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THE AIA 500 EXPANDED: THE EFFECTS OF PATENT MONETIZATION ENTITIES

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The AIA 500 Expanded:

The Effects of Patent Monetization Entities

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Public attention is increasingly focused on the phenomenon of patent monetization entities. Known colloquially as "patent trolls," these entities concentrate on creating income from licensing or litigating patents, rather than producing a product.

The activity of patent monetization is coming under increasing scrutiny from a variety of governmental entities. In December of 2012,

[1] Robin Feldman, Professor of Law and Director of the Institute for Innovation Law at UC**Hastings** Law; Tom Ewing, JD, MS, MA, Licentiate in Industrial Management & Economics (expected 2013). Sara Jeruss previously performed academic research on patent law and served as Director of Legal Analytics at Lex Machina. While the article was in progress, Sara departed Lex Machina to take a position on the developer policy team at Facebook. She, therefore, had to bow out from further work on the article. Robin Feldman and Tom Ewing wish to express their deep appreciation to Sara for her leadership in the study's design and implementation. The authors also appreciate the guidance in data analysis that we received from Marcus Holgersson, Department of Technology Management and Economics, Chalmers University of Technology, Gothenburg, Sweden. We are grateful beyond measure to Phil Arredondo, John Beard, Nicholas Billings, Padmini Cheruvu, Adlah Chista, William David, Brian Hahn, Winston Hill, Byron Huang, Tasha Iyer, Jenna Kelleher, Rachel Kinney, Umar Khan, Adrian Kwan, Brian Lee, Robert Lennon, Jason Maples, Carla Rydholm, Nicole Shanahan, Jennifer Simonovich, Nancy Situ, Kevin Smith, Jagtej Sodhi, Michael Thomas, John Tynes, Ryan Witthans, Yi Wilkinson, Matt Wilson, Stephanie Wong, and Jacob Zweig for their dedicated research assistance and to Natalie Feldman for recruiting researchers. We also wish to thank the Chip Robertson Fund for faculty research at UC**Hastings** Law for support of the project.

the Federal Trade Commission and the Department of Justice held a joint workshop on the behavior of patent assertion entities.[2] The Patent and Trademark Office held its own workshop a month later on proposed sunshine rules that would have the effect of providing greater transparency of patent ownership. The study and identification of activity by patent monetization entities has been hindered by the complex structure and arrangements of many such entities, whose activities are shrouded in complex layers of subsidiaries or revenue-sharing agreements.[3]

Even the President has entered the fray. In an online 'Fireside Hangout" in February 2013, President Obama responded to a question by acknowledging the problem of patent trolls, suggesting the need for patent reform to address the problem and noting the following:

> They don't actually practice anything themselves. They're just trying to essentially leverage and hijack somebody else's idea and see if they can extort some money out of them. Sometimes these things are challenging. Because we also want to make sure that

[2] *See* United States Department of Justice, Antitrust Division List of Public Workshops, *available at* http://www.justice.gov/atr/public/workshops/pae/index.html

[3] *See* United States Patent and Trademark Office, Roundtable on Real Party in Interest Information, *available at* http://www.uspto.gov/ip/officechiefecon/roundtable-RPI-agenda.1.pdf

patents are long enough and that people's intellectual property is protected.[4]

The increasing attention corresponds to what appears to be a rapid expansion in the activity of patent monetization activity in recent years. Although sporadic patent monetization activity has existed in the patent world across time, new types of entities have emerged recently. These entities are larger and far more complex than the original patent monetizers.

The new versions include mass aggregators, who operate as patent defense clubs to protect their members against operating companies who would assert patents against them.[5] The mass aggregators, however, also operate as monetizing organizations, promising large returns to their members and investors.[6] Some aggregators are private companies and others are publicly held entities.[7] The largest has amassed 30,000-60,000 patents—giving it at

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[4] *See* Mike Masnick, *President Obama Admits That patent Trolls Just Try to 'Extort' Money; Reform Needed,* TECHDIRT (Feb. 14, 2013) *available at* http://www.techdirt.com/articles/20130214/14351821988/president-obama-admits-that-patent-trolls-just-try-to-extort-money-reform-needed.shtml

[5] Robin Feldman, *Intellectual Property Wrongs* (manuscript *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2127558); *see also* Tom Ewing & Robin Feldman, *The Giants Among Us,* 2012 STANFORD TECH. L. REV. 1 (describing the activities of modern mass aggregators).

[6] Feldman, *Intellectual Property Wrongs, id.*

[7] *See* Ewing & Feldman, *supra* note 5 (describing, for example, the private aggregator Intellectual Ventures and the public aggregator Acacia).

least the 5th largest patent portfolio of any domestic US company—and is organized in a complex structure of more than 1,200 subsidiaries.[8]

As the monetization trend has spread, numerous entities of varying sizes and configurations have entered the market. Some operating companies are also joining the game, either creating subsidiaries to manage their intellectual property portfolios or transferring their intellectual property to third parties, who purchase the patents either for an infusion of cash or for a return on the monetization activities of the third-party.[9]

In an effort to better understand the nature of patent monetization, Congress directed the nonpartisan Government Accountability Office (GAO) to study "the consequences of patent infringement lawsuits brought by non-practicing entities."[10] The directive was passed as part of the 2011 patent reform legislation, the America Invents Act. At the request of the GAO, two of the authors provided data on patent monetization entities using a database from Lex Machina.

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[8] *See* Ewing & Feldman, *supra* note 5 (describing the mass aggregator Intellectual Ventures).
[9] *See* Feldman, *Intellectual Property Wrongs, supra* note 5.
[10] 157 CONG. REC. S5441 (daily ed. September 8, 2011) (statement of Sen. Patrick Leahy).

The GAO requested production and coding of a random sample consisting of 100 of the patent infringement cases filed each year for a period of five years from 2007-2011. Lex Machina co-authors Sara Jeruss & Joshua Walker joined Professor Robin Feldman of UC Hastings Law to code the 500 cases in order to establish the types of entities involved in each of the lawsuits, as well as to examine additional details of the suits. The Agency requested only the coded data without analysis, and the authors provided this with the understanding that they would publish their own analysis of the data at a later time.

The authors published that analysis in the fall of 2012, and key conclusions were the following:[11] First, based on the sample, lawsuits filed by patent monetizers increased significantly over the five-year period. Lawsuits filed by monetizers increased from 22% of the cases filed five years before to almost 40% of the cases filed in the latest year of the study. Monetizers were also heavily represented in the list of those who filed the greatest number of lawsuits. Of the 5 parties in the sample who filed the greatest number of lawsuits during the period studied, 4 were monetizers and only one was an operating company.

[11] *See* Sara Jeruss, Robin Feldman & Joshua Walker, *The America Invents Act 500: Effects of Patent Monetization Entities on US Litigation,* 11 DUKE TECH. L. REV. 357 (2012).

The authors also noted that universities were almost invisible in the dataset, accounting for only 0.2% of the first named plaintiffs. Finally, the authors noted some additional observations about case outcomes, although the data sample was too small to reach any conclusions.

100 cases a year is a small sample, however, and we were curious to see what the data from the full set of cases would look like. Would the dramatic rise in litigation by patent monetization entities hold true when we looked at all of them? Would enough of the cases reach definitive outcomes that we could form conclusions about case outcomes, rather than mere observations? And how would passage of the America Invents Act, which included provisions intended to reduce the amount of litigation by monetization entities, affect the picture?

In addition to these questions, we also looked at the history of the patents asserted in each of the litigations. What could we tell about the effects of monetization by looking at the trail of each of the patents?

To answer these questions, we looked at all of the patent litigations filed in four years, 2007-2008 and 2011-2012. This involved analyzing roughly 13,000 cases and almost 30,000 patents asserted in those cases. In this process, we were able to identify almost 99% of the

entities in our dataset.

Our analysis of the full set of cases across the chosen years confirms what we saw in the smaller sample: patent infringement litigation by patent monetization entities has risen dramatically over a remarkably short period of time. One of the most striking results is the following: **in 2012, litigation by patent monetization entities now represents a majority of the patent litigation filed in the United States.** Specifically, patent monetization entities filed 58.7% of the patent lawsuits in 2012. This is a sharp rise from 2007, when patent monetization entities filed only 24.6% of patent infringement litigations.

The number of defendants sued by patent monetization entities decreased slightly from 2011 to 2012. This may suggest that changes in the joinder rules from the America Invents Act had at least some initial success in pushing patent monetization entities not to cast the net so broadly. Even with this reduction however, the number of defendants sued by patent monetization entities is much higher than in 2007 and 2008. In fact the number has doubled, even with the reduction.

Our data also show that the parties who file the highest number

of patent lawsuits are generally monetizers. Of the 10 parties who filed the greatest number of patent litigations in the years we studied, all were patent monetization entities.

Our analysis of the litigations also revealed another problem that has gone unnoticed in the literature. Mechanisms for notifying the public when patents have been asserted in litigation are woefully inadequate. Although, federal law requires that district courts notify the Patent & Trademark Office when patents are asserted, and the Patent & Trademark Office then notifies the public, the system was not operative for more than one-third of the patents asserted in our database. This lack of notice puts small companies, particularly startups, at a disadvantage because they cannot easily tell if a patent has been asserted and what territory is being claimed by the patent holder.

Finally, tracing the transfer history of the patents asserted in our database revealed what many have suspected, that there is a robust market for transfer of patents prior to litigation. Looking at those

patents for which transfer history was available,[12] a majority of the patents asserted in the cases we studied had been transferred to someone other than their original owner prior to litigation. Roughly 52% of the patents had been transferred while roughly 47% of the patents were still identified as being held by their original owner.[i]

Our analysis of the age of patents litigated suggested a surprising result. The distribution of asserted patents shows a consistent decay from the patent issuance such that the newest patents issued are the most frequently litigation and the oldest patents are the rarest ones to be asserted. This age distribution could be an indication that parties are increasingly filing for patents for the primary purpose of assertion. This age distribution also suggests that for patents in many technical fields, such as electronics, the full 20-year term might be of less practical consequence.

We also noticed an interesting market for post-expiration transfers. In other words, parties are transferring patents after those patents have expired to others, who then assert those patents. This

[12] The transfer data for 15.1% of the patents studied was not available via the USPTO's patent assignment database. Thus, the percentages listed in the text represent percentages of those patents asserted for which assignment data was available.

behavior may be suggestive of the development of subspecialties in the patent monetization market, as the high level of interest in the activity drives more parties and speculators into the market.

In addition, if a patent that is asserted in litigation is transferred once, it is likely to be transferred again. This could be a further indication of the development of an active trading market providing arbitrage opportunities.

Other observations and conclusions are described below. In particular, we offer a few observations from a case study of selected patent categories that are being asserted in the smart-phone wars.

I. Prior Literature[13]

For many years, discussion of patent monetization has been long on anecdotes and short on empirical evidence. This has begun to change, particularly in the last eighteen months as an increasing number of studies have cast light on monetization activity and its litigation effects.

[13] We described the literature as it existed through late summer 2012 in our prior work. *See* Jeruss, Feldman & Walker, *supra* note 11.

Many of the authors use the term "NPE" to describe the entities they are studying, a term that stands for non-practicing entity. We will explain below why we use the term patent monetization entity. Nevertheless, in describing an author's work, we will use the term that the author chooses.

The earliest work in the area can be credited to James Bessen and Michael Meurer, who published one of the first data-based analyses of patent monetization entities in their 2008 book, *Patent Failure*.[14] The authors defined patent trolls as individual inventors who do not commercially manufacture their inventions.[15] Consequently, patent aggregators, groups, and other entities fell outside of the study's scope. Focusing only on the behavior of non-commercializing individual inventors from 1984 to 1999, Bessen and Meurer concluded that patent trolls had little effect on the cost of patent litigation.[16]

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[14] James E. Bessen & Michael J. Meurer, Patent Failure 16 (2008) (arguing that the costs of patent litigation exceeded patents' earnings benefits in the non-pharmaceutical and chemistry sectors).
[15] *Id.* at 17.
[16] *Id.* at 16-17. *See also* James E. Bessen & Michael J. Meurer, *The Direct Costs from NPE Disputes* (Boston Univ. School of Law, Working Paper No. 12-34, 2012), *available at* http://ssrn.com/abstract=2091210. Bessen and Meurer's work is based on a database compiled by the patent aggregator RPX and a small survey of entities that had a relationship with RPX.

However, other studies using a broader definition show a more substantial impact. For example, Colleen Chien's 2010 study showed that NPEs brought 20 percent of patent infringement suits in the high-tech field.[17] Chien's study classified patent trolls as those entities using patents primarily to extract license fees.[18] The definitional differences between the studies may account for much of the disparity in results. In addition, the fact that Chien's data captured much more recent patent litigation may explain why their studies show a greater impact from patent monetizers. Our own prior work confirms that the number of lawsuits from patent monetization entities have been rising significantly in recent years.[19]

Current research corroborates this view and demonstrates that patent monetization is quickly dominating the litigation landscape. For example, Chien recently presented findings to the Department of Justice and Federal Trade Commission showing that NPEs brought 61%

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[17] Colleen V. Chien, *From Arms Race to Marketplace : The Complex Patent Ecosystem and Its Implications for the Patent System*, 62 Hastings L.J. 297, 324 (2010-2011).
[18] Chien, *supra* note 5, at 327 (distinguishing patent-assertion-entities from other organizations, such as universities, that do not practice their inventions but support the development of new technology.)
[19] *See* Jeruss, Feldman & Walker, *supra* note 11. The group Patent Freedom, which provides large operating companies with information on NPEs, also concluded that patent troll litigation has increased in recent years. *See All About NPEs*, PatentFreedom, https://www.patentfreedom.com/about-npes/litigations (last visited Feb. 20, 2013).

of patent lawsuits in 2012, increasing from 45% in 2011 and 29% in 2010.[20] Similarly, Mark Lemley identified a 162% increase in troll suits.[21] Whereas NPE infringement actions once accounted for only 20% of all cases in 2006, by 2012 that number rose to 57%.[22] Brian Love also has documented the litigious behavior of patent asserting entities. His 2012 study analyzed 100,000 recently expired patents and determined that NPEs file more than twice as many lawsuits per patent as their practicing counterparts.[23] Moreover, according to Love, NPEs sue more than four times as many alleged infringers per patent and do so much later in the patent term than other rights holders.[24]

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[20] Colleen v. Chien, *Patent Assertion Entities : Presentation to the Dec. 10, 2012 DOJ/FTC Hearings on PAEs*, *available at* http://ssrn.com/abstract=2187314, at 12 (using a database from the patent aggregator RPX). Also using RPX data, Bessen, & Meurer conclude that NPE lawsuits result in the loss of billions of dollars. *See* James Bessen, Jennifer Ford, & Michael J. Meurer, *The Private and Social Costs of Patent Trolls* 2 (Boston Univ. School of Law, Working Paper No. 11-45, 2011); *See also*, David L. Schwartz and Jay P. Kesan, *Analyzing the Role of Non-Practicing Entities in the Patent System* 3 (Chicago-Kent Coll. of Law Legal Studies Research Paper No. 2012-13, 2012), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2117421 (identifying the upper limit of NPE litigation cost at $29 billion).

[21] PowerPoint: Mark Lemley, *Trolls, Trolls Everywhere*, at UC Hastings debate with Dr. Christian Mammen, "Hostility to patent trolls has made bad law." (Feb. 15, 2013).

[22] *Id.* at 9.

[23] Brian J. Love, *An Empiricial Study of Patent Litigation Timing: Could A Patent Term Reduction Decimate Trolls Without Harming Innovators?* (Santa Clara Univ. School of Law, Working Paper No. 1917709, 2011-12), *available at http://ssrn.com/abstract=1917709*.

[24] *Id*.

Patent monetization litigation has not remained confined to federal courts either. Colleen Chien and Mark Lemley published a study showing that NPEs have flocked to the International Trade Commission ("ITC") in the wake of *eBay Inc. v. MercExchange, LLC*.[25] *eBay* severely limited patent monetization entities' ability to obtain injunctions in district courts.[26] Given that an injunction (or the credible threat of one) is valuable leverage in settlement negotiations, patent monetization entities are seeking them from the ITC instead, saddling that court with more cases than ever before.[27] Chien and Lemley concluded that this new flood of patent litigation risks undoing many of the desirable consequences of *eBay*.[28]

The effects of patent monetization litigation appear to be felt more strongly in the Internet and technology sectors and by young

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[25] Colleen V. Chien and Mark A. Lemley, *Patent Holdup, the ITC, and the Public Interest*, 98 Cornell L. Rev. 1 (2012) (arguing that the ITC should assert broader discretion under 19 U.S.C. § 1337 when considering injunctive relief for NPEs).
[26] *See eBay, Inc. v. MercExchange, LLC*, 547, U.S. 388 (2006) (holding that courts must account for equitable considerations before granting injunctive relief). *Cf.* Chien and Lemley, *supra* note 11, (explaining that Justice Kennedy's concurrence in *eBay, Inc. v. MercExchange, LLC* precludes NPEs from asserting certain equitable considerations that would warrant an injunction because, if granted, the injunction can then be wielded against defendants in an effort to extract exorbitant licensing fees).
[27] *See* Chien and Lemley, *supra* note 13, at 3, 10 (finding that only 26% of patent assertion entities were successful in obtaining injunctions between 2006, when *eBay* was decided, and 2011).
[28] *Id.* at 4.

start-ups. Allison, Tiller, Zyontz, and Bligh recently compared Internet-related patents to non-Internet-related patents and concluded that the former were litigated 7.5 to 9.5 times more frequently than the latter.[29] The authors also determined that owners of Internet-related patents are more likely to settle an infringement case once a lawsuit has been filed.[30] Similarly, Chien conducted a survey study of 223 technology startups and found that 79 of them had been "trolled," that is, threatened with a patent monetization lawsuit unless they acceded to a licensing arrangement.[31] Her research also showed that most defendants to troll suits are small; 55% of her surveyed defendants made under $10 million a year.[32] Jaconda Wagner, however, suggests a trend towards enforcement actions against larger companies.[33]

Several studies have illuminated other key aspects of patent litigation as practiced by patent monetization entities. For example, David Schwartz described a cost imbalance in contingent fee

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[29] John R. Allison et al., *Patent Litigation and the Internet*, 2012 Stan. Tech. L. Rev. 1, 6 (2012).
[30] *Id.* at 6.
[31] Colleen V. Chien, *Startups and Patent Trolls*, (Santa Clara Univ. School of Law, Research Paper No. 09-12, 2012) *available at* http://ssrn.com/abstract=2146251.
[32] *Id.* at 10.
[33] *See* Jaconda Wagner, *Patent Trolls and the High Cost of Litigation to Business and Start-Ups – a Myth?*, 45-OCT Md. B.J. 12, 17 (2012) (describing a trend toward enforcement actions against larger companies).

representation between plaintiffs and defendants in patent lawsuits.[34] He ascribed the disparity to the fact that NPEs have far fewer documents to discover and tend to litigate very sparingly, avoiding substantial motion practice.[35] Michael Risch studied the 10 most litigious NPEs, in terms of lawsuits filed.[36] Risch concluded that among this sample, most of the patents asserted by these 10 NPEs came from operating companies, and that most of them sat on the shelf for more than seven years before being asserted. Research into the effects of patent trolls on other aspects of litigation is in its early stages, but the literature as a whole shows that patent monetization activity is surging.[37]

Significantly, however, while patent monetization entities increasingly assert their patents in litigation, the number of defendants is decreasing, a phenomenon confirmed by our data as well. As we will

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[34] David Schwartz, *The Rise of Contingent Fee Representation in Patent Litigation*, 64 Ala. L. Rev. 335 (2012).

