as "sham litigation." I have found no evidence to support such an assertion, but will later probe this question more deeply.

A teleconference seminar on the use of an antitrust law defense to a patent infringement complaint confirmed the difficulty of using such a defense. The seminar was presented by the American Bar Association (ABA). Speakers at the seminar stated not only that it is very difficult to use an allegation of an antitrust violation to defend against a patent infringement claim in the U.S., but also that the relevant law in Europe, Brazil, and several other countries is quite similar to that in the U.S., and that mounting an antitrust defense to a patent infringement claim will likewise be very difficult in those countries.

Despite the fact that I have found no evidence of antitrust violations by Type (7) NPEs related to their patent enforcement activities, below I discuss some possible situations in which semiconductor companies might be able to mount an antitrust law defense. I

include in this discussion situations in which defendants may be able to use the “patent misuse” defense, as well, because this defense incorporates the same kinds of concerns about competition that the antitrust laws do. Although these defenses are very difficult to establish, in particular factual situations a defendant may be able to make at least a sufficiently plausible showing to tie up the NPE plaintiff in discovery on the issue and have a positive effect on settlement negotiations. Although my focus in the discussion of antitrust law and patent misuse as potential defenses, as well as in my discussion of actions by the Federal Trade Commission, is on patent infringement enforcement activities by NPEs, the same principles apply to all other types of patent owners.

Following are some scenarios in which semiconductor companies and their customers may be able to employ antitrust law or “patent misuse” as defenses to NPE patent infringement suits. Then I discuss another issue that is closely related to antitrust law, namely, activities that may result in enforcement actions by the Federal Trade Commission (FTC) for “unfair methods of competition.”

(1) It is possible that an NPE might assert a patent that was obtained by fraud on the U.S. Patent & Trademark Office (PTO) and utilizes the fraudulently procured patent to exercise monopoly power in violation of Section 2 of the Sherman Act.⁹⁸ The term “fraud on the patent office” has fallen out of usage, and in modern times the concept is called “inequitable conduct.”⁹⁹ Inequitable conduct alone, consisting of either affirmative deception by an applicant that contributes to the PTO’s decision to issue a patent or willful blindness concerning an item of relevant, material prior art that should have been disclosed, causes the patent to be unenforceable. If such conduct contributes to the acquisition or abuse of monopoly power by the patent applicant, there may be a violation of Sherman Act section 2’s prohibition of monopolization. Although application for a patent normally would be constitutionally protected conduct similar to the filing of a lawsuit, inequitable conduct removes this protection as does the

⁹⁸ Walker Process Equip. v. Food Mach. & Chem. Corp., 382 U.S. 172 (1965).

⁹⁹ Kingsdown Med. Consultants, Ltd. v. Hollister Inc., 863 F.2d 867, 876 (Fed. Cir. 1988) (en banc).

sham nature of litigation so that the conduct can be used to help prove an antitrust violation.

(2) An NPE or other patent owner cannot legally contract with a licensee on any terms having the effect of extending either the scope or length of time covered by the patent. It is clear that no rational licensee would agree to such license terms unless the patent confers substantial market power on the patent owner such that the licensee has little choice in the matter. Examples include a license agreement obligating the licensee to pay royalties for longer than the remaining term of patent protection, or to pay royalties on the basis of worldwide use for a U.S. patent. In such situations, the license agreement is unenforceable because the licensee may successfully assert the “patent misuse” defense.¹⁰⁰ However, normal rules of antitrust law then must be applied to determine whether an antitrust violation has occurred. As discussed earlier, proving an antitrust violation is difficult, and has been much more difficult since the U.S. Supreme Court and lower federal courts began adhering to the views of the “Chicago School of Economics” in the early 1980s.

(3) An NPE or other patent owner may violate section 1 of the Sherman act if that owner participates in a patent license pooling agreement with one or more other companies that effectively extends the market power of the patents being licensed. For instance, when two or more companies pool their patents and then license or enforce those patents without giving a prospective licensee an opportunity to limit the patents it must license to those needed for a single alternative for implementing the technology, the prospective licensee has an argument that the licensing firms have committed an antitrust violation. For example, in *Princo Corp. v. Int'l. Trade Comm'n*, 616 F.3d 1318 (Fed. Cir. 2010), the U.S. Court of Appeals for the Federal Circuit rejected the patent misuse and antitrust argument on the facts as presented, but the FTC filed an *amicus curiae* brief urging the Federal Circuit to adopt a less restrictive standard for the

¹⁰⁰ *Transparent-Wrap Mach. Corp. v. Stokes & Smith Co.*, 329 U.S. 637, 643 (1947).

anticompetitive impact which the licensee needed to establish to sustain its patent misuse defense.

