



Patent Litigation and Marketplace Report

Public Excerpt

June 2020

RPX Corporation is the leading provider of patent risk solutions, offering defensive buying, acquisition syndication, dispute resolution, patent intelligence, insurance services, and advisory services.

Since its founding in 2008, RPX has introduced efficiency to the patent market by providing a rational alternative to litigation. The San Francisco-based company's pioneering approach combines principal capital, deep patent expertise, and client contributions to generate enhanced patent buying power. By acquiring patents and patent rights, RPX helps to mitigate and manage patent risk for its client network.

As of March 31, 2020, RPX had invested over \$2.7B to acquire more than 60,000 US and international patent assets and rights on behalf of 330+ clients in eight key sectors: Automotive, Consumer Electronics and PCs, E-Commerce and Software, Financial Services, Media Content and Distribution, Mobile Communications and Devices, Networking, and Semiconductors.

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The patent ecosystem now finds itself at another inflection point, with a series of judicial decisions and reforms causing the pendulum to continue its swing back toward patent owners in 2019 and into 2020.

As the avenues for patent validity become narrower, plaintiffs have focused more on the assertion of higher-quality assets, causing a marked increase in overall patent assertion. NPEs have contributed to this upswing, with some fueled by a newfound influx of litigation finance capital as investors seek uncorrelated risk during uncertain economic times. These trends have accelerated during the COVID-19 pandemic.

At RPX, we continue to work diligently to counter the ever-evolving sources of patent risk with a renewed focus on what we do best: bringing companies together to solve patent issues they have in common. Since our founding in 2008, we have deployed over \$2.7B to help our members resolve patent disputes, and through our work to aggregate the interests of our clients, we have helped them to achieve more than 1,650 litigation dismissals through the end of 2019, saving more than \$4B in avoided legal and settlement costs. 2019 was a banner year for deals completed on behalf of RPX's membership, and 2020 is off to an equally strong start.

RPX's tried-and-true, collaborative business model enables the efficient resolution of a wide variety of patent dispute types—including those involving standard essential patent (SEP) licensing. Many factors indicate that SEPs will become an increasingly significant source of patent risk in the coming years as standards-dependent product categories continue to expand and converge. Quantifying SEP risks for individual products can be impractical, given the sheer number of declared SEPs and the often varied interests of those who own them, but licensing deals can be achieved with far greater efficiency and at lower cost when trusted intermediaries independently aggregate the interests of parties on both sides of the table: one intermediary addressing

the interests of licensees, and another handling the interests of licensors. RPX has already begun to put this model to the test through its landmark deal with Sisvel in January 2019. Stay tuned for more.

Through our work to understand and mitigate patent risk, RPX has also developed industry-leading expertise, data analytics, and written intelligence that help our members gain a greater understanding of the patent market and assess their risk. Our latest Patent Litigation and Marketplace Report provides a comprehensive reference for our latest data and intelligence, detailing some of the most important trends and developments that shaped the patent space in 2019. Those include the continued decline in *Alice* invalidation rates since the Federal Circuit's decisions in *Berkheimer* and *Aatrix* decisions, procedural reforms implemented at the PTAB that have tended to benefit patent holders, significant developments related to venue, and the rise of a new breed of NPEs backed by litigation finance.

While this report provides a uniquely rich snapshot of the market overall, we encourage our members to think of this report as a template. Our team of experts can provide our member companies with custom analyses using this same rich data, enabling informed decision-making and risk assessment at no additional cost. More than 30% of our membership is now regularly taking advantage of these services.

With an uncertain economic future on the horizon, understanding the key drivers of industry trends is essential for stakeholders to stay ahead of the curve. This report—as well as custom analyses requested by individual members that may be spurred by it—are just some of the many ways that we seek to provide our members an edge in the marketplace. We hope you find it useful and instructive.

Daniel P. McCurdy
Chief Executive Officer, RPX Corporation

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US patent litigation stabilized over the past three years, with 2019 outpacing the previous year by 7% and NPEs filing a significantly greater share of litigation than in 2018. This increase was driven by a variety of factors, including judicial rulings affecting both district court litigation and the Patent Trial and Appeal Board (PTAB) that largely tended to favor plaintiffs by tightening substantive and procedural requirements for patent validity challenges.

The law governing patent eligibility, in particular, has seen significant changes in the past two years that continued to reverberate in 2019 and beyond. The Federal Circuit's decisions in *Berkheimer* and *Aatrix* have left *Alice* in a significantly narrowed state by limiting the circumstances in which courts will grant early eligibility challenges, causing a marked drop in invalidation rates under Section 101. Moreover, the Supreme Court's January decision not to review *Berkheimer* means that this decline is likely to persist.