[35] *Id.* at 370.

[36] *See* Risch, Michael, *Patent Troll Myths*, 42 Seton Hall L. Rev. 457 (2012). The list was provided by PatentFreedom, which identifies itself as offering subscriptions and services to help operating companies and law firms manage NPE risk more effectively. *See https://www.google.com/search?q=PatentFreedom&aq=f&oq=pat&aqs=chrome.0.59j57j60l3j61.1323&sourceid=chrome&ie=UTF-8*

[37] *See* Lemley, *supra* note 10, at 9 (showing an upsurge of NPEs as a percentage of all patent infringement actions using the RPX database).

describe, the reduction in the number of defendants appears to be at least partially the result of the America Invents Act's new joinder rules.[38]

Prior to the America Invents Act, monetization entities could join numerous defendants in a single action, provided the all the entities were alleged to have infringed the same patent. The America Invents Act altered this scheme so that defendants may be joined in a suit only if the plaintiff seeks joint or several relief or if the cause of action for each defendant results from the same transaction and gives rise to a common set of facts.[39] In her presentation at the FTC/DOJ workshop, Chien reported that the number of defendants in lawsuits filed by NPEs has fallen from 3018 in 2011 to 1788 in 2012. She attributed the decline to the America Invents Act's new joinder provision.[40] Mark Lemley corroborates Chien's findings; his study identifies a 10% decrease in the number of NPE defendants between 2011 and 2012.

To these emerging views of patent monetization, we add our own

[38] Colleen V. Chien, *Reforming Software Patents*, 50 Hous. L. Rev. 325, 383 (2012) (noting that trolls could maximize damages awards by suing multiple defendants in a single action, giving defendants less time to present their cases in jurisdictions that do not increase the amount of time available as the number of defendants increases).
[39] 35 U.S.C. § 299.
[40] Chien, *supra* note 9, at 12.

contribution. As described in the next section, we took a deep look at all patent infringement litigation filed for a two-year period from 2007-2008 and the most recent two-year period of 2011-2012 to see if we could identify trends and changes.

II. AIA 500 Expanded: Methodology & Design

The following section describes the data used as well as the methodology and design of the study. This section also describes some of the limitations of the study, although other limitations are noted in the discussion of results.

As an initial matter, we note that as with the AIA 500 study, we have chosen to use the term "patent monetization entity" or "monetizer" for short. We define patent monetization entity as one whose primary focus is deriving income from licensing and litigation, as opposed to making products.

There has been a considerable variety of terms used to identify the type of entity described above. These range from the more derogatory term "patent troll" to more neutral terms such as "non-practicing entity" and "patent assertion entity." The term "non-

practicing entity" or "NPE" may be particularly confusing for those outside the patent brotherhood. In the code-like lingo of patent law, one who creates a product using a patent is described as "practicing" a patent. To those less steeped in the vernacular, however, the term makes little sense and even sounds as if those who make products are "just practicing" while the real work is somehow performed somewhere else.

The term "patent assertion entity" has been favored by the Federal Trade Commission, and communicates more from a plain language perspective than the term NPE.[41] Using the term Patent Assertion Entity, however, carries the risk that it could be interpreted to leave out those who do not assert patents themselves, but rather focus on licensing and transferring patents to others who will assert them. In our view, parties who do not assert patents against manufacturers, but make money by licensing patents and then transferring those patents to others who will assert them against manufacturers, have the potential to create the same market distortions as those who simply assert the patents directly.

[41] For an argument that patents should be written in plain language, to the extent possible, see Robin Feldman, *Plain Language Patents,* 17 TEXAS I.P.L.J. 289 (2009).

Although the Federal Trade Commission appears to include in its definition of the "patent assertion entity" both those who assert directly and those who transfer to others who assert, there is a risk that the terminology is could be misconstrued, intentionally or in error. Thus, we use the term "patent monetization entity" to describe those whose primary focus is deriving income from licensing and litigation, as opposed to making products. Our original AIA 500 study contains additional discussion of the choice of terms.[42]

Finally, we note that with the rapid emergence of a market for patent monetization, the types of entities and the activities in which they engage are complex and fluid. Modern patent markets involve tremendously complex multi-dimensional games of chess, and the ways in which those games are played continue to evolve rapidly.

A. Source of Data:

We performed our study using data collected from lexmachina.com. Lex Machina is a Silicon Valley startup that spun out of a joint project of Stanford University Law School and Computer Science Department in late 2009. (https://lexmachina.com/about/). Lex

[42] *See* Jeruss, Feldman & Walker, *supra* note 11, at 366-370.

Machina's database contains over 130,000 intellectual property and antitrust cases, filed from Jan 1, 2000 to today, culled from crawling the web and extracting data and documents from PACER, all 94 District Court sites, ITC's EDIS site and the PTO site. (https://lexmachina.com/about/). PACER is the administrative database of the United States federal courts and EDIS is the International Trade Commission's website. After the cases are crawled, Lex Machina applies Lexpressions, a state-of-the-art natural language processing (NLP) text classification system to the documents, and creates datasets for case outcomes, parties, law firms and attorneys, patents, districts and judges.

We expanded upon the data in our litigation database by accessing information from the USPTO about the specific patents asserted in the litigations found in the litigation database. In particular, we examined pertinent records from the USPTO's assignment database (http://assignments.uspto.gov/assignments/?db=pat), the USPTO's patent database (http://patft.uspto.gov/), and the USPTO's PAIR database (http://portal.uspto.gov/external/portal/pair/), which contains information about a patent's prosecution history.

B. Study Design

In order to look more deeply at the data produced in the AIA 500 study and the conclusion that patent litigation by patent monetization entities has risen dramatically since 2007, we choose to look at the full dataset of all relevant patent litigations filed for years at the beginning of the data period and for the most current period. In particular, we look at the full set from the first two years of the relevant period, 2007 and 2008. Using data from two years give us some comfort that there was nothing particularly anomalous about one of the years, although it is certainly possible that both were anomalous in ways that we have been unable to detect.

In choosing two current years for comparison, we choose 2011 and 2012. The original AIA 500 dataset used the final years of 2010 and 2011. The study was conducted during the summer of 2012, making 2011 the most recent full year of data. For our expanded study, however, we were able to use the more recent data for the full year of 2012. Using data from 2011 and 2012 also allowed us to take a preliminary look at possible effects from the patent law changes in the America Invents Act, which was signed into law in September of 2011. As discussed below, those effects could have played out in terms of

changes in filing patterns in anticipation of the legislative change as well as changes in filing patterns after passage of the legislation. We will describe these issues further below.

To look at the data itself, we started by extracting every electronically available patent case for the years 2007, 2008, 2011, and 2012. This yielded over 14,000 cases. We excluded declaratory judgments using Lex Machina's automated declaratory judgment classifier, and supplemented this with manual exclusion where possible (for example, when a coder found a declaratory judgment case that the system did not catch). Although it is possible that our system missed a declaratory judgment case, we estimate that this would have happened in only a small percentage of cases, based on the authors' review of a random sample of the data. To the extent that failure to exclude a declaratory judgment case would skew the data, it would skew it toward over-representing operating company plaintiffs. Declaratory judgment actions arise when a company that had been threatened with a patent infringement claim files a lawsuit to declare that the patent is invalid. As a general matter, patent monetizers do not make products and thus are not threatened with claims that they are infringing

someone else's patent. Thus, patent monetizers do not tend to file declaratory judgment cases.

Lex Machina attempts to identify and remove false marking cases from its database, and the coders also removed these cases where possible. As a backup, we used data from Docket Navigator, via http://www.grayonclaims.com/false-marking-case-information/ to exclude approximately 70 additional false marking cases. Still, it is possible that a very small subset of false marking cases were left in the data.

In cases where an initial case was transferred or severed, we removed the new case so that the initial case would not be double counted. This led to a total of almost 13,000 cases.

We also limited the data to the first named plaintiff in each action, as our research in the GAO study indicated that including secondary named plaintiffs could skew the data.[43]

To provide a more robust picture of the litigation data, we took the patents identified in the database for the study years and looked at pertinent USPTO records to gather additional information about the patents asserted. This entailed collecting information on almost 13,000

[43] See GAO 500 at 363-4.

unique patent records for patents of all types (utility, design, plant, and reissue) in a dataset that contained almost 30,000 total patent records.

i. Existing Data.

Next, we created a record of the first named plaintiff for each of the almost 13,000 cases in our dataset. We used existing data to narrow the subset of entities requiring manual review. In particular, we coded the entities that were already coded during the GAO 500 study.[44] We also used existing lists of known operating companies, such as the Fortune 500 (http://money.cnn.com/magazines/fortune/fortune500/2012/full_list/), the WashingtonTech100 (a list of companies awarded government contracts)(http://washingtontechnology.com/toplists/top-100-lists/2012.aspx), and a list of the 50 largest pharmaceutical companies, by sales (http://seekingalpha.com/article/287269-the-50-largest-pharmaceutical-companies-by-sales) to identify known operating companies.

The authors do not know of any pure monetization entities within these lists. Still, one limitation of this approach is that some of

[44] See GAO Study.

the Fortune 500 companies do engage in significant monetization activity, and under our approach, unless they were caught by the GAO study, they would be classified as an operating company. For example, Qualcomm is classified as "Other" based on research during the GAO study, where the authors found statements in Qualcomm's Forms 10-k that describe both traditional operating company business segments and a separate licensing business segment.[45] If Qualcomm were only classified based on its Fortune 500 status, it would have been classified as an Operating Company because it is a Fortune 500 company. To the extent that the same issue affects other members of the Fortune 500 that were not reviewed during the GAO 500 study, our results may over-represent Operating Companies and underrepresent Other Entities.

ii. Entity Websites.

After coding entities based on existing information, we then coded entities based on their websites, in the event that such a classification was possible. We limited website classification to entities

[45] See http://www.sec.gov/Archives/edgar/data/804328/000123445212000371/qcom10-k2012.htm at 2.

for which their status was clear from the entity's website. For example, a 2012 website describing product sales that makes no mention of any patent monetization activity would be classified as "Operating Company." Conversely, a website in which an entity self-describes as a patent litigation and licensing company would lead to an entity classification of Monetizer. If an entity's website was at all unclear, additional factors, described below, were used.

To ensure accuracy, we had a second coder double-check each initial coder's work, using a subset of the coder's cases, flagging any issues. We found only a small number of cases in which the initial coder and the second coder disagreed, and in these cases the disagreement tended to be based on limitations to the website approach, rather than the coder's interpretation of the website.

For example, one limitation of this approach is that it does not catch entities which have put up "sham" websites, or entities with websites describing product sales where sales are in fact limited and the companies have, behind the scenes, shifted their focus to monetization. For example, Soverain Software's website contains a "products" section and a "services" section, and explains "Soverain Software™ provides e-commerce software and services for enterprises,

focusing on the publishing, news syndicate and digital content industries. Soverain's flagship product Transact™ is a time-tested, robust e-commerce system which supports multiple storefront/merchant configurations. Soverain's products have been deployed to customers in 25 countries, from mid-market companies to large-scale deployments."[46] According to ArsTechnica, however, that website is a front:

> Court records show Soverain hasn't made a sale—*ever*. The various voice mailboxes were all set up by Katherine Wolanyk, the former Latham & Watkins attorney who is a co-founder and partial owner of Soverain. And the impressive list of big corporate customers on its webpage? Those are deals struck with another company, more than a decade ago.[47]

To the extent that other companies have set up similar websites, this type of error would skew the results toward over-representing Operating Companies and under-representing Monetizers and Other Entities.

iii. Other Factors.

If an entity could not be classified from existing information or its website, we classified entities using other publicly available

[46] http://www.soverain.com/asp/about/.
[47] http://arstechnica.com/tech-policy/2013/01/how-newegg-crushed-the-shopping-cart-patent-and-saved-online-retail/

documents. These included court filings, state incorporation records, patent assignment records, and external entity descriptions. Again, these outcomes were double-checked to ensure agreement among two coders.

a. Entity Types

We began with the same terminology regarding patent monetization entities and operating companies as we used in our prior study, *The AIA 500*.[48]

The nine categories used were:

- *Operating Company*. An entity was classified as an operating company if the company was classified as such in existing sources, or if we were able to classify the entity as such based on the entity's webpage.[49] As in the AIA 500, entities were described as operating companies if they self-described as selling a product or providing a service other than patent monetization.[50]

[48] AIA 500 at 367-370
[49] *See, supra.*
[50] AIA 500 at 370.

- *Patent Monetization Entity (PME)*: An entity was classified as a patent monetization entity if the company was classified as such in existing sources, or if we were able to classify the entity as such based on the entity's webpage.[51] Where such a classification was not possible, we looked at verifiable documents such as court filings and company press releases, and we also looked at the dates of company incorporation, dates of filing, and relationships to other entities. Entities were classified as patent monetization entities if they self-described as such, or if they had a clear connection to a monetizer such as Acacia, an incorporation date within 6 months of filing suit, or an assignment date within 6 months of filing suit, provided there was no contrary evidence of operating company status. Contrary evidence could have included, a self-description as an operating company, company website, or external description of an operating company. We also classified entities as patent monetization entities when there was no evidence of operating status and the address of their principal place of business was the same as the address of their litigation counsel.

[51] *See, supra.*

- *Suspected Operating Company:* We used the same methodology as in the AIA 500, coding entities as suspected operating company where there was some form of unverifiable evidence that the company was such an entity.[52] This mainly took the form of unverifiable sources such as blogs describing the company as an operating company. [53]

- *Suspected Patent Monetization Entity.* We used the same methodology as in the AIA 500, coding entities as suspected operating company where there was some form of unverifiable evidence that the company was such an entity.[54] This mainly took the form of unverifiable sources such as blogs describing the company as a patent monetization entity. [55]

- *Linked to Operating Company*: As in the AIA 500, we used this category for companies linked to operating companies if we could not determine the specific role the entity played within the operating company. [56] Again, we did not create a "Linked to Patent Monetization Entity" category because in each case we

[52] See AIA 500 at 370-71.
[53] *Id*.
[54] *Id.* at 371.
[55] *Id.*
[56] *Id.*

found, the company linked to a patent monetization entity was itself a patent monetization entity.

- *Individual or Trust:* As we did in the AIA 500, we created a separate category for individuals and trusts, but note that individuals and trusts appear to function more like monetizers than like operating companies.[57]

- *University*: We kept the University category used in the AIA 500[58], and this time found 53 cases with universities as the first named plaintiff. More research is still needed to determine whether there are patterns in how universities behave in patent cases.

- *Other*: We again used "Other" as a catch-all for entities that did not fit into the above categories. This category includes companies that are "mixed," meaning they could not be clearly classified as either a primary operating company or primary monetizer.

[57] *Id.* at 371-72.
[58] *Id.* at 372.

- *Insufficient Evidence*: Again, if we could not find enough information to classify an entity in any of the other categories, we used Insufficient Evidence. This time, we were able to classify almost 99% percent of our cases, leaving only 153 of almost 13,000 cases marked as Insufficient Evidence.

b. Case Outcomes

We used the same basic categorization framework as in the AIA 500, categorizing outcomes in the following ways (1) likely settlements (2) procedural dispositions (3) claimant wins (including consent judgments favoring claimant) (4) claimant losses (including consent judgments favoring claim defendant) (5) ongoing cases, including stays, and (6) cases that were transferred out of the initial filing district, severed, or consolidated.[59] For cases in category (6), we deleted cases that were double-counted (e.g. a transfer coded in both its original district and its transfer district), but were unable to code transfer outcomes because of the size of the sample.

One limitation to this approach is that our codings are based on whether the claimant or claim defendant wins. They do not, however, provide insight into whether the "winning" party won on an initial

[59] *Id.* at 372-74.

claim or whether they won on a counterclaim. This issue does not affect monetizers, for whom patent infringement counterclaims are rarely an issue. But it does mean that caution must be taken in drawing conclusions about operating company outcomes. With operating companies, some of the "claimant wins" may actually be cases in which the plaintiff operating company lost on an infringement counterclaim.

Explanation of the categories used for case outcomes are the following. These are the same as the categories we used in the AIA 500 study as well:

• *A Likely Settlement:* We categorized cases as likely to have been settlements if the case was dismissed at the parties' request pursuant to Rule 41 of the Federal Rules of Civil Procedure. This includes cases in which the party who claimed patent infringement voluntarily dismissed the case before the defendant filed an answer. It also includes stipulated dismissals, in which both parties agree that the judge should dismiss the complaint without entering a judgment of fault, often because they have entered into a confidential settlement agreement. We excluded cases in which there was a determinative outcome in the case

prior to a settlement. For example, we excluded cases in which there had been a trial verdict prior to settlement or in which prior to settlement, there had been a summary judgment finding that the defendant had not infringed the patent. We also excluded cases that were dismissed for procedural reasons, such as cases dismissed under Rule 12 of the Federal Rules of Civil Procedure, which covers defenses such as the lack of jurisdiction and failure to state a claim.

• *A Procedural Disposition:* This category included cases dismissed for procedural reasons, such as those dismissed pursuant to Rule 12 of the Federal Rules of Civil Procedure, which covers defenses such as the lack of jurisdiction and failure to state a claim.

• *The Claimant Wins:* This category denotes cases in which an infringement claimant won, including consent judgments in favor of the party filing the claim. In a consent judgment, the judge enters a decision in favor of one party or the other that is binding on both parties, with the consent of both parties. For example, the parties may choose to consent to a particular decision after

claim construction if the judge's construction essentially destroys one side's case. When a party sees that a loss is likely given the judge's construction of the claim, it may be in that party's interest to move straight to a final judgment, which then can be appealed to the Federal Circuit. (An appeal to the Federal Circuit cannot take place until the trial court has entered a final judgment.)[60] For operating company cases, it is possible that the plantiff could be the loser in a case coded as "claimant wins," as the plaintiff could have lost on a counterclaim. This is unlikely to happen in monetizer cases as monetizers by definition do not practice technology and thus are unlikely to be sued for infringement counterclaims.

• *Claimant Loses:* This category denotes cases in which the party defending against the claim of infringement has won, including consent judgments in favor of the defendant. As described above, in a consent judgment, the judge enters a decision in favor of one

[60] *See generally* James E. Pfander and David R. Pekarek Krohn, *Interlocutory Review by Agreement of the Parties: A Preliminary Analysis,* 105 NW. U. L. R. 1043 (2011) (providing a general discussion of Federal Circuit jurisdiction over final judgments).

party or the other that is binding on both parties, but with the consent of both parties.