B. Possible NPE Violations of Section 5 of the FTC Act

Section 5 of the Federal Trade Commission (FTC) Act prohibits “unfair methods of completion and deceptive trade practices.”¹⁰¹ The first part of section 5, “unfair methods of competition,” has been applied by the FTC that closely tracks US antitrust laws, such as section 1 of the Sherman Act (contracts, combinations, and conspiracies in restraint of trade), section 2 of the Sherman Act (monopolization and attempted monopolization), and section 7 of the Clayton Act (corporate mergers and acquisitions that “tend to” create a monopoly or an unreasonable limitation on completion).

Only the FTC itself can enforce Section 5 of the FTC Act. A private party claiming to have been harmed by the unfair competitive practices of another has no standing to enforce this law. I discuss section 5 in this part of the report, however, because informal complaints by companies or consumers can bring to the agency’s attention unfair competitive practices that it might not otherwise know about, and the cooperation of companies or consumers in providing evidence can assist the agency in determining whether to further investigate possible violations. Thus, there can be a place in a company’s strategy for communicating with an agency like the FTC.

The FTC has authority to apply section 5 to business activities that do not fit exactly within the scope of the other antitrust laws, but rarely does so, especially in the modern era when all kinds of antitrust violations have become more difficult to prove in the U.S. and the attitudes of the U.S. government and federal courts have become more antipathetic toward antitrust law enforcement.

¹⁰¹ 15 U.S.C. § 45.

Normal patent enforcement activities by NPEs will not violate section 5 of the FTC Act. It is possible, however, that some unusual NPE behavior could do so. For example, during the past few years, the FTC has found violations of section 5 by NPEs such as Negotiated Data Solutions, LLC (N-Data) and Rambus, for having agreed to make certain of their patents available to standard-setting organizations such as IEEE (Institute of Electrical and Electronic Engineers) and the Advanced Television Systems Committee (ATSC) for RAND (Reasonable and Nondiscriminatory)¹⁰² licensing and then subsequently violating their agreements by refusing to grant licenses on reasonable terms and threatening litigation or actually suing when their demands were not met.

The N-Data case from 2008 is particularly instructive, because the FTC found a violation of section 5 without concluding that there was a violation of section 2 of the Sherman Act for monopolization or attempted monopolization, but, contrary to most of its prior cases in the modern era, found that unfair methods of competition were a violation even without a violation of the Sherman or Clayton Acts. The original patent holder, National Semiconductor Corporation (“National”), was an active participant in IEEE. In 1993, National convinced IEEE to adopt its autonegotiation technology, referred to as “NWay,” into the Fast Ethernet standard. In order to persuade IEEE to adopt the technology as an industry standard, National publicly announced that if NWay technology were chosen, National would license NWay to any requesting party for a one-time fee of \$1,000. As a result, National’s technology was incorporated into the Fast Ethernet standard. In 2003, N-Data was assigned the patent for NWay technology; at the time, N-Data was aware of National’s prior commitment to IEEE. However, a direct relationship between N-Data and IEEE did not exist. N-Data thereafter rejected requests from companies to license NWay technology for the one-time fee. Instead, N-

¹⁰² Sometimes the term FRAND is used—“fair, reasonable, and non-discriminatory” licensing rates. FRAND and RAND are essentially interchangeable terms, although FRAND seems to be the preferred term in Europe and RAND in the U.S. for licensing agreements in stand-setting organizations (SSOs). See *Reasonable and non-discriminatory licensing*, http://en.wikipedia.org/wiki/Reasonable_and_non-discriminatory_licensing, last visited on April 21, 2012.

Data threatened to initiate legal action against companies that refused to pay its royalty demands, which were far in excess of the one-time fee.