Courts have also imposed significant potential burdens on the PTAB. In October 2019, the Federal Circuit held in *Arthrex* that the appointment of the PTAB's administrative patent judges (APJs) had been unconstitutional, casting doubt on hundreds of America Invents Act (AIA) reviews potentially subject to remand according to an RPX analysis. Additional judicial rulings issued in 2020 have imposed further limits on the PTAB.

On the other hand, defendants benefitted from a February 2020 ruling on venue, in which the Federal Circuit overturned a controversial Eastern District of Texas ruling under which venue could be established through the presence of servers in an ISP data center—ending a loophole that some stakeholders warned could have reestablished nationwide venue despite *TC Heartland*.

Meanwhile, third-party litigation funders have played an increasingly greater role in patent litigation, providing backing for a number of significant new NPE assertion campaigns. The ongoing transfer of patents also drove the filing of litigation as NPEs continued to acquire and assert patents from a variety of sources, including some assets divested by [Intellectual Ventures LLC](#) and others acquired from operating companies.

In this report, RPX provides an in-depth quantitative and qualitative analysis of these and other notable trends from 2019 and onward. The report is designed both to spark further debate about the direction of the patent system and to highlight the ways in which RPX data, analytics, and intelligence can help parties make informed decisions.

Patent Litigation Filing Activity

The number of defendants added to campaigns in 2019 increased slightly (about 7%) from 2018, making it the third year in a row of stable litigation rates (compared to the tumultuous period of 2011–2016).

- Furthermore, the percentage of defendants added by NPEs increased from 48% in 2018 to 55% in 2019.
- In mid-March 2020, shortly after a National State of Emergency was declared due to the COVID-19 pandemic, NPE litigation began increasing relative to the same time period in 2019.

Over the past five years, the Eastern District of Texas has seen more large-scale NPE campaigns (those hitting at least five defendants) than any other district. However, in the last three years, the Eastern District has seen a significant drop in filings, largely as a result of *TC Heartland*.

The top market sectors for NPE litigation include E-Commerce and Software (30% of defendants added by NPEs), Consumer Electronics and PCs (19%), and Networking (17%). For operating company litigation, the top sectors are Consumer Products (41% of defendants added by operating companies) and Biotech and Pharma (22%).

RPX data also indicate that litigation, especially NPE litigation, increases around the time of a company's Initial Public Offering (IPO). The proportion of litigation filed by NPEs against public companies hovers at 60% around three to four years before an IPO event but reaches around 80% at the time of IPO, remaining close to that level for three to four years thereafter.

Venue Trends and Legal Developments

Overall, the District of Delaware saw the most defendants added to campaigns in 2019 (just under 1,000), followed by the Central District of California and the Eastern District of Texas.

The District of Delaware was the most popular district for NPE litigation in 2019, while the Eastern District of Texas held a distant second place, further solidifying the trend observed since *TC Heartland*. Those two districts hold the first and seventh spots, respectively, for operating company litigation.

Additionally, the Western District of Texas has risen significantly in the rankings since the late-2018 confirmation of District Judge Alan D. Albright. In 2019, the Western District became the fifth most popular district overall, also rising to third place for NPE litigation.

In early 2020, the Federal Circuit resolved a lingering district court split over venue by reversing a 2018 Eastern District of Texas ruling that servers in an ISP datacenter each qualified as a "regular and established place of business", which some stakeholders feared would undo *TC Heartland* for companies reliant on web infrastructure. Rather, the appeals court held in *In re: Google* that the "regular, physical presence of an employee or other agent of the defendant conducting the defendant's business" is required "at the alleged 'place of business'".

Top NPE Plaintiffs

The top plaintiffs of 2019 included multiple NPEs that have remained top filers for years, including [IP Edge LLC](#) and [Leigh M. Rothschild](#). While some NPEs that have historically been prolific litigants no longer appear among the top filers—including [Brian Yates](#), who has shifted his focus to China—other formerly active plaintiffs are surging back. This includes [Acacia Research Corporation](#), which underwent a strategic transformation in 2019 and has since resumed the active filing of litigation, bolstered by a partnership with a hedge fund that gives Acacia access to up to \$500M in new capital.

Top Operating Company Plaintiffs

The top operating company plaintiffs of 2019 targeted various types of consumer products, including dog toys, fitness equipment, and luxury goods, as well as pharmaceuticals and semiconductors.

Jury Verdicts

Nationally, about seven out of ten patent jury trials favor plaintiffs, with the other three favoring defendants.