• *Ongoing Cases:* This category consists of cases that are continuing as of the time of the study, including cases that have been stayed.

• *Cases Transferred, Severed, or Consolidated:* This category denotes cases that were transferred out of the district in which they were originally filed, as well as cases severed or consolidated. We avoided double counting by excluding cases if they appeared in our sample as the result of a transfer, rather than an initial filing.

c. *additional limitations*

In addition to the limitations described above, we also wish to note the following limitations in the study. These are similar to limitations in the original AIA 500 study as well. The AIA 500 expanded looks at a much larger set of data than the original AIA 500. Rather than a sample of 100 cases a year, we looked at the entire set of cases across the four years we examined. Nevertheless, this is still only a selected

picture of all patent litigation across time, and there could certainly be anomalous characteristics that we did not identify or detect. In particular, the effects of passage of the America Invents Act have the potential to distort the data in additional ways to the ones described above. Although we believe it is important to monitor the trends of patent monetization as they are occurring, it may take some years before one can reach a conclusion about the effects of the Act.

Other limitations exist, such as the lack of comprehensive electronic records for some of the cases filed in 2007. In addition, as described above, our study did not include cases filed as declaratory judgments. Declaratory judgment cases arise when a party, threatened with a claim of patent infringement, files an anticipatory suit to challenge the validity of the patent with which it is threatened. Our study focused on plaintiffs claiming that their patents have been infringed, and declaratory judgment plaintiffs do not allege patent infringement.

Another limitation results from focusing mainly on entities filing lawsuits, rather than focusing on defendants in the lawsuits. As a result of this approach, our case outcome is based on the last recorded

outcome in the case, and does not account for different outcomes obtained by different defendants. Where there were multiple defendants and one defendant settled while another went to trial, the case is likely to be coded as a trial outcome, rather than a settlement. Thus, the number of settlements may be slightly understated in the results.

We conclude this section with the limitation that we consider the most significant for this and other studies of this kind—the focus on lawsuits filed, rather than other aspects of patent monetization. Increasing anecdotal evidence suggests that patent litigation represents only the tip of the iceberg, and that the vast majority of patent monetization activity never progresses to the point at which a patent infringement lawsuit is filed.[61] Thus, focusing on litigations filed

[61] For a description of the difficulties of examining patent monetization behavior outside of the context of litigation and an explanation of how the Federal Trade Commission could use its powers to initiate a broad based investigation, see Feldman, *Intellectual Property Wrongs, supra* note 5. *See also id.* at 11 t 11 (explaining that given 1) the uncertainty surrounding the boundary of patent rights, 2) the lack of a quick, reliable, and inexpensive way to resolve such uncertainty, and 3) the possibility of facing outsized damage awards and injunction against entire products, a rational company may choose to pay a patent holder's demands, even if the patent is weak or does not apply to the product, in order to avoid the costs and risks of litigation); FELDMAN, RETHINKING PATENT LAW, *supra* note **Error! Bookmark not defined.** 50–74 (describing bargaining outside lawsuits in the modern patent system to resolve uncertainties surrounding the boundaries of patent rights); Ewing & Feldman, *supra* note 3, at 23–25 (describing why it is

provides only a slice of the picture.

c. Number of Defendants

Given the large number of cases, we were unable to manually count the number of defendants. Instead, we relied on Lex Machina's automated entity classifications. Although Lex Machina is a leader in this field, it is still possible that we overrepresented defendants where multiple related defendants (e.g. a company and three of its subsidiaries) were grouped in the same litigation. We do not view this as a large problem given that 1) technically, according to the court findings, these are separate defendants and 2) to the extent that defendants are over-counted, this problem should be consistent among years and should affect all parties.

Section III summarizes the results of our study. Graphs are integrated into the text. Charts showing raw numbers are included at the end of the article as Appendix A.

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economically rational for manufacturing companies to capitulate to a monetizer's demands rather than to fight, even if the patents underlying the demands are weak). *See also id.* at 15, 60, 70 (describing the mass aggregator Intellectual Ventures, which has earned $2 billion in licensing revenue since its inception in 2000 but did not file any lawsuits until 2010; the entity does appear in some cases to have transferred patents to third parties, who then filed lawsuits).

iv. Patent Data Expansion.

We wanted to analyze various characteristics of the patents in our database. In particular, we wanted to gauge the age of the patents in our database at the time of their assertion. We also wanted to gauge the robustness of the emerging patent monetization markets by determining how many times our patents had been transferred to new owners and how recently those transfers occurred prior to the filing of the litigation. For those patents that had been transferred, we wanted to see if we could characterize the last owner prior to litigation. We assumed that this statistic might be helpful in gauging information such as 1) the extent to which operating companies were outsourcing their patent exploitation efforts to third parties, such as patent monetizers, and 2) the extent to which monetizers may play a role in patent litigation that does not bear their name as a litigant by transferring patents to operating companies who then assert them in litigation. Finally, we also wanted to see for the newer patents in our database the extent to which the USPTO was informing the public about patent litigations.

Federal legislation requires that trial courts report patents that are asserted in litigation to the Patent Office. Presumably, this can aid

in data gathering as well as in supporting the notice function of the patent system. Patents are intended to provide notice to the public of the territory claimed by an inventor. Information in the patent system is constantly changing, however, as new products come to market and new inventions emerge. Among other things, information on assertion of patents supports the notice function of the patent system by providing additional information to the public regarding the territory claimed.

There do not appear to be any enforcement mechanisms in place for ensuring that the data is reported and published, however. Thus, our goal in examining this data was to determine whether the reporting is taking place.

a. Patent Age

We wanted to gauge the age of the patents in our database at the time of their assertion. We used the USPTO database to locate the precise issue date for each of the roughly 14,000 unique patents in our dataset. Where necessary, we expanded this list of dates to include the full set of patents in our dataset. We obtained the litigation filing dates from the Lex Machina database.

Calculating the age of the patent at the time of its litigation was performed using a simple Excel function that returned the number of days between the patent issuance and the filing of the litigation. Of particular importance, we note that the patents in our database may have been asserted in other years than the four years that we have focused on, a limitation of the study design that prevents definitive conclusions. However, our hope is that the observations from this set of data will shed some light on the question of whether the relative age of a patent makes a difference in terms of its likelihood to be asserted.

b. Patent Ownership Transfers

We also wanted to gauge the robustness of the emerging patent monetization markets by determining how many times our patents had been transferred to new owners and how recently those transfers occurred prior to the filing of the litigation.

We examined each of the 14,000 patents in the database to determine the number of recordals for the patent found in the USPTO's assignment database, the number of records that represented a genuine change in control over the patent, and the date of the last transfer of ownership. An example of the methodology can be found at

Appendix B.

Interpretation

We researched transfers of patent ownership. The default position of US law is that a person who is named as an inventor on a patent application owns the patentable inventions that he or she creates. However, most corporations typically have procedures in place to circumvent this default legal position. Employees, for example, typically sign agreements early in their employment that obligate them to transfer inventions to their employers. We were not interested in a pro forma transfer of rights from an individual to his or her employer. However, sometimes an inventor obtains a patent and then later sells the patent to a third party. We were interested in tracking those transactions. Thus, not all transfers from individuals to companies were ignored – only those involving pre-patent issuance transfers from employee to employer.

The Patent Office permits the recordation of information that does not comprise a meaningful transfer of rights for our purposes. These transfers are typically titled "Change of Name" and "Security Interest" – or words to that effect. For this reason, we tracked the

number of total transfers and the number of transfers that represented a genuine change of ownership and control for the patent.

We were also interested in the "execution date" of the last transaction in which rights have been transferred. The Patent Office records two dates per transaction – the date that the ownership transfer document was executed (signed) and the date that it was recorded. On occasion, the date of recordation is years after the date of execution. Some patent owners prefer that their ownership of a given patent should be shielded from public view until they are ready to assert it against others. One could analogize at least some of this behavior to pirate ships of old who would wait until they had a target ship in their sights before hoisting the pirate flag.

In addition to determining real transfers of rights and the date of the last transfer, we also recorded the total number of entries. Entries would include things such as a transfer from an employee to an employer and a company name change. An example of entries and transfers recorded can be found in Appendix B.

In some cases, a patent infringement litigation will have been brought by an exclusive licensee and there will be no formal recordal at

the USPTO. In addition, for a few patents, we noticed splits in ownership. It is possible for a patent to be owned by two separate parties (although not a good idea, typically, since the co-owner may grant licenses to third parties without consultation with the other co-owner.). Prior to engaging in litigation, we noted that an entity has typically acquired all of the rights from all of the other parties in order to become the sole owner of the patent.

We next calculated the average number of transfers across the years in our database, and we calculated the average number of transfers for patents owned by various entity types.

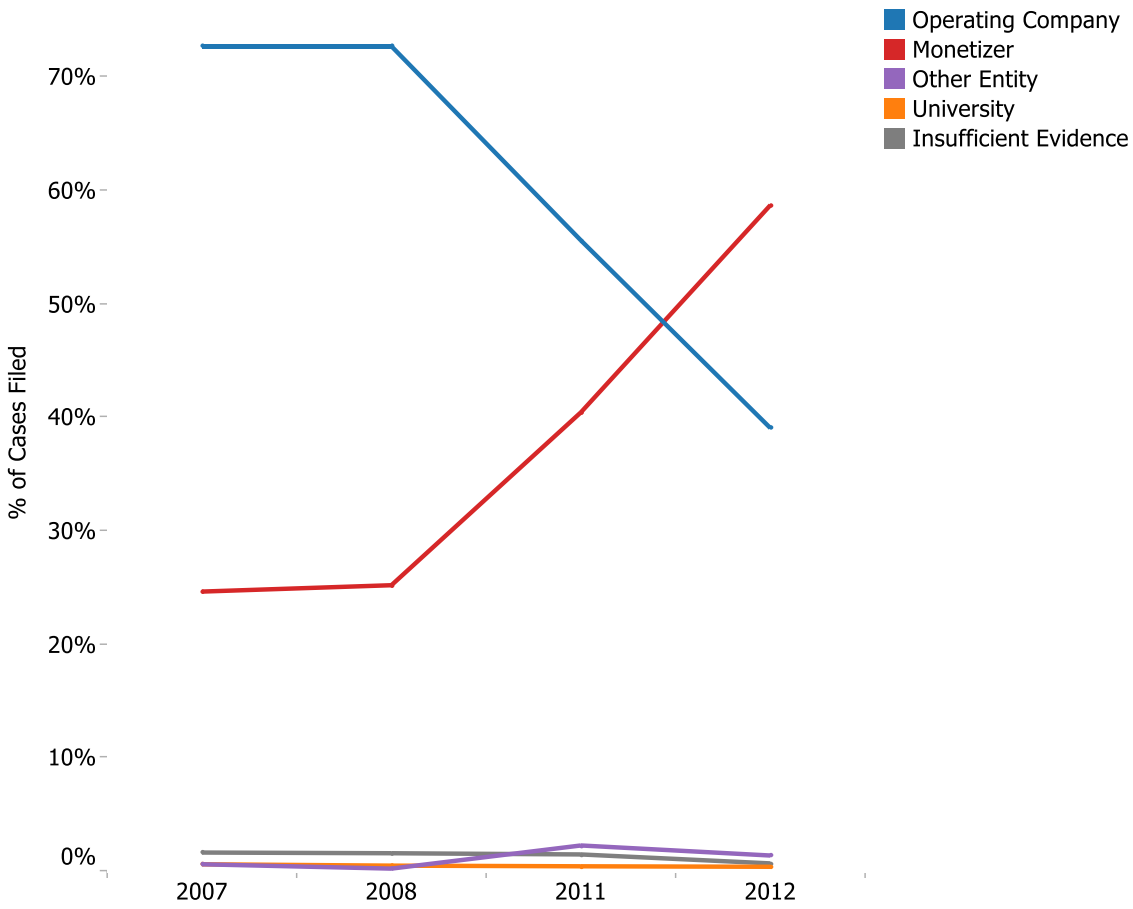
We also calculated the proximity of the last patent transfer to a new owner compared with the date of the patent assertion. This information gave us some idea as to how recently patents were transferred prior to litigation. One limitation in this approach is that we do not know when the patents in our dataset were first asserted. In some cases the date of the last patent assignment was a date after the filing of a lawsuit in our dataset. Such transfer may occur for a variety of reasons. For example, parties who have been sued for infringing a patent may settle their case by purchasing the patent that has been

asserted against them. In those circumstances, the record would show a transfer after the litigation has begun.

We also wanted to gauge the robustness of the emerging patent monetization markets by determining how many times the patents had been transferred to new owners and how recently those transfers occurred prior to the filing of the litigation.

III. Results

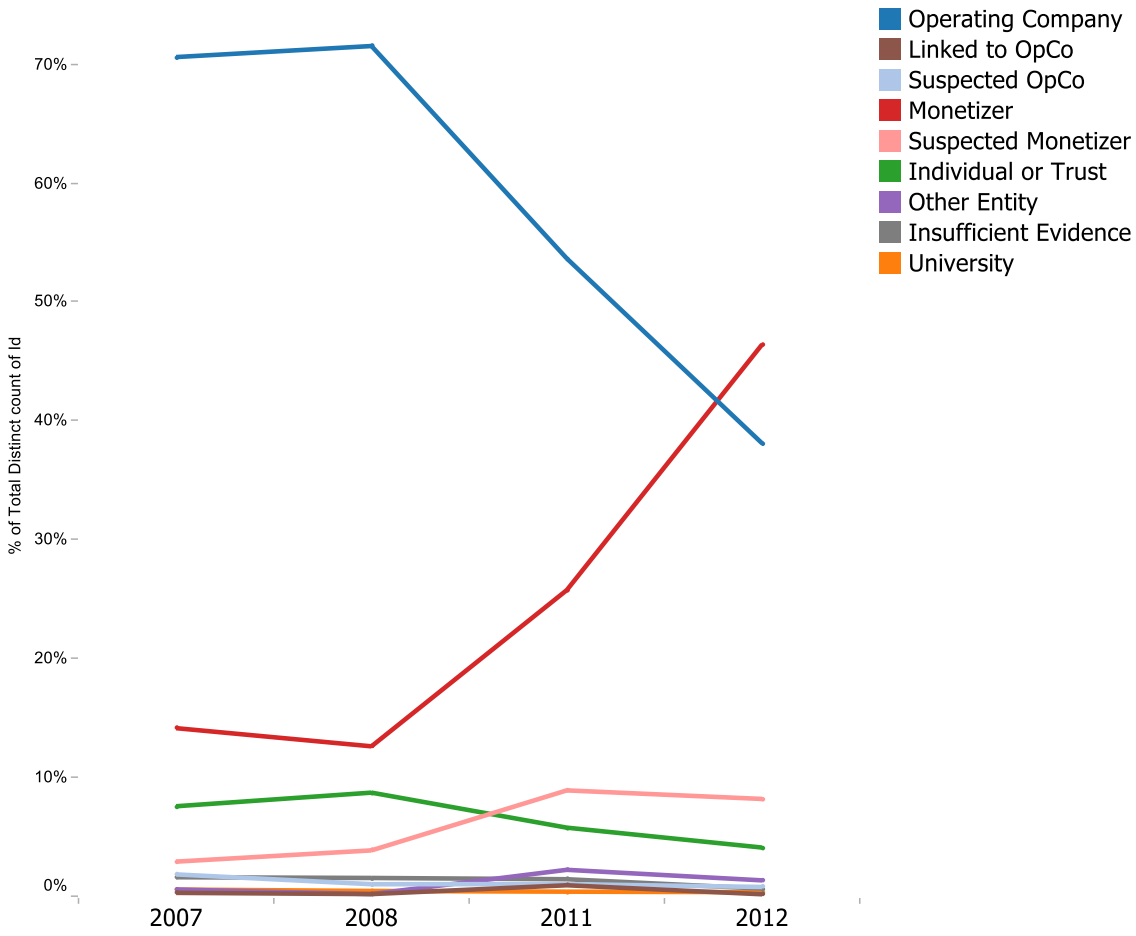
The data confirm that patent monetization entities are having a dramatic impact on US patent litigation. Patent litigation filed by patent monetization entities has increased substantially in recent years. The increase can be seen both in terms of actual number of lawsuits filed and in the number of defendants sued by monetizers. In 2007, monetizers filed only 24.6% of the patent infringement lawsuits. Monetizers filed 40.4% of the lawsuits in 2011. Most significantly, in 2012 monetizers crossed into the majority, filing 58.7% of patent infringement lawsuits.



The results were remarkably consistent with the limited dataset we prepared for the GAO. In that study, looking at 100 cases a year, we concluded that the amount of patent litigation had risen from 22% in 2007 to almost 40% in 2011. Looking at the full dataset of all cases, the rise is from 24.6% to 40.4%.

The percentages above reflect data aggregating certain categories together. In particular, we set a high bar for classifying entities as either operating companies or patent monetization entities. And even

with those classified as suspected patent monetization entities or suspected operating companies, we still found ample secondary evidence of their proper categorization. As a result, we believe that operating companies and patent monetization entities should be aggregated with their suspected counterparts. We include the disaggregated data for clarity, however, and for the benefit of other researchers who may want to consider the data from different perspectives.



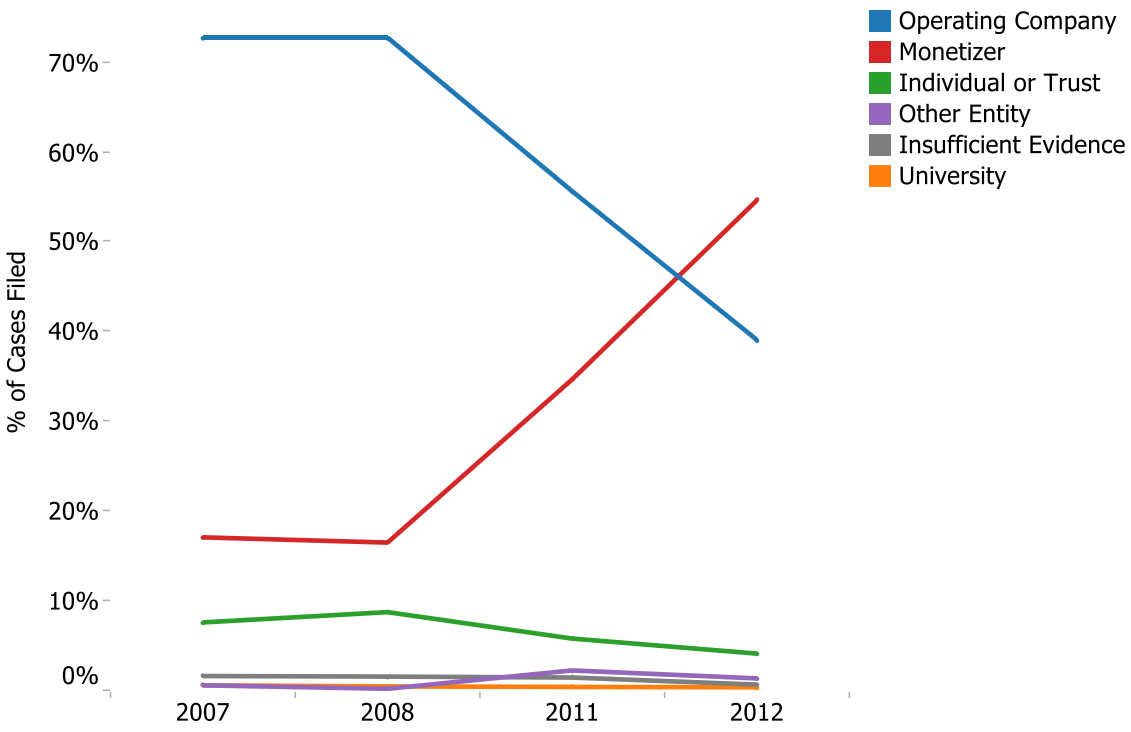
In addition, based on the results we saw, individuals and trusts appear to function more like monetizers than operating companies. For example, in the original AIA 500 sample, the Sorensen Research and Development Trust Fund filed more patent infringement cases than any other entity in our sample. Although it is a trust rather than a corporation, Sorensen appears to make most of its money through patent monetization. Similarly, many of the individuals in the samples appeared to be inventors who had tried to operate companies and, when this failed, switched to litigation as a way of monetizing their patents.