In the same time period during which the FTC investigated and instituted an enforcement action N-Data, the agency also found that Rambus had violated section 5 because of its dealings with an SSO. Acting on the view that Rambus, an NPE, had committed fraud in its dealings with the Joint Electron Device Engineering Council (JEDEC), the FTC's complaint alleged that, "Through deceptive acts and practices, Rambus obtained monopoly power over the DRAM [dynamic random access memory] market" ¹⁰³ The FTC overruled a decision by one of the agency's ALJs in favor of Rambus and issued a remedy in 2007 that set maximum royalty rates for the technology in question. Rambus appealed, however, and the U.S. Court of Appeals for the D.C. Circuit overruled the FTC and held that the agency had failed to sustain its allegation of monopolization. The DC Circuit stated that the FTC did not prove any deceitful conduct, and even if they had, deceit enabling a monopolist to charge higher prices does not constitute monopolization. ¹⁰⁴ Because of the appeals court's finding of a lack of deception on the part of Rambus, it is unlikely that a complaint would have succeeded even if the FTC had proceeded only on the basis of section 5 of the FTC Act rather than on the basis of alleged monopolization under section 2 of the Sherman Act.

Allegations and findings of violations of section 5 for asserting patents in violation of agreements with SSO's has not been limited to NPEs. In the mid-1990's, the FTC broke new ground by charging Dell and Unocal with violations in this setting.

In the Dell case, Dell Computer Corp. agreed to drop patent claims that affect millions of personal computers using the industry standard "VL-bus". The decision follows Federal Trade Commission charges that Dell restricted competition in the personal computer industry and undermined the standard-setting process by threatening to

¹⁰³ In re Rambus, Inc., No. 9302, 2004 FTC LEXIS 17 (2004), complaint, at ¶¶122-24.

¹⁰⁴ Rambus, Inc. v. Fed. Trade Comm'n, 522 F.3d 456, 459, 464 (D.C. Cir. 2008)

exercise undisclosed patent rights against computer companies adopting the VL-bus standard. To settle the FTC charges, Dell agreed not to enforce its patent rights against computer manufacturers using the VL-bus, a mechanism to transfer instructions between the computer's central processing unit and its peripherals, such as a hard disk drive or video display hardware. VL-bus is the technology of choice in computers that use "486" chips. According to William J. Baer, Director of the FTC's Bureau of Competition, this was the first time federal law enforcement authorities have taken action against a company for acting through a standard-setting association to unilaterally seek to impose costs on its rivals through abuse of the standard-setting process.

Dell was a member of the Video Electronics Standards Association (VESA), a non-profit standards-setting organization, when the association began setting a design standard for a computer bus design to respond to demand for faster graphics performance. VESA members, representing virtually all major U.S. computer hardware and software manufacturers, voted to approve the new VL-bus standard in 1992. As part of that approval, a Dell representative allegedly certified that he knew of no patent, trademark or copyright that the bus design would violate.

After the VESA VL-bus design standard became successful and computer manufacturers had sold more than 1.4 million personal computers incorporating the VL-bus, Dell contacted certain VESA members and asserted that it obtained a patent in 1991 that they were violating by using the VL-bus standard.

The FTC charged that Dell's actions were unfair and that they unreasonably restrained competition in the following ways:

- industry acceptance of the VESA VL-bus standard was hindered pending a resolution of the patent issue;

- companies avoided using systems incorporating the VL-bus design because they were concerned that the patent issue would chill its acceptance as the industry standard;
- uncertainty about acceptance of the design standard raised the cost of implementing the VL-bus design and the costs of developing competing bus designs; and
- willingness to participate in industry standard-setting efforts has been chilled.

To settle the charges, Dell agreed not to enforce its patent against computer manufacturers incorporating the VL-bus design in their products. In addition, Dell was prohibited from enforcing any of its patent rights that it intentionally failed to disclose upon request of any standard-setting organization during the standard-setting process. The settlement also contained various reporting requirements that would assist the FTC in ensuring Dell's compliance.¹⁰⁵

I have found no instances in which NPEs have been found to be in violation of section 5 of the FTC Act other than in situations in which they have misused patents in SSOs. This does not mean that NPEs can never violate section 5 in other situations, however.

C. Patent Transactions between Semiconductor Firms and NPEs

NPEs have acquired their patents in various ways and from various sources. Although some NPEs were formed and are owned by those who created their patented technology, most appear to have bought their patents. Sometimes companies buy patents for the purpose of practicing them in the making of products or the use of processes. Sometimes companies buy patents for defensive purposes so that they can have more freedom of action in their own research and development activities with less

¹⁰⁵ U.S. Federal Trade Commission, *Dell Computer Settles FTC Charges; Won't Enforce Patent Rights for Widely Used Computer Feature*, <http://www.ftc.gov/opa/1995/11/dell.shtm>.

fear of being sued, or simply to have patents available to assert in counterclaims when they become infringement defendants.