- The Eastern District of Texas, the District of Delaware, and the Northern District of California generally follow this trend, with the District of Delaware having the highest plaintiff win rate at 72% and the Eastern District of Texas having the lowest plaintiff win rate at 63%, of those districts.

Alice and Patentable Subject Matter

The Federal Circuit's February 2018 decisions in *Berkheimer* and *Aatrix* have contributed to a sharp decrease in district court *Alice* invalidation rates through their holding that factual disputes over inventiveness may preclude early dismissal under Section 101.

- Since *Berkheimer* and through Q1 2020, 44% of patents challenged and adjudicated under *Alice* have had claims invalidated, compared to 67% for patents that saw rulings since *Alice* and before *Berkheimer*. Invalidation rates at Rule 12 and summary judgment have both seen a similar drop.
- An analysis limited solely to decisions that turned on factual disputes shows that defendants who file *Alice* motions are more successful in overcoming *Berkheimer/Aatrix* at the Rule 12 stage than they are at summary judgment. A further breakdown by plaintiff type shows that NPEs fare much worse than operating companies at blocking *Alice* motions under *Berkheimer/Aatrix*.

In January 2020, the Supreme Court declined to review *Berkheimer*, likely solidifying the decline in *Alice* invalidation rates, while the Federal Circuit has expanded the reach of that holding and *Aatrix* through subsequent decisions issued in 2019. The past year also saw Section 101 legislative reform efforts stall in Congress.

Meanwhile, the USPTO has overhauled its approach to Section 101 as a result of *Berkheimer* and *Aatrix*.

- An April 2018 memorandum on *Berkheimer* tightened the requirements for finding that a claim is not directed to “well-understood, routine, and conventional activity”.

- A new guidance, issued in January 2019 and updated in October 2019, has revamped the process for assessing patents under the “abstract idea” step of *Alice*. The guidance provides a framework for analyzing claim eligibility, in part by distilling and categorizing caselaw applying *Alice*.
- While those reforms have reduced certain Section 101 rejection rates and have decreased examination uncertainty, thereby helping patent applicants, the courts have diverged from the PTAB over the effect of the guidance on invalidity challenges.
- Some litigants have questioned whether the guidance properly interprets the underlying caselaw, which could cast doubt over prior PTAB rulings.

Damages

Damages form just a part of the ultimate cost of litigation, which is also driven in significant part by the cost of counsel, the expenses involved in discovery, and the potential amount of a settlement. However, damages are also one of the few risk metrics that can be precisely quantified from publicly available litigation data, and to that end, RPX has analyzed damages awards in jury verdicts and bench trials rendered since 2014.

- Although the total median compensatory award per case in NPE litigation is about \$0.8M, the distribution of damages is spread over a wide range, with 10% of awards in NPE suits exceeding \$27M, and 25% exceeding \$8.6M.
- Damages in operating company litigation tend to be higher—while the median total award per case is \$2.2M, 25% of awards in operating company litigation exceed \$12.5M, and 10% exceed \$56M.
- The cost of litigation against an NPE can be even greater, with a median of \$2.5M for cases with \$1–10M at risk and of \$3.5M for cases with \$10–25M at risk, according to the 2019 AIPLA Economic Survey.
- For operating company litigation, the median cost of litigation is \$1.5M with \$1–10M at risk, and rises to \$2.7M with \$10–25M at risk.

PTAB Developments

In 2019, 1,321 petitions for America Invents Act (AIA) review were filed at the PTAB—a decrease of around 23.1% compared to the previous year. Now that more than two years have passed since *SAS Institute*, which eliminated the practice of instituting trial for less than all petitioned claims, the decision does not appear to have significantly affected institution rates.

The Federal Circuit cast doubt over hundreds of AIA review decisions through its October 2019 ruling in *Arthrex* that the appointment of PTAB administrative patent judges (APJs) had been unconstitutional.

- Multiple parties have stated that they will likely appeal the ruling to the Supreme Court, including the appellant in that case and the US government.
- In early May, the PTAB’s Chief Administrative Patent Judge, Scott R. Boalick, ordered that all cases remanded under *Arthrex*, and those yet to be remanded, be placed under administrative abeyance, citing pending Supreme Court appeals and the need to “avoid burdening the Office”.
- This effectively places numerous AIA review decisions in limbo, as an RPX analysis indicated that more than 200 of those decisions may have been subject to remand and rehearing under *Arthrex*.