We have heard a variety of narratives used to describe the transformation of such inventors. On one end of the spectrum is the narrative in which an individual inventor tries to develop a product, faces overwhelming competition from a well-entrenched larger entity who appropriated the inventor's idea and refused to pay a license fee. The inventor is left with no choice but to go after those who are using the idea. On the other end of the spectrum is the narrative in which an individual inventor whose ideas and products failed has turned to extracting settlements from successful operating companies with their

own ideas. A number of narratives could be developed in between, as well. For the purposes of our study, however, the narrative does not matter. We are examining whether the entity filing the patent infringement lawsuit is an operating company or a monetizer at the time of the lawsuit.

We also note that individuals and trusts represent a relatively small number of those filing lawsuits in our database. Specifically, they accounted for fewer than 6% of the entities filing cases across the 4 years. Thus, we would caution against focusing the discussion too heavily on the nature of individuals and trusts.[62] The following chart shows the aggregated trends, with individuals and trusts as their own category:

[62] In addition, the data only represent those individuals or trusts who brought lawsuits themselves. An individual or trust could have sold the patents to a monetizer, who then filed suit. In those circumstances, the data would under-represent the behavior of individual inventors.



Although we consider the aggregated data to provide a more accurate picture, the disaggregated data also show a significant rise in litigation by patent monetization entities. Looking only at monetizers we could identify through the entity's self-classification or a statement in a verifiable court record, the number of lawsuits filed by these entities doubled between 2007 and 2012.

As with the AIA 500 sample, universities accounted for a tiny portion of those who brought patent infringement lawsuits. Out of almost 13,000 lawsuits filed during the period, only 53 had universities as the first named plaintiff. Thus, universities accounted for less than

one-half of one percent of the litigations filed. The percentage of lawsuits filed by universities remained reasonably steady across time, hovering at less than half of a percent for all but one of the years, when universities accounted for only .56% of first named plaintiffs. It is possible that universities might exist as the second named plaintiff in some of the lawsuits. Nevertheless, universities do not seem to file many patent infringement lawsuits across time, a fact that has remained unchanged in recent years.

We also note one other number that stands out when looking at the raw number of cases filed by entities grouped together. The number of lawsuits filed by monetizers jumped dramatically from the early years, 2007/2008 to the most recent two years. As will be described below, some of the jump is likely to reflect doctrinal changes in the America Invents Act. Nevertheless, the striking rise in numbers from the early years to the later years suggests that the America Invents Act cannot be responsible for all of the leap. In particular, monetizers filed about 600cases a year in 2007 and 2008. In contrast, they filed 1276 cases in 2011. It is certainly possible that some of those cases were filed quickly in 2011, to get in before passage of the America

Invents Act. It seems unlikely, however, that this explanation alone could account for doubling the number of cases filed between 2007/2008 and 2011.

A. Number of Defendants

Measuring the amount of litigation from patent monetization entities is complicated by changes in the America Invents Act. These changes were intended to make it more difficult for patent monetization entities to join a number of defendants into a single lawsuit. Teasing out the effects of these changes from the data, to the extent possible, requires looking at the number of defendants sued, rather than simply looking at the number of lawsuits filed.

Specifically, prior to passage of the Act, certain jurisdictions allowed a patent holder to join defendants together in a single suit, on the grounds that deciding the scope of the patent provided a sufficient basis for joinder, even if the acts of infringement were unrelated.[63] Patent holders had responded by suing dozens of companies in a single

[63] *See, e.g.*, *MyMail, Ltd. v. Am. Online, Inc.*, 223 F.R.D. 455, 456–57; *see also* Jared Bobrow, *The New World of Patent Litigation Under The America Invents Act*, THE METROPOLITAN CORPORATE COUNSEL, June 2012, at 15. For a detailed explanation of the America Invents Act changes related to joinder, see Jeruss, Feldman & Walker, *supra* note 11 at 4, 22-25.

lawsuit, frequently in the Eastern District of Texas, which had a reputation for generous juries and procedural rules hospitable to patent holders.[64] The America Invents Act disallowed this practice, requiring that in order to invoke joinder, alleged acts of infringement must arise out of the same occurrence or transaction and must involve questions of common fact.[65] The change had the potential to make litigation more expensive and difficult for patent holders, particularly monetizers who could no longer sweep large numbers of companies together into a single suit in the forum of their choice.[66]

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[64] Mark Liang, *The Aftermath of TS Tech: The End of Forum Shopping in Patent Litigation and Implications for Non-Practicing Entities*, 19 TEX. INTELL. PROP. L.J. 29, 43 (2010) (discussing the Eastern District of Texas's attractiveness as a forum for patent suits due to the adoption of rules that "included accelerated timelines, broader discovery requirements, and severe sanctions for non-compliance").

[65] 35 U.S.C. § 299(b) (2011) ("[A]ccused infringers may not be joined in one action as defendants or counterclaim defendants, or have their actions consolidated for trial, based solely on allegations that they each have infringed the patent or patents in suit."); 157 CONG. REC. S5429 (daily ed. Sep. 8, 2011) (statement of Sen. Jon Kyl) ("This new section bars joinder of accused infringers as codefendants, or consolidation of their cases for trial, if the only common fact and transaction among the defendants is that they are alleged to have infringed the same patent. This provision effectively codifies current law as it has been applied everywhere outside of the Eastern District of Texas." (citing *Rudd v. Lux Prods. Corp.*, 2011 WL 148052 (N.D. Ill. January 12, 2011)).

[66] *See, e.g.,* Carl Charneski, *Impact of the AIA on Patent Litigation: Changes That May Affect Your Choice of Forum*, 4 LANDSLIDE (May/June 2012), *available at* http://www.brinkshofer.com/files/article_landslide_mayjune_2012_charneski.pdf.

These legislative changes could have the effect of inflating the number of cases filed, without reflecting a true increase in the amount of litigation. For example, imagine a patent holder who could file a single lawsuit against 10 defendants before the Act. After the Act, the patent holder would have to file 10 separate lawsuits to proceed against the same number of parties. Thus, we had to account for the possibility that an increase in lawsuits might reflect, in whole or in part, a reshuffling of the same number of defendants into a larger number of cases.

To compensate for this possible effect, we examined the number of defendants sued in all years, in addition to the number of lawsuits filed. With operating companies, the number of defendants sued across the years studied is remarkably stable, hovering around 4,000 in each of the years, including the early years and the later years.[67] The following table shows number of defendants sued for each group, by year:

[67] We do note a slight drop in the number of defendants sued by operating companies in 2008, dropping to 3,789 that year as opposed to 4377 in 2008.

Year	Operating Company	Monetizer	Individual or Trust	Insufficient Evidence	Other Entity	University
2007	4,377	2,648	1,009	113	66	17
2008	3,789	1,814	895	129	12	36
2011	4,253	6,244	498	120	407	37
2012	3,832	4,606	579	75	100	39

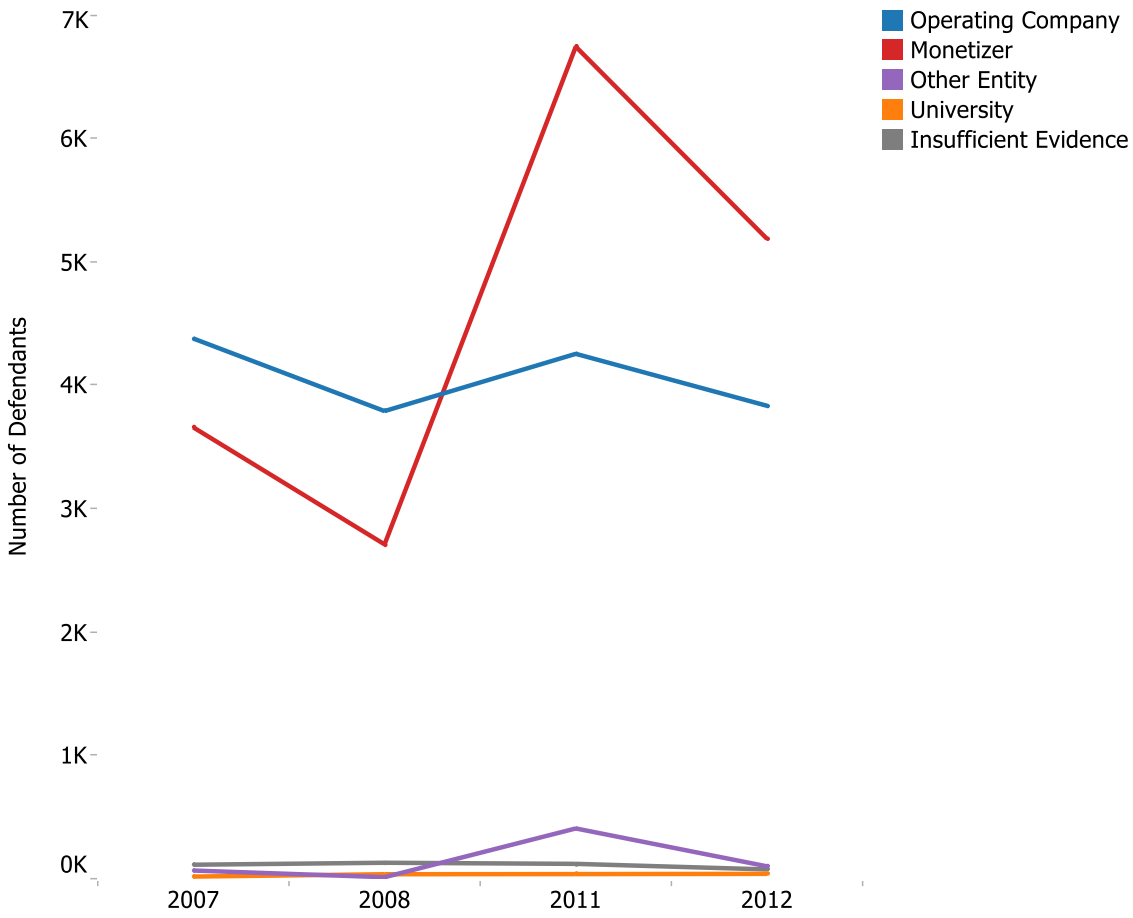
The number of defendants sued by patent monetization entities, however, has changed markedly across time. For example, monetizers sued 1814 defendants in 2008, that number increased almost 3.5 times in 2011, jumping to a total of 6244. This suggests that the rise in the number of lawsuits reflects an increase in litigation activity, rather than simply an increase in the number of cases filed.

Interestingly, the number of defendants sued by patent monetization entities in 2012 decreased from 2011. The number dropped from 6,244 defendants sued in 2011 to 4,606 defendants sued in 2012. Other academics have noted this trend in unpublished data as well.[68] The number of defendants sued in 2012 is still more than double the level in 2008, however, further supporting the conclusion that

[68] *See* PowerPoint: Mark Lemley, *Trolls, Trolls Everywhere*, at UC Hastings debate with Dr. Christian Mammen, "Hostility to patent trolls has made bad law." (Feb. 15, 2013); Colleen v. Chien, *Patent Assertion Entities : Presentation to the Dec. 10, 2012 DOJ/FTC Hearings on PAEs*, *available at* http://ssrn.com/abstract=2187314, at 12 (using data provided by the patent monetizer RPX).

litigation by patent monetization entities has increased dramatically in recent years.

The following aggregated chart shows how the number of defendants sued has changed over the four years studied:



The drop between 2011 and 2012 is interesting, nevertheless. One could hypothesize that some monetizers filed lawsuits in 2011, in an effort to have the suit in place before possible changes of any kind took effect from the America Invents Act. If that were true, a more

accurate picture of the number of defendants across the two years might have a lower number in 2011 and a higher number in 2012, on the theory that lawsuits were simply filed sooner. From another perspective, one could hypothesize that the legislative changes in the America Invents Act were partially successful in reducing the amount of litigation by patent monetizers.[69] Although the number remains quite high, perhaps some monetizers chose to focus only on key defendants, rather than sweeping quite so many companies in so broadly. Much more information would be necessary, however, to reach any conclusions about the reason for the decline in the number of defendants in 2012. In particular, it will be interesting to see the numbers in the coming years.

To the extent that the decrease in defendants reflects some success from the joinder provisions of the America Invents Act, that success may be short-lived. Press reports suggest that judges in the Eastern District of Texas have responded to the new joinder rules by allowing cases brought by a single plaintiff against multiple defendants to be consolidated for claim construction and discovery, despite the

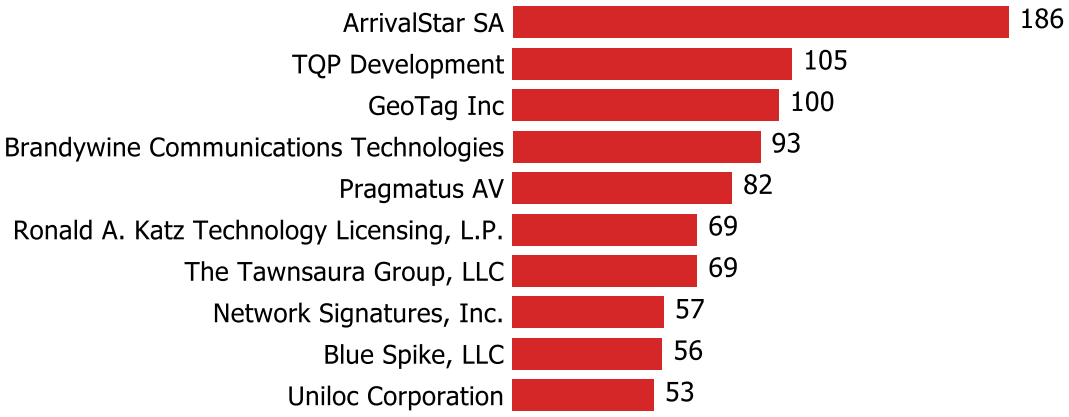
[69] *See* Chien, *supra* note

fact that the trials will be separate.[70]

B. Entities with Most Cases Filed

Once again, of the 10 parties who filed the greatest number of lawsuits during the period studied, all 10 were monetizers or suspected monetizers. [71]

Filers in Sample, By Number of Lawsuits Filed



Finally, as with the original AIA 500 dataset, universities were

[70] *See* Lisa Shuchman, *Study: Eastern District of Texas Reclaims Top Spot for New Patent Suit Filings,* THE RECORDER (January 15, 2013), *available at* http://www.law.com/jsp/ca/PubArticleCA.jsp?id=1202584588647&Study_Eastern_District_of_Texas_Reclaims_Top_Spot_for_New_Patent_Suit_Filings&slreturn=20130125222625

[71] In early drafts of the paper, we originally noted that Brandywine Communications Technologies appeared to behave in a manner analogous to a monetizer, but that were unable to confirm that classification. We have since been able to find sufficient confirmation that it is now within the category of suspected patent monetization entity.

almost invisible. Universities accounted for less than one-half of one percent of the litigations filed, making up only 43 of the 12,993 entities who filed lawsuits during the period. Moreover, the percentage of lawsuits filed by universities remained reasonably steady across time, hovering at less than half of a percent for each of the years. It is possible that universities might exist as the second named plaintiff in some of the lawsuits. Nevertheless, universities do not seem to file many patent infringement lawsuits across time, a fact that has remained unchanged in recent years.

C. Case Outcomes

The following section describes the case outcomes that we observed in the data. Given that most patent cases settle, however, the datasets related to outcomes other than settlement, as well as the data related to timing of settlement, are too small to provide statistically significant results. Thus, we offer the following as observations only and note that they may provide interesting avenues for further research.

The vast majority of patent lawsuits settle, regardless of whether they are initiated by operating companies, patent monetization entities,

or individuals and trusts. The percentage of patent suits that settle when operating companies bring suit is slightly lower than when patent monetization entities or individuals and trusts sue, but all are quite high. Specifically, 72% of patent lawsuits brought by operating companies settle while 74% settle when monetization entities bring suit and 76% settle when brought by individuals and trusts.

The following table shows all case outcomes in our set:

All Case Outcomes	
Likely Settlement	6,200
Case is Ongoing	4,483
Interdistrict Transfer	506
Consolidation	468
Procedural - Dismissal	371
Procedural - Stay	293
Claimant Favored in Consent Judgment	283
Claim Defendant Win on Summary Judgment	154
Claimant Win on Default Judgment	89
Claimant Win at Trial	54
Claim Defendant Win at Trial	41
Claim Defendant Favored in Consent Judgment	31
Claimant Win on Summary Judgment	11
Claim Defendant Win on JMOL	5
Claimant Win on JMOL	2
Claim Defendant Win - Judgment on the Pleadings	1
Procedural - Severance	1

As with the prior AIA 500 sample set, the data suggest that patent monetizers rarely proceed to trial, or even to a summary judgment decision. When they do proceed to the summary judgment stage, monetizers win even more rarely. Out of 165 cases decided at summary

judgment, we did not find a single one in which a patent monetization entity, individual or trust bringing the lawsuit won. We found only eleven cases decided on summary judgment in which the claimant won.

Out of the 95 cases with a judgment at trial outcome, there were only thirteen cases in which a patent monetization entity that brought the case, won the case. There were only five cases in which an individual or trust that brought the case, won the case, resulting in a total of eighteenwins for patent monetization entities, individuals and trusts combined. When operating companies that brought the lawsuit proceeded to trial judgment, a claimant won 40 times. The raw numbers themselves, however, differ from the percentages. Given that patent monetization entities, individuals, and trusts proceed to trial so rarely, the percentage at which they prevail is actually higher than the percentage at which operating companies prevail at trial. Once again, however, we caution strongly that the numbers are too small to safely draw any conclusion.