However, most NPEs that have been active in litigation against manufacturers and their customers, including firms in the semiconductor industry, have acquired all or most of their patents for the sole purpose of asserting them against product makers. They sometimes send cease-and-desist letters and proposed license agreements to targets and then file suit after not being able to persuade the target to take a license, but sometimes the first thing a product maker receives from an NPE is a federal court complaint for alleged infringement.

Some NPEs have purchased patents from manufacturers, including those in the semiconductor industry, and then asserting them against firms in that same industry. Although there are several examples of such occurrences, probably the most notable was the sale by Micron Corp. of a portfolio of approximately 3,500 patents to Round Rock Research (RRR) in 2009, making RRR one of the largest NPEs as measured by the size of its patent portfolio. Reportedly, this sale represented at least 20% of Micron's portfolio. In turn, this NPE has asserted a significant number of those former Micron patents against members of the industry.

Although the Micron-RRR transfer is perhaps the most notable instance of a semiconductor company patent portfolio assignment to an NPE, there are other examples, one being the assignment from National Semiconductor patent assignment to N-Data that the latter subsequently sought to use in violation of National's agreement to license for a very low fee to other members of a standards-setting organization. As previously explained, this led to a finding of unfair competition in violation of section 5 of the FTC Act.

A semiconductor or other manufacturer might be well advised to reconsider the selling of its patents to an NPE. Such activity may very well be in the short- to medium-term

best interests of that manufacturer. However, when other semiconductor firms are sued for infringement by the purchasing NPE, they could themselves be more likely to subsequently sell patents to NPEs. Over the longer term, the effects of such behavior are probably not good for the industry.

It is absolutely necessary that, if semiconductor firms or other manufacturers do give consideration to not selling patents to NPEs, each firm discuss the question only within the company. A semiconductor firm should NEVER discuss or even bring up the issue with another firm in the semiconductor industry. Any such discussion could create legal suspicion. An express or even implicit agreement between companies in the same business to not sell to or buy from another entity will violate Section 1 of the Sherman Act, which prohibits “contracts, combinations, or conspiracies in restraint of trade.” If, for example, an employee of one semiconductor company communicates in any way with an employee of another semiconductor company about not selling patents to NPEs, this communication could be just as dangerous from a legal perspective as discussing prices. It must not be done. But those working within a single company can do so if they wish.

D. Using the Services of a Firm that Specializes in Finding “Prior Art”

A strategy for defending against patent infringement claims, especially claims filed by NPEs, that a number of defendants have found to be worthwhile is to employ one of the companies in the business of finding relevant prior art—prior patents and other printed publications, and evidence of prior public uses or sale activity involving an identical or obviously similar invention—that the defendant may use in an attempt to have the court invalidate the plaintiff’s patent.

What appears to be the largest of these companies is Article One Partners LLC, 18 Commerce Way, Suite 2250, Woburn, MA 01801. Information about the company was obtained through email correspondence with the top officers in the company, and from

its website at www.ArticleOnePartners.com. The company was founded by Cheryl Milone in 2008, and she remains as CEO. Greg McKallagat is the company's marketing manager. The company locates prior art not only to help defendants invalidate patents asserted against them, but also to assist patent owners in validating their patents. Article One is backed by the venture capital firms Alleghany Capital Corporation and General Catalyst Partners.

Article One operates using an open source model by presenting on its website and the websites of international affiliates research requests on behalf of its clients. It pays compensation to what it calls its "community" for providing it with high-quality prior art in response to the request. Article One has researchers from 178 countries and has been described as social media for patents. Projects are translated into eight languages to trigger foreign language research in key geographic locations. The success of the company led Marshall Phelps (former head of IP and licensing at IBM and Microsoft) to join Article One's Board of Directors, and resulted in client feedback that in 57% of research projects, Article One provided new and valuable evidence compared to traditional research. As of August 2011, Article One had over 110 clients, 14 of which are in the Fortune 100, 24 in Global Fortune 500, and 12 of the top 30 companies targeted most frequently by NPEs. More information about Article One Partners LLC on both its own website, in a Wikipedia article at http://en.wikipedia.org/wiki/Article_One_Partners, and by contacting the company.

Two other companies have been created more recently and operate as competitors of Article One Partners, Blue Patent, <http://www.bluepatent.com/>, and CrowdIPR, <http://www.crowdipr.com/>.