Our sample also shows a few more operating companies proceeding to trial or summary judgment. We caution, however, that the number of such cases in the sample is so small that one cannot safely draw a

conclusion.

The following table shows outcomes as a percentage of all entity cases, excluding ongoing cases, for operating companies, monetizers, and individuals/trusts:

All Case Outcomes	Operating Company	Monetizer	Individual or Trust
Likely Settlement	71.94%	74.44%	75.94%
Interdistrict Transfer	5.29%	7.43%	5.12%
Consolidation	5.44%	6.80%	0.68%
Procedural - Dismissal	4.29%	3.20%	9.73%
Procedural - Stay	3.19%	4.19%	1.71%
Claimant Win on Default Judgment	1.27%	0.54%	1.37%
Claim Defendant Win - Judgment on the Pleadings	0.02%		
Claimant Favored in Consent Judgment	5.10%	0.33%	0.68%
Claim Defendant Favored in Consent Judgment	0.32%	0.46%	0.17%
Claimant Win on Summary Judgment	0.19%		
Claim Defendant Win on Summary Judgment	1.59%	1.87%	3.07%
Claimant Win at Trial	0.76%	0.33%	0.85%
Claim Defendant Win at Trial	0.57%	0.29%	0.51%
Claim Defendant Win on JMOL	0.04%	0.04%	0.17%
Claimant Win on JMOL	0.02%	0.04%	
Procedural - Severance		0.04%	

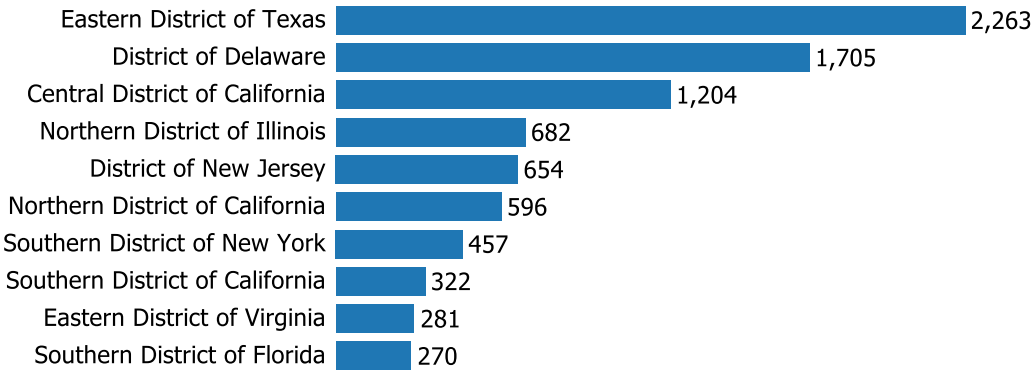
We also note that the case outcome descriptions explained above

do not separate out the earlier two years from the later two years. This further limits their usefulness, particularly if trends are changing across time. Given the time it takes for a patent lawsuit to reach a conclusion, however, it is likely to be too soon to glean any useful information about the outcomes of patent lawsuits filed in the last year or two.

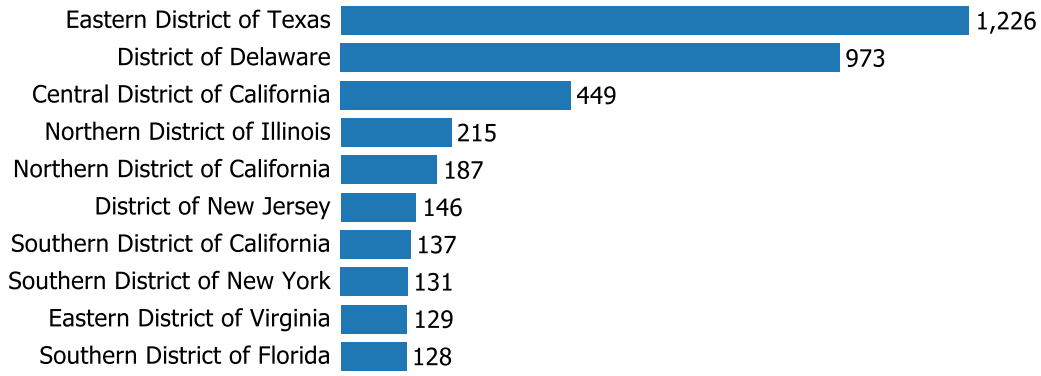
D. Location of Filing

We also collected data on the jurisdictions in which patent holders choose to file lawsuits most frequently.

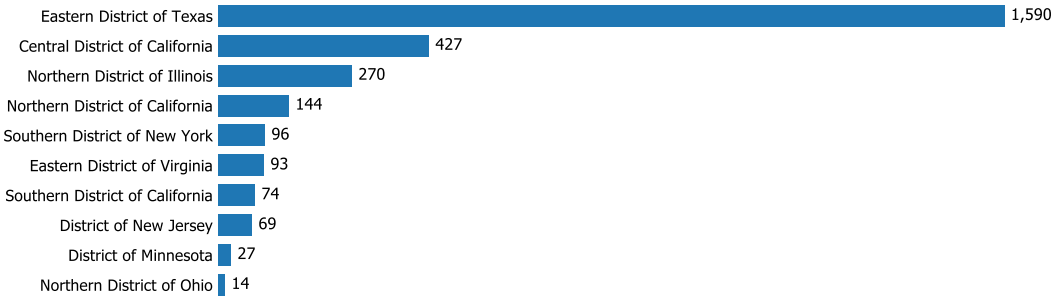
Top Districts – All Years



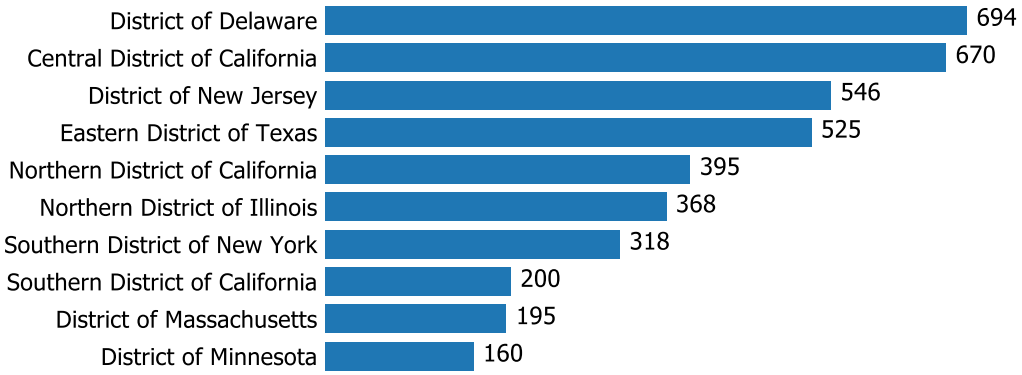
Top Districts – 2012



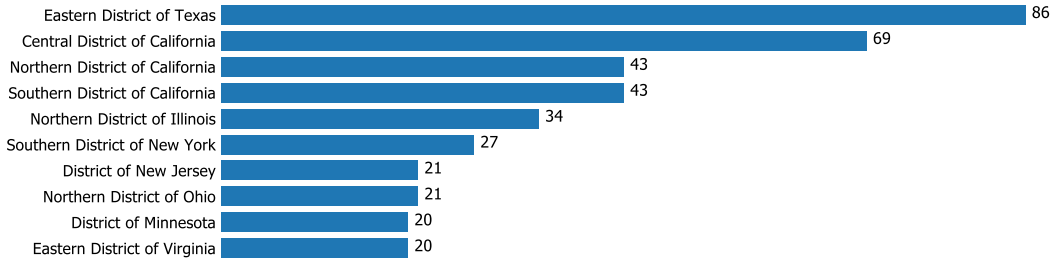
Top Districts – PMEs



Top Districts – OpCos



Top Districts – Individuals/Trusts



The Eastern District of Texas remained the favorite choice for filing a patent infringement lawsuit by any entity—monetizer or operating company across all years of the study. However, it was the fourth most frequent location for operating companies across all years, and the third most frequent for operating companies in 2012. In contrast, the Eastern District of Texas was by far the most frequent filing jurisdiction for montizers across time, and in 2012.

It is particularly interesting to note that the Eastern District of Texas remained by far the most popular choice for monetizers in 2012. The changes in the joinder rules from the America Invents Act were specifically aimed at the Eastern District of Texas, and one might have expected the district to lose its luster. The continued popularity of the locale could suggest either that 1) other characteristics of the Eastern District of Texas remain a powerful draw for patent litigation, particularly among monetizers or 2) to the extent that the America

Invents Act operated as a deterrent, montizers have found effective ways to work around the provisions to their satisfaction.

Other top choices for both operating companies and monetizers include Delaware, the Central, Northern and Southern districts of California, and Florida. The Eastern District of Virginia makes the top ten list for monetizers, both in 2012 and across time, but not for operating companies, although the numbers are far smaller than for jurisdictions such as the Eastern District of Texas and Delaware.[72]

E. Public Notice of Patents Asserted in Litigation

For the newer patents in our dataset, we wanted to see the extent to which the USPTO informed the public about patent lawsuits. 35 USC Sec. 290[73] and 15 USC Sec. 1116 require that the trial courts report litigated patents to the USPTO. The goal of this task was to determine

[72] For additional discussion of the potential significance of filing clusters in various locations, see Jeruss, Feldman & Walker, *supra* note 11, at 383-385.

[73] Text of 35 U.S.C. 290:

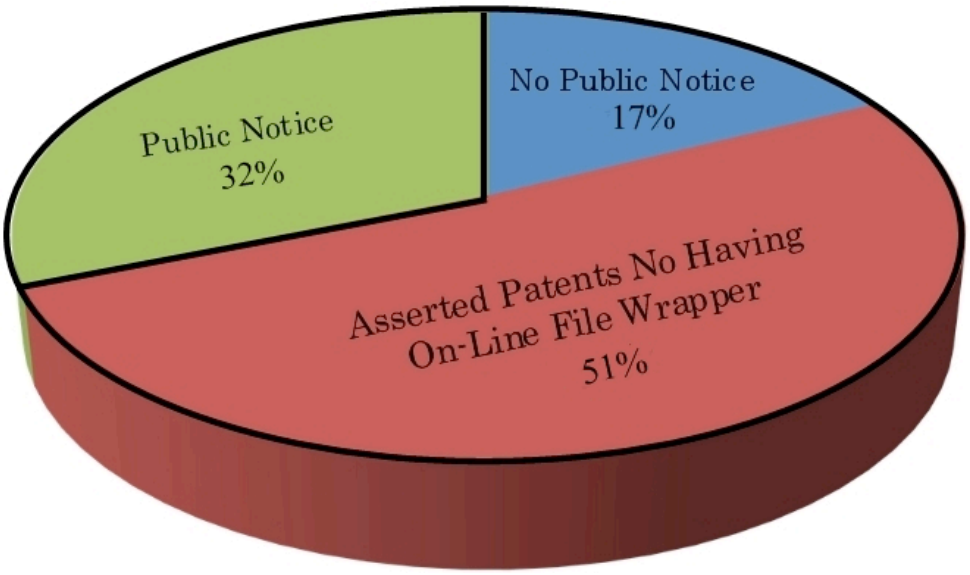
> "The clerks of the courts of the United States, within one month after the filing of an action under this title, shall give notice thereof in writing to the Director, setting forth so far as known the names and addresses of the parties, name of the inventor, and the designating number of the patent upon which the action has been brought. If any other patent is subsequently included in the action he shall give like notice thereof. Within one month after the decision is rendered or a judgment issued the clerk of the court shall give notice thereof to the Director. The Director shall, on receipt of such notices, enter the same in the file of such patent."

how many litigated patents have been reported by the USPTO to the public as being litigated.

Of the roughly 14,000 unique patents in our dataset, we found that approximately 6,600 of these patents had on-line file wrappers. For this set of patents, approximately 4,300 (or 65%) contained a notice of patent litigation while approximately 2,300 (or 35%) had no mention of a patent lawsuit in their file history.

We assume that a lack of notice about litigated patents puts companies – especially small companies - at a disadvantage because it means they cannot easily tell if a patent has been litigated. This information might be tracked in certain subscription databases, but not everyone has the money or sophistication to subscribe to them.

If we combine the number of patents in our study that do not have on-line file wrappers (approximately 7,000 patents) with the on-line file wrappers that have no notice of a litigation (approximately 2,300 patents), then we find that about 68% of the file histories for the patents in our dataset provide no notice to the public that the patent has been litigated, with only about 32% having an indication of litigation.



We believe that the USPTO and court clerks may have paid more attention to this public notice issue in recent years. For 2007, only 51% of the patents having image file wrappers contain an indication of a patent litigation. For 2007 as a whole, only 17% of litigated patents have an indication in USPTO records that they have been litigated. For 2012, 65% of the patents having image file wrappers contain an indication of a patent litigation. For 2012 as a whole, 42% of litigated patents have an indication in USPTO records that they have been litigated.

We believe there are two possible reasons why a litigated patent is not included in the image file wrapper for patents that have been litigated. One possible reason is that court clerks do not report such patents to the USPTO. We suspect this may arise most often in situations where a patent is included as a counterclaim in a lawsuit or added to an amended complaint. Our hypothesis would be that the set of initially asserted patents are much more likely to be represented in an on-line file wrapper. We found some examples of cases in which this occurred. A second possible reason is that the court clerks have reported litigated patents to the USPTO but the office does not add the notice to the image file wrapper. We also found examples of where this occurred. We do not know, however, which explanation fits the greatest number of cases.

E. A Market for Pre-Litigation and Post-Litigation Patent Transfers

As described above, we also examined the transfer history of the patents asserted in the cases in our dataset. We wanted to know how many of the asserted patents were asserted by their original owner. We found that 6,095 patents had been transferred to someone other than their original owner, 5,560 patents were still owned by their

original owner, and 2,139 patents had assignment data that was not available.

Thus, some 52% of the asserted patents were owned by a different party than the original owner while only 47% of the asserted patents were owned by their original owner, excluding the unavailable patents. In conducting our analysis, we excluded transfers from inventors to their employers, so these statistics reflect genuine transfers of ownership. Of course, in a few situations, the transfers may involve transfers to parties related to the original owner, rather than to a completely unrelated entity, in a way that we were unable to detect.[74]

For the patents that had been transferred to other parties, we looked at the date of last transfer in comparison to the lawsuit filing date. We discovered that for approximately 1,500 of the slightly more than 6,000 patents (about 25%) in our set, transfers were recorded after the litigation filing date. We suspect that in some of these cases, the defendant may have purchased the patent as part of a settlement agreement. In other cases, it is possible that the litigation made the

[74] We excluded from these transfers recordations that were to obvious subsidiaries of the previous owner. However, in a few situations the new owner might have had a non-apparent relationship with the previous owner.

patent more commercially attractive, which prompted someone to buy the patent.

In terms of stealth, we found that some 43 patents had recorded transaction dates that matched the litigation filing date. Another 73 patents had recorded transaction dates within one day of the litigation filing date. We chose the date of litigation and one day prior to filing as representative indicators of last-minute recording of transfer. It is possible that the data show similar transfers in the month or two prior to filing.

Overall, the mean number of days between the last recorded transfer and the onset of litigation was 1,237.5 days or about 3.25 years for those patents transferred prior to litigation. Some of the transferred patents had been sold to a new party many years before the patent litigation was filed. For this reason, the standard deviation was 1,422.54 days.

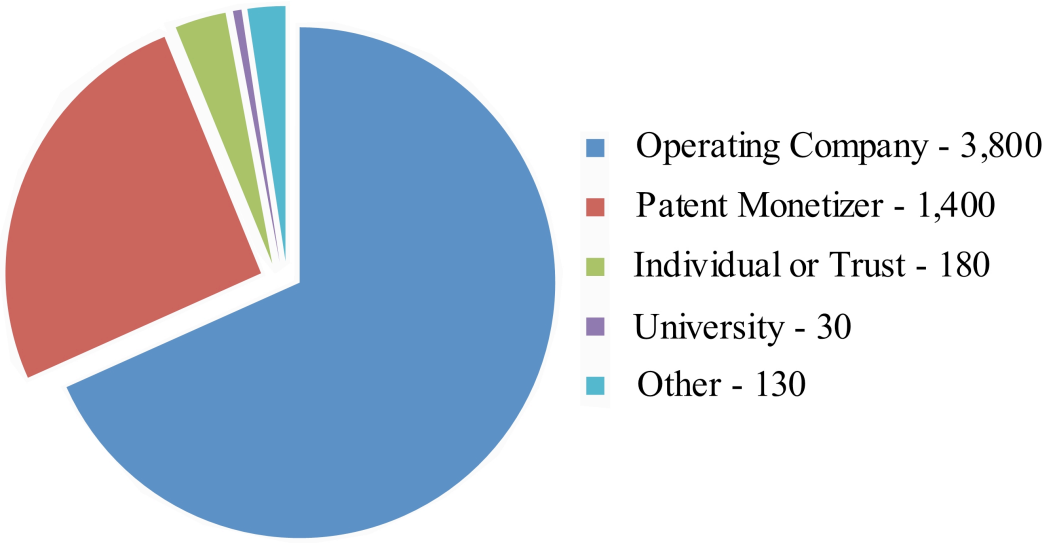
The patents sold subsequent to the lawsuit filing were typically sold long after litigation began. The mean for these transfers was 1,398.98 days with a standard deviation of 555.3 days.

In terms of the frequency of transfers, of the patents that had a recorded transfer, these patents had been conveyed on average nearly

twice (1.85 times with a standard deviation of 1.25). These patents had a mean number of total conveyances of 4.024 transfers with a standard deviation of 3.128 transfers. Thus, if a patent asserted in litigation is transferred once, it is likely to be transferred again. This could be a further indication of the development of an active trading market providing arbitrage opportunities.

We decided to examine the plaintiffs associated with the more than 5,500 patents that had no recorded transfers. As suspected, this group was also heavily dominated by operating companies with patent monetizers comprising the second largest group. We were surprised that the patent monetizers owned about 1,100 of the non-transferred patents. We suspect that further analysis may show that many of these patents have been transferred to the patent monetizers by virtue of an unrecorded sale or exclusive license. If so, this would support other evidence that the current patent recording system does not provide a complete picture of patent ownership or the real parties in interest. An alternative explanation could be a scenario we are hearing about increasingly that could be described as the "failed inventor scenario." Specifically, it is much easier to get a patent than to develop a successful product. In fact that transition is described in startup lingo

as “the valley of death” because so few are able to cross it successfully.[75] Translating an idea, even a patented one, into a successful product generally requires additional work and further research to refine the idea, as well as huge amounts of capital. In addition, an idea must be translated into something that is affordable, can be mass-produced and for which customers exist. In the new frenzy for monetization, original inventors, unable to develop any product from their patents, reportedly are turning to monetization to create a revenue stream.



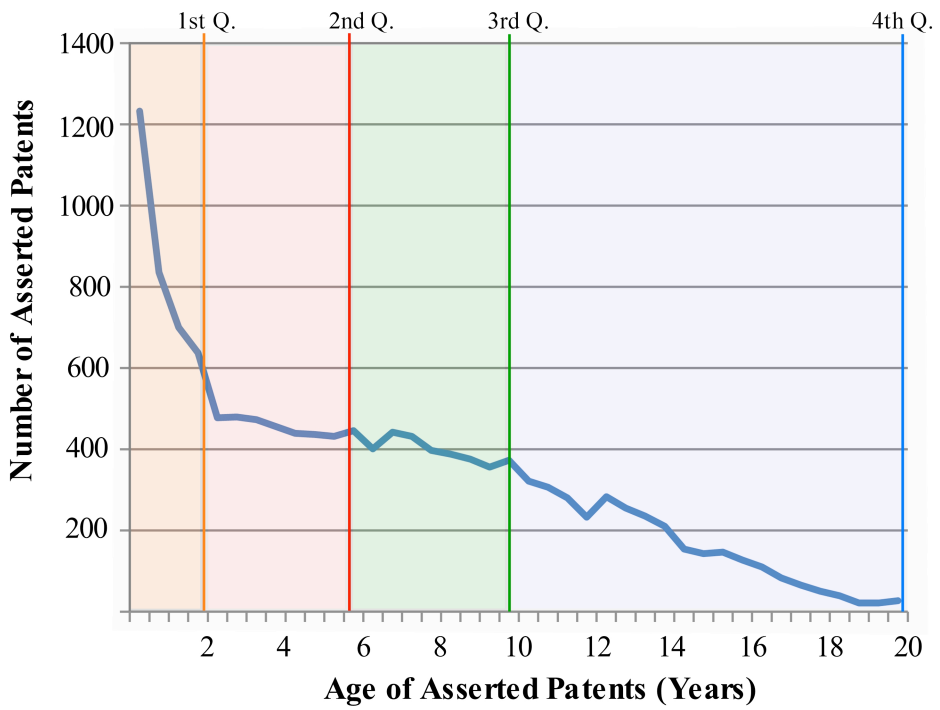
Entities Associated with Non-Transferred Patents

[75] For a more detailed description of the difficulty of creating a successful product from a patented idea, see ROBIN FELDMAN, RETHINKING PATENT LAW, 55-56 (subsection titled, “Crossing the Valley of Death”).

F. Age of Litigated Patents

We decided to examine the age of the asserted patents at the time of their assertion. One limitation on our analysis is that the patents in our study could have been litigated in years other than our four study years. The age of the patents in our database at the time of their assertion was a little over 6 years (2,263.4 days) with a standard deviation of 1,833.2 days.

We had expected that the distribution of asserted patents would have a bell shape around the mean. However, the distribution of asserted patents shows a consistent decay from patent issuance such that the newest patents are the ones most frequently asserted and the oldest patents are the rarest ones to be asserted.



The first quartile of asserted patents ends at patents that are barely two years old. The second quartile of asserted patents ends at patents that are not yet 6 years old, and the third quartile of patents ends at patents that are less than 10 years old.

The young patents so heavily dominate the asserted patents that some 144 patents were litigated on the day of their issuance as patents. Another 75 patents were litigated within the first week of their issuance as patents. The largest single group of asserted patents were patents asserted within their first six months of issuance – 1,232 patents, and the second largest group comprised patents asserted in between six months and 12-months of age – 835 patents.

This age distribution could be an indication that parties are increasingly filing for patents for the primary purpose of assertion. That is, the patent applicant may not intend to make a product at all but simply intend to assert the patent against product companies. If so, the trend towards assertion of younger patents is suggestive of the way in which monetization is now dominating and shaping the entire patent field.

This age distribution also suggests that calls to reduce the patent term for inventions in particular fields (*e.g.*, software) might have a smaller impact than its proponents suggest. We have not examined the technology sectors for the oldest asserted patents, but we would imagine that they are more heavily dominated by patents in regulated fields like pharmaceuticals.

At the other end of the spectrum, a number of patents seem to have been litigated after their expiration. US law allows for retrospective collection of infringement damages for up to six years. This suggests the presence of what could be described as a separate market offering residual value for expired patents. We have not seen this identified in the literature previously and suggest that the

phenomenon would benefit from additional study. In particular, the evidence of a market for post-expiration may be suggestive of the development of subspecialties developing in the patent monetization market as the high level of interest in the activity drives more parties and speculators into the market.

G. Data Analysis

The data that we have collected can be used to further investigate the types of patents presently being asserted. We were curious, for example, how many of our patents might relate to the so-called "smartphone patent wars." We offer the following as a limited case study, not as a comprehensive analysis of a full dataset.

This article is forthcoming, and we continue to refine the data. For example, as noted above, we originally noted that Brandywine communications appeared to behave in a manner analogous to a monetizer but had been unable to confirm that classification. We have been able to find sufficient confirmation and are in the process of updating the following paragraph to reflect the new information: We searched our patents for just two possible classifications - Class 379 (Telephonic Communication) and 455 (Telecommunication). There

are, of course, many other relevant classifications for patents related to smartphones. But using just these two classifications for patents asserted during the years 2011-2012, we found that patent monetizers had asserted 159 patents in 708 litigations during just 2011-2012, as shown in Appendix C. By contrast, operating companies had asserted 162 patents in just 556 litigations. However, the number of operating company litigations drops more than half to 263 if just one small operating company – Brandywine Communications - is excluded from the data. We note, in addition, that Brandywine Communication was the sole operating company in the top ten most frequent patent litigants over the period we studied.

Looking solely at this small case study, monetizers in this part of the smart-phone wars assert one patent on average in 4.45 litigations. In contrast, while operating companies assert one patent on average in 3.43 litigations, and excluding Brandywine, assert one patent on average in just 1.7 litigations. In other words, operating companies tend to assert 1-2 patents against one specific competitor while monetizers,assert their patents against a much wider swath of the competitive market. One cannot generalize these results to patent litigation as a whole without additional research, but we would be very

interested to see whether this conclusion holds up more broadly across the litigation data. In particular, operating companies in the smartphone wars seem to be engaging in tremendously complex patent strategies, and it is possible that observations in this realm are not representative of general operating company litigation. On the other hand, given that operating companies are perceived as being unusually active in the smartphone realm, it may be particularly interesting that they are asserting fewer patents, even under those circumstances. It is also possible that operating companies, even ones with significant licensing operations, limit their assertion activities against other operating companies out of fears of retaliation from countersuits and other forms of commercial retaliation. In short, this tantalizing glimpse suggests interesting possibilities for further study.

Conclusion

Looking at all patent infringement litigation filed in the years 2007, 2008, 2011 and 2012, it is clear that there has been a dramatic increase in litigation by patent monetization entities. Although the number of defendants decreased in 2012, possibly in response to changes in joinder rules from the America Invents Act, the number of

defendants sued by patent monetization entities, as well as the percentage of litigation filed by patent monetization entities, is far higher today than it was 5 years ago. This represents a striking market shift in a remarkably short period of time. Our data also show that all of the 10 parties who filed the largest number of patent infringement suits are monetizers.

We also discovered that the current mechanisms for notifying the public when patents have been asserted in litigation are seriously inadequate. Although, federal law requires that district courts notify the Patent & Trademark Office when patents are asserted, and the Patent & Trademark Office then notifies the public, the system was not operative for roughly two-thirds of the patents asserted in our database.[76] This lack of notice puts small companies, particularly startups, at a disadvantage because they cannot easily tell if a patent has been asserted and what territory is being claimed by the patent holder.

In addition, tracing the transfer history of the patents asserted in

[76] Either because the patent did not have an on-line file wrapper or because the patent did have an on-line file wrapper but the file wrapper had no indication of a litigation.

our database revealed what many have suspected, that there is a robust market for transfer of patents prior to litigation. Looking at those patents for which transfer history was available, a majority of the patents asserted in the cases we studied were transferred from the original inventor to someone (other than the inventor's employer) prior to litigation.

Other data analysis and observations suggest that the newest patents issues are the most frequently litigated, that markets exist for patents that have already been litigated at least once, and for post-expiration transfer of patents, and that if a patent asserted in litigation has been transferred once, it is likely to be transferred again. These suggest the development of an active trading market in patents, with subspecialties and arbitrage opportunities, as the high level of interest and activity in patent monetization drives more parties and speculators into the market.

Finally, we conclude by noting what this study can and cannot provide. The study can tell us that there is a lot of patent litigation being filed by monetizers, that the amount has increased rapidly over the last five years, and that it appears to be continuing to increase. The

study cannot identify the reasons for the increase in monetization, determine whether the level of litigation by patent monetizers is problematic, and if so, identify the solutions to that problem. We hope, however, that by quantifying the dramatic rise in this behavior, we will encourage regulatory and legislative actors to take a hard look at what is driving litigation by patent monetization entities and at the effects of such litigation on innovation and on the economy as a whole.

Appendix A

Aggregated Number of Cases Filed by Entity by Year

Year	Operating Company	Monetizer	Individual or Trust	Insufficient Evidence	Other Entity	University
2007	1,826	428	190	40	14	14
2008	1,661	376	199	35	4	10
2011	1,755	1,094	182	45	70	12
2012	1,966	2,750	206	32	67	17
Grand Total	7,208	4,648	777	152	155	53

Appendix B

Assignment Methodology Examples

1. Example of Searching Transfer History

As described above, we examined each of the 13,744 patents in the dataset to determine the number of recordals for the patent found in the USPTO's assignment database, the number of records that represented a genuine change in control over the patent, and the date of the last transfer of ownership.

Here are the steps performed for each of the 13,744patents in the database:

1. Visit the USPTO assignments website.
2. Enter the patent number.
3. Record the number of entries.
4. Record the number of patent ownership transfers.
5. Record the date of the last patent ownership transfer.
6. Update the database.
7. Save/Print the results of the search as a PDF file.

Examples

Assume that one searches for patent transfers related to US Patent No. 5,251,294; US Patent No. 5,345,195; US Patent No.

5,623,495, and US Patent No. 5,729,419. The completed database entries will appear as in the table below with the in red being the ones added as a result of the search.[77]

Patent Number	Number of Entries	Number of Transfers	Last Execution Date
5251294	3	3	06/04/2012
5345195	2	1	05/05/2011
5623495	4	2	08/02/2009
5729419	5	0	10/23/2007

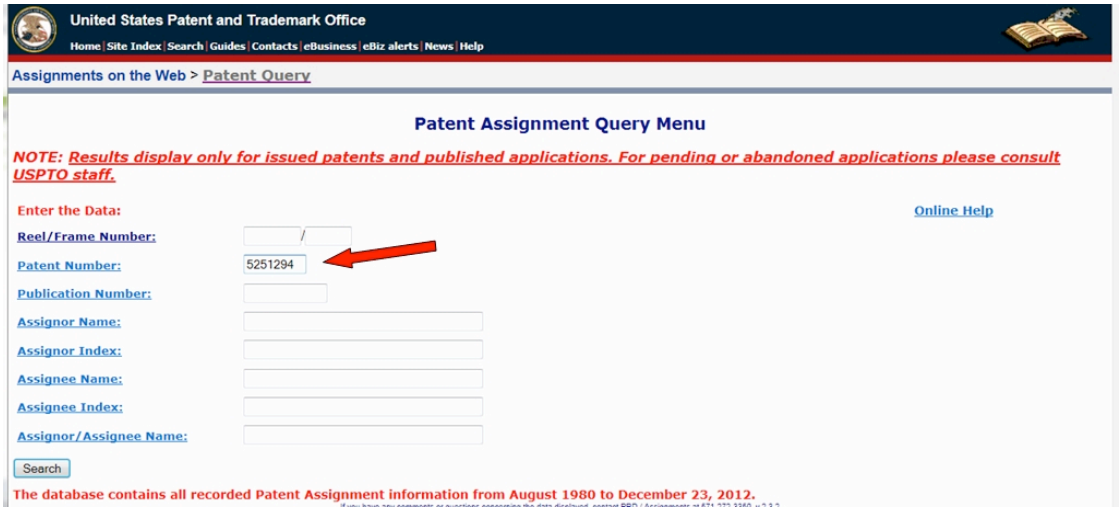
Here's how one will find the information to complete the table for US 5,251,294:

1. Go to: http://assignments.uspto.gov/assignments/?db=pat

2. Enter "5251294"

3. The screen will look like this before one presses the "search" button.

[77] Note that only entry for 5,251,294 is based on actual USPTO data. The other entries are merely representative.



4. After one presses "Search," one will be presented with a results page that will then requires interpretation.

2. Examples of Determining Total Number of Entries

As described above, in addition to determining real transfers of rights and the date of the last transfer, we also recorded the total number of entries. Entries would include things such as a transfer from an employee to an employer and a company name change. An example of entries and transfers recorded can be found in Appendix B. So, assume for example, that a patent assignment record contained the transfer of rights from an inventor to her company, a change of name for the company, and the sale of the patent to another company, and then a sale of the patent back to the inventor on Jan. 5, 2012. For such a history, we recorded the following:

Number of Entries	Number of Transfers	Last Execution Date
4	2	01/05/2012

The 4 “Entries” are:

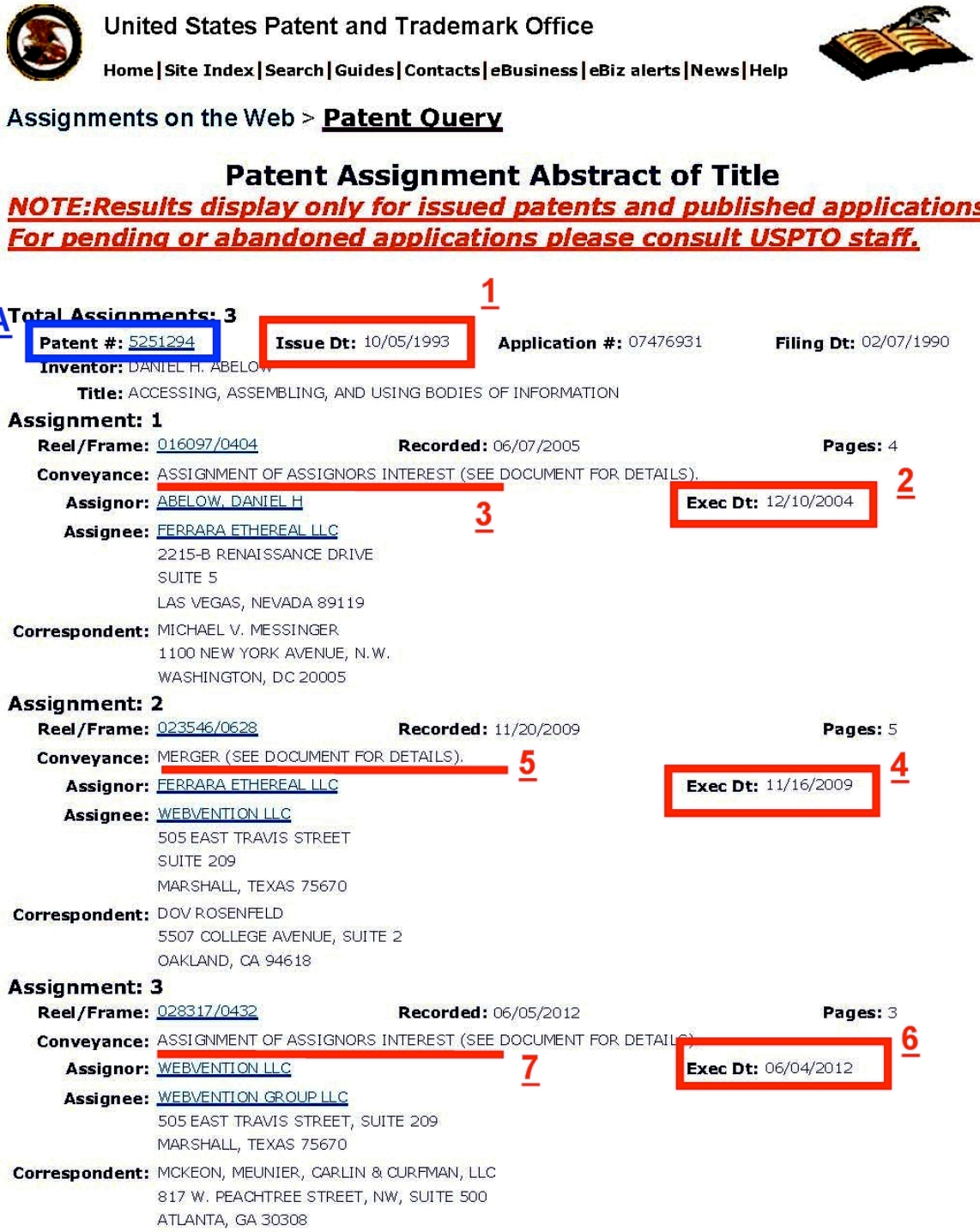
- Transfer from inventor to her company
- Change of name of the company
- Sale of the patent to another company
- Sale of the patent back to the inventor

The 2 “Transfers” are:

- Sale of the patent to another company
- Sale of the patent back to the inventor
-

The “Last Execution Date” is Jan. 5, 2012.

Returning to the example using US Patent 5,251,294 above. A search presents the user with the following results page, which has been annotated to highlight certain results:



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Assignments on the Web > **Patent Query**

Patent Assignment Abstract of Title

NOTE:Results display only for issued patents and published applications. For pending or abandoned applications please consult USPTO staff.

1

A Total Assignments: 3

Patent #: 5251294 **Issue Dt:** 10/05/1993 **Application #:** 07476931 **Filing Dt:** 02/07/1990

Inventor: DANIEL H. ABELOW

Title: ACCESSING, ASSEMBLING, AND USING BODIES OF INFORMATION

Assignment: 1

Reel/Frame: 016097/0404 **Recorded:** 06/07/2005 **Pages:** 4

Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS). 2

Assignor: ABELOW, DANIEL H 3 **Exec Dt:** 12/10/2004

Assignee: FERRARA ETHEREAL LLC
2215-B RENAISSANCE DRIVE
SUITE 5
LAS VEGAS, NEVADA 89119

Correspondent: MICHAEL V. MESSINGER
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

Assignment: 2

Reel/Frame: 023546/0628 **Recorded:** 11/20/2009 **Pages:** 5

Conveyance: MERGER (SEE DOCUMENT FOR DETAILS). 5

Assignor: FERRARA ETHEREAL LLC **Exec Dt:** 11/16/2009 4

Assignee: WEBVENTION LLC
505 EAST TRAVIS STREET
SUITE 209
MARSHALL, TEXAS 75670

Correspondent: DOV ROSENFELD
5507 COLLEGE AVENUE, SUITE 2
OAKLAND, CA 94618

Assignment: 3

Reel/Frame: 028317/0432 **Recorded:** 06/05/2012 **Pages:** 3

Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS) 6

Assignor: WEBVENTION LLC 7 **Exec Dt:** 06/04/2012

Assignee: WEBVENTION GROUP LLC
505 EAST TRAVIS STREET, SUITE 209
MARSHALL, TEXAS 75670

Correspondent: MCKEON, MEUNIER, CARLIN & CURFMAN, LLC
817 W. PEACHTREE STREET, NW, SUITE 500
ATLANTA, GA 30308

Under Assignment 1 in the record above, we note that the patent issued on Oct. 5, 1993, but the inventor Dan Abelow did not sell the patent until Dec. 10, 2004. Inventors who work for companies do not

typically execute assignments for patents 11 years after the patent has issued. Consequently, we concluded that this is a patent in which an individual obtained a patent and then later sold the patent to a company.[78] This record represents the first transfer.