E. Seeking More Specificity in Federal Court Complaints

A substantial majority of the many federal patent infringement complaints that I have studied recite only an extremely general and vague set of alleged facts. This vagueness

makes it far more difficult for a defendant to know what it has supposedly done. Sometimes the complaint specifies the products of the defendant that allegedly infringe the plaintiff's patent, but many times it does not even do that.

In such cases, the defendant often must participate in costly pretrial discovery procedures before knowing what it is allegedly doing wrong. The Federal Rules of Civil Procedure provide that a district court judge may levy sanctions on an attorney who files a claim or motion in behalf of her client without having first determined that there is a reasonable factual basis for the filing. Although I have not done a systematic empirical analysis of this, I have read a very large number of patent infringement complaints, and anecdotal evidence strongly suggests that type (7) NPEs are much more likely than others to file very sketchy and vague complaints. Many of these complaints do not appear to be based on a thorough prior investigation of the evidence of infringement, and thus it seems likely that many attorneys for NPEs are violating the Federal Rules of Civil Procedure. Yet, Federal District Courts usually allow patent infringement plaintiffs to get away with this.

It may be a good idea for semiconductor companies, and indeed product manufacturing companies in other industries, to lobby for action by Congress to make the rules and enforcement mechanisms relating to vague complaints stronger and more effective. And, of course, it is legal for a group of competitors such as semiconductor companies to jointly lobby Congress and federal agencies for changes in the law, so long as the competitors do not discuss forbidden topics such as prices or other factors that may restrict competition among them.

F. Bargaining Over Attorney Fees

It is common knowledge that attorney fees in patent infringement cases are extraordinarily high. Most of this expense is justified. Most of the attorneys who handle patent infringement and other complex IP cases are close to the top of the legal

profession, and they are not going to be cheap. Good expert witnesses also are often a necessity in these cases, and really good ones are not cheap.

Given that cases with stakes of \$25 million or more had a median cost per party through the end of discovery was \$3 million as of 2009, it is likely that there is at least some room for cost cutting.¹⁰⁶

Although many semiconductor firms may have already had serious discussions about costs with their litigation defense counsel, this should certainly be done on an ongoing basis. Putting out work for bids from at least two capable, experienced IP litigation firms (or IP litigation sections at large law firms) can sometimes help to lower costs. In addition, negotiating for bulk discounts with IP litigators sometimes can be fruitful for any company that has a substantial amount of IP defense work. Some manufacturing firms that continually have a substantial amount of IP defense work have also hired experienced American litigators to work in-house. Other possible strategies for lowering litigation defense costs should be carefully considered and discussed between existing in-house counsel and management.

X. Conclusion

Non-practicing entities—entities that own and assert patents but that do not make products or provide services based on those patents—can take a variety of forms, ranging from independent inventors that have retained ownership of their patents to universities and research foundations to the more commonly maligned “patent aggregators,” “patent licensing shops,” or “patent assertion entities” that do not invest in research, development, or invention but that instead just acquire patents and enforce them.

¹⁰⁶ AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, REPORT OF THE ECONOMIC SURVEY 2009, at I-129.

Patent owners of all kinds, whether or not they make products, are capable of engaging in questionable patent enforcement behavior, and sometimes they do. In recent years, however, it appears that the type of NPE that merely acquires patents, some of which seem to be of questionable quality, which I have often referred to as Type (7) NPEs, have been more likely than other kinds of entities to engage in litigation tactics that may not be desirable from a public policy perspective.

I have identified the main types of NPEs and the category that is more likely to engage in abusive litigation tactics, "Type (7)," provided detailed profiles of a number of NPEs of this kind, and presented data from both my own original research and other sources about the scope and magnitude of the NPE-semiconductor patent litigation phenomenon.

This report also discussed formal recognition of problems that manufacturers have faced in defending against infringement claims brought by NPEs, including a provision in the American Invents Act of 2011 ordering the GAO to perform a year-long study of NPE infringement litigation and report back to Congress, and a 2011 study by the Federal Trade Commission (FTC) on problems in the patent system associated with inadequate advance notice of patent rights to potential infringers that gave significant attention to such problems in the case of NPEs.

I reported on the results of a survey that was distributed as widely as possible to knowledgeable persons within the semiconductor industry. Although the response rate was low, those who did respond provided very interesting and insightful information.

Finally, I discussed several recent legal developments that are likely to provide some relief to semiconductor companies and other manufacturers, as well as several possible courses of action that semiconductor firms may wish to consider as possible responses to the NPE litigation problem.