The Ferrara Ethereal company later "merged" with a company called Webvention LLC. We considered "mergers" to represent patent transfers. Thus, this record represents our second transfer.

The Webvention company recently sold the patent to Webvention Group LLC. You will note that the Webvention Group has the same address as Webvention. We will, however, consider this to have been a transfer of rights because it is recorded as such. We could surmise, for example, that the new Webvention entity was created in light of new investors or some other circumstance that might have involved a genuine change of control for the company. This final transaction was executed on June 4, 2012.

In this example, we note that all of the recorded entries are also transfers, so the number of entries and the number of transfers are the same.

[78] The company involved is a known shell of Intellectual Ventures LLC.

Thus, when we are complete, the updated Excel spreadsheet will read as follows:

Patent Number	Number of Entries	Number of Transfers	Last Execution Date
5251294	**3**	**3**	**06/04/2012**

As a final step, we saved the assignment record for the 5251294 patent in the form of a PDF file. This step preserved our work for further review and analysis later.

Example 2

Patent Number	Number of Entries	Number of Transfers	Last Execution Date
5729428	2	1	01/28/2002

The above entries are based on the following search page:

Assignments on the Web > **Patent Query**

Patent Assignment Abstract of Title

NOTE:Results display only for issued patents and published applications. For pending or abandoned applications please consult USPTO staff.

1

Total Assignments: 2

Patent #: 5729428 **Issue Dt:** 03/17/1998 **Application #:** 08639111 **Filing Dt:** 04/24/1996

Inventors: KOJI SAKATA, YUJI AOKI, TOSHIHIKO NISHIYAMA, SATOSHI ARAI, SYUICHI NAGASHIMA

Title: SOLID ELECTROLYTIC CAPACITOR WITH CONDUCTIVE POLYMER AS SOLID ELECTROLYTE AND METHOD FOR FABRICATING THE SAME

Assignment: 1

Reel/Frame: 007993/0506 **Recorded:** 04/24/1996 **Pages:** 2

Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)

Assignors: SAKATA, KOJI **Exec Dt:** 04/11/1996

AOKI, YUJI **Exec Dt:** 04/11/1996

NISHIYAMA, TOSHIHIKO **Exec Dt:** 04/11/1996

ARAI, SATOSHI **Exec Dt:** 04/11/1996

NAHASHIMA, SYUICHI **Exec Dt:** 04/11/1996

2

Assignee: NEC CORPORATION
7-1, SHIBA 5-CHOME, MINATO-KU
TOKYO, JAPAN

Correspondent: SUGHRUE, MION, ZINN, MACPEAK & SEAS
J. FRANK OSHA
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, D.C. 20037-3202

Assignment: 2

Reel/Frame: 012683/0050 **Recorded:** 03/15/2002 **Pages:** 3

Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).

Assignor: NEC CORPORATION **Exec Dt:** 01/28/2002

3

Assignee: NEC TOKIN TOYAMA, LTD.
560, NYUZEN, NYUZEN-MACHI
SHIMONIIKAWA-GUN, TOYAMA, JAPAN 939-0

Correspondent: SUGHRUE MION, PLLC
J. FRANK OSHA
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, D.C. 20037-3213

Here, one will note that the patent was assigned (on April 11, 1996) by the inventors before the patent even issued (March 17, 1998). This is a typical transfer of rights from an employee to his/her employer. Thus, this will not count as a transfer of rights for our purposes, but will count in the total number of entries for the patent.

The second transaction in the record above likely comprises one that does not involve a genuine change of ownership. However, since the assignment as styled as an assignment of rights, and since the new entity does not have precisely the same name as the previous entry, we considered this transaction to represent an assignment of rights. This assignment took place on Jan. 28, 2002.

Our entry of this information will take the following form:

Patent Number	Number of Entries	Number of Transfers	Last Execution Date
5729428	2	1	01/28/2002

On occasion, we found that no information has ever been recorded for the ownership of a patent. We entered such entries as follows:

Patent Number	Number of Entries	Number of Transfers	Last Execution Date
5729417	0	0	No recordal

Appendix C

US Patents in Classes 379 (Telephonic Communication) and/or 455 (Telecommunication) Asserted in Patent Litigations filed in 2011-2012 by Apparent Patent Monetizers and Operating Companies

C.1 Apparent Monetizers

No.	Patent No.	Title	No. of Litigations	Own
1.	5223844	Vehicle tracking and security system	44 litigations	PJC Logistics LL
2.	5305381	Cradle for telephone	3 litigations	Piao Shang Indu
3.	5339352	Directory assistance call completion via mobile systems	1 litigation	Intellectual Vent
4.	5351296	Financial transmission system	18 litigations	Swipe Innovatio
5.	5379421	Interactive terminal for the access of remote database information	1 litigation	Garnet Digital, L
6.	5455859	Telephone handset interface for device having audio input	1 litigation	GTZM Technolog LTD
7.	5487100	Electronic mail message delivery system	4 litigations	Helferich Patent LLC.
8.	5555286	Cellular phone based automatic emergency vessel/vehicle location system	1 litigation	Tendler Cellular LLC
9.	5561706	System for managing access by mobile users to an interconnected communications network where a billing authority is identified by a billing code from the user	1 litigation	Fenner Investm
10.	5576952	Medical alert distribution system with selective filtering of medical information	1 litigation	Sonic Industry L
11.	5600712	Enabling technique for quickly establishing high speed PSTN connections in telecommuting applications	12 litigations	Telecomm Innov
12.	5606602	Bidding for telecommunications traffic	2 litigations	AIP Acquisition
13.	5636282	Method for dial-in access security using a multimedia modem	7 litigations	Digital Signal In LLC
14.	5675734	System for transmitting desired digital video or audio signals	1 litigation	Sightsound Tech
15.	5737394	Portable telephone apparatus having a plurality of selectable functions activated by the use of dedicated and/or soft keys	1 litigation	MobileMedia Ide
16.	5754306	System and method for a communication system	1 litigation	Unified Messagi LLC
17.	5774526	Reconfigurable on-demand telephone and data line system	2 litigations	Ceres Communi Technologies, LI
18.	5774527	Integrated telephone and cable communication networks	1 litigation	Multiservice Sol

No.	Patent No.	Title	No. of Litigations	Own
19.	5802160	Multi-ring telephone method and system	1 litigation	Teleconnect Solu
20.	5805676	Telephone/transaction entry device and system for entering transaction data into databases	3 litigations	CyberFone Syste
21.	5809246	Selection and retrieval of music from a digital database	1 litigation	Mission Abstrac
22.	5818836	Method and apparatus for anonymous voice communication using an online data service	3 litigations	Click-to-Call Tec
23.	5841840	Multiple line modem and method for providing voice on demand	5 litigations	Driden Multicon LLC
24.	5844596	Two-way RF communication at points of convergence of wire pairs from separate internal telephone networks	1 litigation	United Access T LLC
25.	5845219	Mobile station having priority call alerting function during silent service mode	1 litigation	MobileMedia Ide
26.	5850505	Method for preconfiguring a network to withstand anticipated failures	2 litigations	Telecommunica Research Labora
27.	5874903	RF repeater for automatic meter reading system	1 litigation	SipCo, LLC
28.	5894506	Method and apparatus for generating and communicating messages between subscribers to an electronic messaging network	1 litigation	Mobile Telecom Technologies LL
29.	5903830	Transaction security apparatus and method	1 litigation	Joao Bock Trans Systems LLC
30.	5917897	System and method for controlling a telecommunication network in accordance with economic incentives	2 litigations	AIP Acquisition
31.	5937341	Simplified high frequency tuner and tuning method	3 litigations	Washington Res Foundation
32.	5940771	Network supporting roaming, sleeping terminals	25 litigations	Innovatio IP Ver
33.	5942986	System and method for automatic critical event notification	1 litigation	Medical Monitor Paging LLC
34.	5987103	Telephone/transaction entry device and system for entering transaction data into databases	3 litigations	CyberFone Syste
35.	6044062	Wireless network system and method for providing same	2 litigations	IP Co., LLC
36.	6044069	Power management system for a mobile station	3 litigations	WIAV Solutions
37.	6044382	Data transaction assembly server	8 litigations	CyberFone Syste
38.	6070068	Communication terminal device and method for controlling a connecting state of a call into a desired connection state upon a predetermined operation by a user	1 litigation	MobileMedia Ide
39.	6078654	Method of and system for efficient use of telecommunication networks	4 litigations	AIP Acquisition
40.	6088444	Method and apparatus for value-based queuing of telephone calls	1 litigation	Walker Digital L
41.	6091956	Situation information system	7 litigationss	LBS Innovations
42.	6148080	Mobile telephone with amplified listening	1 litigation	Mobile Enhance Solutions LLC

No.	Patent No.	Title	No. of Litigations	Own
43.	6188756	Efficient communication through networks	4 litigations	AIP Acquisition
44.	6192123	Method and apparatus for initiating telephone calls using a data network	9 litigations	Telinit Technolo
45.	6212408	Voice command system and method	1 litigation	Development In Group, LLC
46.	6233330	Telephone call screening device with power and telephone line failure alert, call answering, call routing, and caller ID	1 litigation	Qixiz LLC
47.	6243373	Method and apparatus for implementing a computer network/internet telephone system	1 litigation	C2 Communicati Technologies, In
48.	6243446	Distributed splitter for data transmission over twisted wire pairs	3 litigations	United Access T LLC
49.	6253075	Method and apparatus for incoming call rejection	1 litigation	MobileMedia Ide
50.	6266518	Method and system for down-converting electromagnetic signals by sampling and integrating over apertures	1 litigation	Parkervision, In
51.	6278887	System and method for power conservation in a wireless communication handset	1 litigation	Development In Group, LLC
52.	6311231	Method and system for coordinating data and voice communications via customer contract channel changing system using voice over IP	60 litigations	Pragmatus Telec
53.	6333973	Integrated message center	1 litigation	Helferich Patent LLC
54.	6374311	Communication network having a plurality of bridging nodes which transmit a beacon to terminal nodes in power saving state that it has messages awaiting delivery	24 litigations	Innovatio IP Ver
55.	6397038	Satellite broadcast receiving and distribution system	1 litigation	Global Commun
56.	6427068	Simplified high frequency tuner and tuning method	1 litigation	Washington Res Foundation
57.	6427078	Device for personal communications, data collection and data processing, and a circuit card	1 litigation	MobileMedia Ide
58.	6456841	Mobile communication apparatus notifying user of reproduction waiting information effectively	8 litigations	Digitude Innova
59.	6487291	Method and apparatus for valve-based queuing of telephone calls	1 litigation	Walker Digital L
60.	6496579	Method of and system for efficient use of telecommunication networks	4 litigations	AIP Acquisition
61.	6512465	Vehicle tracker including stationary time determination and associated methods	1 litigation	Omega Patents I
62.	6526268	Mobile weather band radio and method	3 litigation	Tramontane IP I
63.	6529725	Transaction security apparatus and method	5 litigations	Joao Bock Trans Systems, LLC
64.	6542585	Distributed splitter for data transmission over twisted wire pairs	3 litigations	United Access T LLC

No.	Patent No.	Title	No. of Litigations	Own
65.	6560461	Authorized location reporting paging system	1 litigation	Enovsys LLC
66.	6633761	Enabling seamless user mobility in a short-range wireless networking environment	11 litigations	ReefEdge Netwo
67.	6668286	Method and system for coordinating data and voice communications via customer contact channel changing system over IP	61 litigations	Pragmatus Telec
68.	6694007	System and method for establishing long distance call connections using electronic text messages	1 litigation	Integren Holdin
69.	6738740	Speech recognition system for interactively gathering and storing verbal information to generate documents	1 litigation	VoiceFill
70.	6757517	Apparatus and method for coordinated music playback in wireless ad-hoc networks	1 litigation	Black Hills Medi
71.	6771970	Location determination system	4 litigation	CallWave Comm LLC
72.	6778073	Method and apparatus for managing audio devices	1 litigation	Eagle Harbor Ho
73.	6792277	Arranging control signallings in telecommunications system	1 litigation	Core Wireless Li S.a.r.l.
74.	6807257	Computer, internet and telecommunications based network	1 litigation	Parus Holdings,
75.	6847310	Keyboard	2 litigations	Gellyfish Techno Texas, LLC
76.	6865268	Dynamic, real-time call tracking for web-based customer relationship management	1 litigation	VTRAX Technolo Licensing, Inc.
77.	6873848	Method of call routing and connection	1 litigation	JSDQ Mesh Tech
78.	6879838	Distributed location based service system	3 litigations	Mobile Enhance Solutions LLC
79.	6894811	Interface circuit for utilizing a facsimile coupled to a PC as a scanner or printer	13 litigations	Infinity Compute Inc.
80.	6925183	Preventing shortened lifetimes of security keys in a wireless communications security system	1 litigation	Innovative Sonic
81.	6963734	Differential frequency down-conversion using techniques of universal frequency translation technology	1 litigation	Parkervision, In
82.	6978143	Method and arrangement for managing packet data transfer in a cellular system	1 litigation	Core Wireless Li S.a.r.l.
83.	6983138	User interface for message access	1 litigation	Helferich Patent L.L.C.
84.	6985748	Inter-carrier messaging service providing phone number only experience	11 litigations	Intercarrier Com LLC
85.	7003304	Paging transceivers and methods for selectively retrieving messages	1 litigation	Helferich Patent L.L.C.
86.	7035598	Modular computer system	3 litigations	Lochner Techno
87.	7035824	Interactive system for and method of performing financial transactions from a user base	1 litigation	IPEG Limited Lia Company

No.	Patent No.	Title	No. of Litigations	Own
88.	7053767	System and method for monitoring and controlling remote devices	1 litigation	SipCo, LLC
89.	7072614	Communication device	1 litigation	Semiconductor I Market BV
90.	7080051	Internet download systems and methods providing software to internet computer users for local execution	5 litigations	Oasis Research,
91.	7096003	Transaction security apparatus	7 litigations	Joao Bock Trans Systems LLC
92.	7096033	Mobile apparatus enabling inter-network communication	3 litigations	Mobile Enhance Solutions LLC
93.	7102511	Radio wave detection device	1 litigation	SipCo, LLC
94.	7127048	Systems and methods for integrating analog voice service and derived POTS voice service in a digital subscriber line environment	5 litigations	Voice Integratio Technologies LL
95.	7158757	Modular computer	1 litigation	SmartData, S.A.
96.	7167731	Emoticon input method and apparatus	2 litigations	Varia Holdings L
97.	7177608	Personal spectrum recorder	1 litigation	Catch a Wave Te Inc.
98.	7212829	Method and system for providing shipment tracking and notifications	1 litigation	IpVenture, Inc
99.	7236739	Apparatus and method for coordinated music playback in wireless ad-hoc networks	1 litigation	Black Hills Medi
100.	7240290	Telephone call initiation through an on-line search	2 litigations	Vellata, LLC
101.	7286828	Method of call routing and connection	1 litigation	JSDQ Mesh Tech
102.	7299018	Receiver comprising a digitally controlled capacitor bank	1 litigation	Semiconductor I Market BV
103.	7327723	Computer, internet and telecommunications based network	1 litigation	Parus Holdings,
104.	7334024	System for transmission of voice and data over the same communications line	4 litigations	CyberFone Syste
105.	7356361	Hand-held device	1 litigation	GellyFish Techn Texas LLC
106.	7383022	Mobile equipment based filtering for packet radio service	1 litigation	Core Wireless Li S.a.r.l.
107.	7397910	Method and apparatus for providing expanded telecommunications service	2 litigations	CallWave Comm LLC
108.	7418092	Virtual call center	1 litigation	Alto Ventures, In
109.	7450957	System and method for blocking the use of a service in a telecommunication system	1 litigation	Intellectual Vent
110.	7489423	Interface circuit for utilizing a facsimile machine coupled to a PC as a scanner or printer	13 litigations	Infinity Compute Inc.
111.	7493097	High dynamic range compact mixer output stage for a wireless receiver	1 litigation	Signal Enhancem Technologies LL
112.	7496858	Telephone call initiation through an on-line	2 litigations	Vellata, LLC

No.	Patent No.	Title	No. of Litigations	Own
		search		
113.	7515896	Method and system for down-converting an electromagnetic signal, and transforms for same, and aperture relationships	1 litigation	Parkervision, In
114.	7525955	Internet protocol (IP) phone with search and advertising capability	5 litigations	H-W Technology
115.	7555110	Methods and apparatus for providing expanded telecommunications service	2 litigations	CallWave Comm LLC
116.	7596606	Message publishing system for publishing messages from identified, authorized senders	2 litigations	Easyweb Innova
117.	7599664	Mobile equipment based filtering for packet radio service (PRS)	1 litigation	Core Wireless Li S.a.r.l.
118.	7606910	Method for indicating a UE that it must register	1 litigation	Core Wireless Li S.a.r.l.
119.	7685247	System for publishing and converting messages from identified, authorized senders	2 litigations	Easyweb Innova
120.	7689658	Method for publishing messages from identified, authorized senders to subscribers	2 litigations	Easyweb Innova
121.	7698372	System for publishing messages from identified, authorized senders to subscribers	2 litigations	Easyweb Innova
122.	7724879	Efficient communication through networks	7 litigations	AIP Acquisition
123.	7734251	Signal processing apparatus and methods	1 litigation	Personalized Me Communication
124.	7764231	Wireless location using multiple mobile station location techniques	2 litigations	TracBeam, L.L.C
125.	7822188	Methods and apparatus for providing expanded telecommunications service	1 litigation	CallWave Comm LLC
126.	7826791	Satellite broadcast receiving and distribution system	1 litigation	Global Commun
127.	7840176	Information distribution and processing system	1 litigation	Email Link Corp
128.	7852995	Method and apparatus for selectively providing messages in telecommunications systems	11 litigations	Callertone Innov
129.	7853225	Simplified high frequency tuner and tuning method	1 litigation	Washington Res Foundation
130.	7860225	Method and apparatus for selectively providing messages in telecommunications systems	11 litigations	Callertone Innov
131.	7876744	Method for collect call service based on VoIP technology and system thereof	2 litigations	Howlink Global
132.	7899492	Methods, systems and apparatus for displaying the multimedia information from wireless communication networks	1 litigation	Virginia Innovat Inc.
133.	7907933	Call routing apparatus	4 litigations	CallWave Comm LLC
134.	7916648	Method of call routing and connection	2 litigation	JSDQ Mesh Tech
135.	7925238	Simplified high frequency tuner and tuning method	1 litigation	Washington Res Foundation
136.	7925273	Method and apparatus for updating the location	1 litigation	Enovsys LLC

No.	Patent No.	Title	No. of Litigations	Own
		of a mobile device within a wireless communication network		
137.	7934148	Systems and method for storing, delivering, and managing messages	71 litigations	Unified Messagi LLC
138.	7953390	Method for content delivery	1 litigation	Affinity Labs of
139.	7970379	Providing broadcast content	1 litigation	Affinity Labs of
140.	7983616	Method and system for improving client server transmission over fading channel with wireless location and authentication technology via electromagnetic radiation	1 litigation	Sellerbid, Inc.
141.	8019060	Telephone/transaction entry device and system for entering transaction data into databases	16 litigations	CyberFone Syste
142.	8027268	Method and apparatus for dynamic configuration of multiprocessor system	1 litigation	Eagle Harbor Ho
143.	8040574	Interface circuit for utilizing a facsimile machine to a PC as a scanner or printer	12 litigations	Infinity Compute Inc.
144.	8050711	Methods, systems and apparatus for displaying the multimedia information from wireless communication networks	1 litigation	Virginia Innovat Inc.
145.	8060117	Location based information system	2 litigations	Tendler Cellular LLC
146.	8064434	Method for providing internet services to a telephone user	8 litigations	Meadows Financ LLC
147.	8078200	System and method for blocking the use of a service in a telecommunication system	1 litigation	Intellectual Vent
148.	8090321	Transmitting sports and entertainment data to wireless hand held devices over a telecommunications network	1 litigation	Front Row Tech
149.	8095064	Satellite broadcast receiving and distribution system	1 litigation	Global Commun
150.	8107601	Wireless messaging system	8 litigations	Helferich Patent LLC
151.	8135398	Method and apparatus for multimedia communications with different user terminals	1 litigation	Virginia Innovat Inc.
152.	8135801	Method, apparatus and system for management of information content for enhanced accessibility over wireless communication networks	1 litigation	Wireless Ink Cor
153.	8145268	Methods, systems and apparatus for displaying the multimedia information from wireless communication networks	1 litigation	Virginia Innovat Inc.
154.	8224381	Methods, systems and apparatus for displaying the multimedia information from wireless communication networks	2 litigations	Speculative Proc LLC
155.	8229437	Pre-allocated random access identifiers	2 litigations	Wi-LAN USA, Inc
156.	8254894	Method for advertising on digital cellular telephones and reducing costs to the end user	2 litigations	Xcellasave Inc.
157.	8294915	Interface circuit for utilizing a facsimile machine	12 litigations	Infinity Compute

No.	Patent No.	Title	No. of Litigations	Own
		coupled to a PC as a scanner or printer		Inc.
158.	8325901	Methods and apparatus for providing expanded telecommunications service	2 litigations	CallWave Comm LLC
159.	RE39231	Communication terminal equipment and call incoming control method	1 litigation	MobileMedia Ide
	TOTAL		**708 litigations**	

Table C.2
Apparent Operating Companies

No.	Patent No.	Title	No. of Litigations	Own
1.	5206854	Detecting loss of echo cancellation	49	Brandywine Communications Technologies, LL
2.	5228077	Remotely upgradable universal remote control	1	Universal Electr
3.	5251328	Predistortion technique for communications systems	49	Brandywine Communications Technologies, LL
4.	5255313	Universal remote control system	1	Universal Electr
5.	5298884	Tamper detection circuit and method for use with wearable transmitter tag	1	Alcohol Monitor
6.	5410326	Programmable remote control device for interacting with a plurality of remotely controlled devices	1	Universal Electr
7.	5414761	Remote control system	1	Universal Electr
8.	5438329	Duplex bi-directional multi-mode remote instrument reading and telemetry system	1	Sensus USA Inc.
9.	5481570	Block radio and adaptive arrays for wireless systems	1	Harris Corp.
10.	5515378	Spatial division multiple access wireless communication systems	1	Harris Corp.
11.	5570369	Reduction of power consumption in a mobile station	1	Nokia
12.	5574779	Method and apparatus for provisioning network services	1	Dashwire
13.	5579239	Remote video transmission system	1	Apple, Inc.
14.	5594936	Global digital video news distribution system	7	Trans Video Elec
15.	5619503	Cellular/satellite communications system with improved frequency re-use	1	Harris Corp.
16.	5630159	Method and apparatus for personal attribute selection having delay management method and apparatus for preference establishment when preferences in a donor device are unavailable	1	HTC Corp.
17.	5689825	Method and apparatus for downloading updated software to portable wireless communication units	1	Motorola Mobili
18.	5710987	Receiver having concealed external antenna	2	Motorola Mobili
19.	5719922	Simultaneous voice/data answering machine	19	Brandywine Communications
20.	5754119	Multiple pager status synchronization system and method	2	Motorola Mobili
21.	5781541	CDMA system having time-distributed transmission paths for multipath reception	1	Harris Corp.
22.	5790643	Pricing method for telecommunication system	1	Arris Corp.
23.	5793853	System and method for recording billing information for a telecommunications service request	3	Sprint Communi

24.	5812537	Echo canceling method and apparatus for data over cellular	47	Brandywine Communications
25.	5815116	Personal beam cellular communication system	1	Harris Corp.
26.	5828657	Half-duplex echo canceler training using a pilot signal	47	Brandywine Communications
27.	5845202	Method and apparatus for acknowledge back signaling using a radio telephone system	1	Motorola Mobili
28.	5877656	Programmable clock generator	1	Avago Technolo
29.	5881142	Integrated communications control device for a small office configured for coupling within a scalable network	16	Brandywine Communications
30.	5884190	Method for making a data transmission connection from a computer to a mobile communication network for transmission of analog and/or digital signals	1	Nokia
31.	5897625	Automated document cashing system	1	Capital Security
32.	6151309	Service provision system for communications networks	1	British Telecom PLC
33.	6151310	Dividable transmit antenna array for a cellular base station and associated method	1	Harris Corp.
34.	6188909	Communication network terminal supporting a plurality of applications	1	Nokia, Inc.
35.	6205216	Apparatus and method for inter-network communication	1	Arris Group, Inc.
36.	6222914	System and method for administration of an incentive award system having a delayed award payment using a credit instrument	1	Meridian Enterp Corporation
37.	6236717	Simultaneous voice/data answering machine	19	Brandywine Communications
38.	6246758	Method of providing telecommunication services	1	Comcast IP Hold
39.	6272333	Method and apparatus in a wireless communication system for controlling a delivery of data	1	Motorola Mobili
40.	6278888	Radiotelephones having contact-sensitive user interfaces and methods of operating same	1	Ericsson, Inc.
41.	6397040	Telecommunications apparatus and method	1	British Telecom plc
42.	6405037	Method and architecture for an interactive two-way data communication network	1	Openwave Syste
43.	6408176	Method and apparatus for initiating a communication in a communication system	1	Motorola Mobili
44.	6418310	Wireless subscriber terminal using java control code	1	Ericsson, Inc.
45.	6445917	Mobile station measurements with event-based reporting	1	Ericsson, Inc.
46.	6445932	Multi-service mobile station	1	Nokia, Inc.
47.	6466568	Multi-rate radiocommunication systems and terminals	1	Ericsson, Inc.
48.	6493673	Markup language for interactive services and methods thereof	1	Motorola Mobili
49.	6504515	High capacity broadband cellular/PCS base station using a phased array antenna	2	Harris Corp.

50.	6504580	Non-Telephonic, non-remote controller, wireless information presentation device with advertising display	1	Universal Electr
51.	6529824	Personal communication system for communicating voice data positioning information	2	Silver State Intel Technologies, In
52.	6597787	Echo cancellation device for cancelling echos in a transceiver unit	1	Ericsson, Inc.
53.	6605038	System for monitoring health, wellness and fitness	1	BodyMedia Inc.
54.	6694154	Method and apparatus for performing beam searching in a radio communication system	1	Harris Corp.
55.	6718030	Virtual private network system and method using voice over internet protocol	1	Netgear, Inc.
56.	6728530	Calendar-display apparatus, and associated method, for a mobile terminal	2	Nokia, Inc.
57.	6731751	Apparatus for cordless computer telephony	1	Ericsson, Inc.
58.	6744858	System and method for supporting multiple call centers	1	Cassidian Comm Inc.
59.	6757324	Method and apparatus for detecting jamming signal	1	CSR Technology
60.	6771980	Method for dialing in a smart phone	1	Samsung Electro
61.	6778517	Wireless broadband service	1	Harris Corp.
62.	6792247	Co-located frequency-agile system and method	1	CSR Technology
63.	6873694	Telephony network optimization method and system	2	Comcast IP Hold
64.	6873823	Repeater with digital channelizer	3	Axell Wireless L
65.	6879808	Broadband communication systems and methods using low and high bandwidth request and broadcast links	2	Space Systems/
66.	6879843	Device and method for storing and reproducing digital audio data in a mobile terminal	1	Samsung Electro
67.	6882827	Testing response of a radio transceiver	1	CSR Technology
68.	6882870	Personal mobile communications device having multiple units	2	Nokia, Inc.
69.	6885870	Transferring of a message	1	Comcast Cable Communication
70.	6915119	Telephone and data transmitting method for telephone	1	Fujifilm Corp.
71.	6920316	High performance integrated circuit regulator with substrate transient suppression	7	Freescale Semic Inc.
72.	6950645	Power-conserving intuitive device discovery technique in a bluetooth environment	4	SmartPhone Tec LLC
73.	6965666	System and method for sending e-mails from a customer entity in a telecommunications network	1	Comcast Cable Communication
74.	6965667	Method of accounting prepaid online internet service credit values	1	Peregrine Netw
75.	6970501	Method and apparatus for automatic selection and operation of a subscriber line spectrum class technology	47	Brandywine Communication Technologies LL
76.	6996073	Methods and apparatus for providing high speed connectivity to a hotel environment	1	iBAHN General I Corporation
77.	7035607	Systems and methods for providing an adjustable	1	Silicon Laborato

		reference signal to RF circuitry		
78.	7043241	Method and system for provisioning authorization for use of a service in a communications network	1	Comcast Cable Communications
79.	7054654	Automatic messaging in response to television viewing	1	Comcast Cable Communications
80.	7062281	Multi-mode paging system	1	Long Range Syst
81.	7069055	Mobile telephone capable of displaying world time and method for controlling the same	1	Apple, Inc.
82.	7079871	Portable telephone and method of displaying data thereof	1	Apple, Inc.
83.	7089107	System and method for an advance notification system for monitoring and reporting proximity of a vehicle	7	ArrivalStar S.A.
84.	7092509	Contact center system capable of handling multiple media types of contacts and method for using the same	1	Micrologic Corp.
85.	7123898	Switch circuit and method of switching radio frequency signals	3	Peregrine Semic Corporation
86.	7200400	Mobile to 802.11 voice multi-network roaming utilizing SIP signaling with SIP proxy or redirect server	1	Netgear, Inc.
87.	7218722	System and method for providing call management services in a virtual private network using voice or video over internet protocol	1	Netgear, Inc.
88.	7292685	Pro-active features for telephony	1	Mitel Networks
89.	7319874	Dual mode terminal for accessing a cellular network directly or via a wireless intranet	1	Nokia, Inc.
90.	7343165	GPS publication application server	3	Silver State Intel Technologies, In
91.	7366529	Communication network terminal supporting a plurality of applications	1	Nokia, Inc.
92.	7403788	System and method to initiate a mobile data communication utilizing a trigger system	3	m-Qube Inc.
93.	7418086	Multimodal information services	1	LucidMedia Net
94.	7426388	Wireless, ground link-based aircraft data communication system with roaming feature	1	Harris Corp.
95.	7447516	Method and apparatus for data transmission in a mobile telecommunication system supporting enhanced uplink service	1	Samsung Electro
96.	7460852	Switch circuit and method of switching radio frequency signals	4	Peregrine Semic Corporation
97.	7469151	Methods, systems and computer program products for over the air (OTA) provisioning of soft cards on devices with wireless communications capabilities	1	C-SAM Inc.
98.	7502406	Automatic power control system for a code division multiple access (CDMA) communications system	1	Interdigital Com LLC
99.	7505762	Wireless telephone data backup system	4	Synchronoss Te Inc.
100.	7509148	Message alert system and method of providing message notification	1	Motorola Mobili

101.	7533342	System and method of a personal computer device providing telephone capability	1	SmartPhone Tec LLC
102.	7546139	System and method for establishing and maintaining communications across disparate networks	3	F4W, Inc.
103.	7577460	Portable composite communication terminal for transmitting/receiving and images, and operation method and communication system thereof	1	Apple, Inc.
104.	7580376	Methods and apparatus for providing high speed connectivity to a hotel environment	1	iBAHN General I Corporation
105.	7587070	Image classification and information retrieval over wireless digital networks and the internet	1	Facedouble, Inc.
106.	7593512	Private VoIP network for security system monitoring	1	Nextalarm Moni Services Inc.
107.	7602886	Method and system for using a network-provided location for voice-over-packet emergency services calls	1	Comcast Cable Communications
108.	7643824	Wireless telephone data backup system	2	Synchronoss Tec Inc.
109.	7664242	System and method for anonymous telephone communication	2	Teltech Systems
110.	7664485	Making a phone call from an electronic device having an address list or a call history list	4	SmartPhone Tec LLC
111.	7664516	Method and system for peer-to-peer advertising between mobile communication devices	6	Blue Calypso, In
112.	7702322	Method and system for distributing and updating software in wireless devices	2	Good Technolog Corporation
113.	7734020	Two-way voice and voice over IP receivers for alarm systems	1	Nextalarm Moni Services Inc
114.	7742790	Environmental noise reduction and cancellation for a communication device including for a wireless and cellular telephone	1	Noise Free Wire
115.	7752309	Method and apparatus for inexpensively monitoring and controlling remotely distributed appliances	1	Mueller Internat
116.	7773942	Redundant communication path for satellite communication data	1	Viasat, Inc.
117.	7778396	Telephone status notification system	1	Facebook, Inc.
118.	7778613	Dual conversion receiver with programmable intermediate frequency and channel selection	1	Silicon Laborato
119.	7783299	Advanced triggers for location-based service applications in a wireless location system	1	TruePosition Inc
120.	7792518	System and method to initiate a mobile data communication utilizing a trigger system	**3**	m-Qube Inc.
121.	7796969	Symmetrically and asymmetrically stacked transistor group RF switch	4	Peregrine Semic Corporation
122.	7813716	Method of providing information to a telephony subscriber	1	Single Touch Int
123.	7831233	System and method for radio signal reconstruction using signal processor	3	American Radio
124.	7848500	Method and apparatus to validate a subscriber line	1	Paymentone Cor
125.	7849154	Acquiring, storing, and correlating profile data of	1	The Nielsen Com

		cellular mobile communications system's users to events		LLC
126.	7856234	System and method for estimating positioning error within a WLAN-based positioning system	2	Skyhook Wireles
127.	7860499	Switch circuit and method of switching radio frequency signals	4	Peregrine Semic Corporation
128.	7899167	Centralized call processing	1	Securus Technol
129.	7899169	System and method for modifying communication information (MCI)	10	NobelBiz, Inc.
130.	7917285	Device, system and method for remotely entering, storing and sharing addresses for a positional information device	2	Qaxaz LLC
131.	7921455	Token device that generates and displays one-time passwords and that couples to a computer for inputting or receiving data for generating and outputting one-time passwords and other functions	1	EMC Corporatio
132.	7933122	Protective enclosure for a computer	8	Otter Products,
133.	7957524	Protective covering for an electronic device	1	Zagg Intellectua Holding Co
134.	7961709	Secondary synchronization sequences for cell group detection in a cellular communications system	1	Ericsson, Inc.
135.	7970386	System and method for monitoring and maintaining a wireless device	1	Good Technolog Corporation
136.	7995730	Method and system for masquerading the identity of a communication device returning a missed call	1	Cox Communica
137.	8005455	Remotely configurable wireless intercom system for an establishment	1	3M Company
138.	8009636	Method and apparatus for performing an access procedure	1	Interdigital Com LLC
139.	8010043	Capacity maximization for a unicast spot beam satellite system	2	Viasat, Inc.
140.	8012219	System and method for preventing access to data on a compromised remote device	2	Good Technolog Corporation
141.	8014540	Remote control interface for replacement vehicle stereos	2	AAMP of Florida
142.	8014760	Missed telephone call management for a portable multifunction device	3	Apple, Inc.
143.	8015025	Method and apparatus for remote health monitoring and providing health related information	2	Robert Bosch He Systems, Inc.
144.	8019357	System and method for estimating positioning error within a WLAN-based positioning system	1	Skyhook Wireles
145.	8031050	System and method for situational location relevant invocable speed reference	1	Motorola Mobili
146.	8047364	Protective covering for personal electronic device	1	Cardshark, LLC
147.	8068827	Non-interfering utilization of non-geostationary satellite frequency band for geostationary satellite communication	2	Viasat, Inc.
148.	8103313	Portable communicator	1	ADC Technology
149.	8131262	System and method to initiate a mobile data communication utilizing a trigger system	1	m-Qube Inc.

150.	8135122	System and method for modifying communication information (MCI)	8	NobelBiz, Inc.
151.	8140667	Method and apparatus for inexpensively monitoring and controlling remotely distributed appliances	1	Mueller Internat
152.	8155679	System and method for peer-to peer advertising between mobile communication devices	6	Blue Calypso, In
153.	8169992	Uplink scrambling during random access	1	Ericsson, Inc.
154.	8175632	Kit for establishing and maintaining communications across disparate networks	2	F4W, Inc.
155.	8184825	Vehicle remote control interface for controlling multiple electronic devices	2	AAMP of Florida
156.	8204561	One piece co-formed exterior hard shell case with an elastomeric liner for mobile electronic devices	1	Speculative Proc LLC
157.	8229455	System and method of gathering and caching WLAN packet information to improve position estimates of a WLAN positioning device	2	Skyhook Wireles
158.	RE38838	Monitoring system	1	SunPower Corpo
159.	RE40479	Wireless spread spectrum ground link-based aircraft data communication system for engine event reporting	1	Harris Corp.
160.	RE42288	Tracking system for locational tracking of monitored persons	2	Merck Sharp & D
161.	RE42671	Emergency facility video-conferencing system	1	B.I. Incorporated
162.	RE42814	Password protected modular computer method and device	1	International Bu Machines Corpo
	Total number of Brandywine litigations		**293**	
	Total of non-Brandywine operating company litigations		**263**	
	TOTAL number of operating company litigations		**556**	

[i] In conducting our analysis, we ignored patent transfers from inventors to their employers, as we assumed there was a preexisting obligation on the part of these inventors to transfer ownership to their employer.