Courts also issued several other significant decisions affecting the PTAB in 2020:

- In April, the Supreme Court held in *Thryv v. Click-to-Call* that appellate review is not available for applications of the *inter partes* review (IPR) time bar, under which a defendant may not file an IPR petition more than one year after being served with a patent infringement complaint.
- In March, the Federal Circuit held in *Facebook v. Windy City* that parties may not join their own IPR petitions, thus taking away a longstanding safety valve employed by frequent petitioner-defendants—although the court has yet to issue its mandate. In early June, the parties and the US government (as an *amicus*) briefed the impact of *Click-to-Call* on this case by order of the court. Facebook and the USPTO have both argued that PTAB joinder decisions may not be appealed as a result of *Click-to-Call*.

- In February, the Federal Circuit ruled in *Samsung v. Prisua Engineering* that the PTAB may not cancel claims as indefinite under Section 112 in IPRs.
- In January, the Supreme Court declined to review a decision holding that states lack sovereign immunity from IPR, after similarly resolving the issue as to Native American tribes in 2019.

Multiple constitutional challenges against the IPR regime also remain pending, each contesting the retroactive application of IPR under the Due Process and Takings Clauses of the Fifth Amendment.

Additionally, USPTO Director Andrei Iancu has continued to implement a series of notable reforms since his confirmation in February 2018, including a new pilot program designed to make claim amendments easier in AIA reviews and the creation of a new panel designed to handle appeals and identify important precedents. In 2019, that panel greatly expanded the circumstances under which the PTAB will exercise discretion over AIA review institution.

Patent Marketplace

Litigation finance has increasingly fueled a fundamental shift in the dynamics of patent assertion over the past two years, enabling an upswing in litigation by established players as well as up-and-coming plaintiffs.

In 2019, the ongoing divestiture of patents from [Intellectual Ventures LLC \(IV\)](#) also remained a key driver of new litigation, as NPEs have continued to assert divested assets in both new and existing campaigns—while the recorded transfers of IV patents serve as a bellwether for assertion efforts yet to come.

As in years past, NPEs have also kept acquiring and litigating former operating company patents, a trend that may accelerate as businesses seek new revenue streams to counteract the impact of a potential recession.

Federal Circuit Filing Trends

Federal Circuit cases peaked in 2016, a year after a corresponding peak in district court filings. For the last several years, the Federal Circuit has averaged about 1,000 cases per year, with nearly 900 cases filed in 2019.

Just under half of Federal Circuit appeals originate from cases in district court, followed by the PTAB (just under 40%).

NPE cases account for about half of all Federal Circuit appeals.

Around half of Federal Circuit appeals involve appellants that have filed fewer than five total appeals, while top appellants—the small number of parties that filed more than 30 appeals each—account for just a tenth of the court's total caseload.

Chinese Litigation Overview and Outcomes

Patent litigation in China differs markedly from the US system with respect to the structure of its patent system, litigation procedure, and available remedies.

Over the last decade, the number of infringement cases in China has more than quadrupled. In cases that reach a merit-based outcome, plaintiff win rates have increased to over 80% in the recent years.

Damages awarded in China are much lower than those seen in US patent cases, with the overwhelming majority amounting to \$100K or less.

In contrast, injunction rates are much higher in Chinese patent cases than for those in the US. When the plaintiff prevails (either outright or in a mixed-outcome judgment), an injunction is issued more than 90% of the time. Chinese injunctions also present greater risk for defendants with supply chains in China, as they can also block the *export* of patented articles.

Furthermore, most cases in China are solely between domestic Chinese parties, with less than 10% of litigation involving one or more foreign parties. While foreign plaintiffs win at a rate similar to Chinese plaintiffs, foreign defendants fare better than Chinese defendants.

The number of invalidity proceedings has seen about a threefold increase in the last decade. Patents are invalidated in about 60% of these proceedings.

Dive Deeper with RPX Insight

RPX members can access the full version of this report, and dive deeper into the data underlying the topics discussed here, on [RPX Insight](#).

The past two years have brought significant changes to the state of the law governing patent subject matter eligibility, as the Federal Circuit's *Berkheimer* and *Aatrix* decisions have led to a marked decrease in district court *Alice* invalidation rates—a decline that appears to be here to stay, given that both the *en banc* Federal Circuit and the Supreme Court have decided not to review *Berkheimer*.

Additionally, the USPTO has revamped its approach to Section 101 as a result of *Berkheimer* and *Aatrix*, in part by issuing new guidance that distills and classifies applicable caselaw in an attempt to establish greater certainty and consistency with respect to the *Alice* analysis. Although the guidance has led to fewer 101-based rejections during the examination process, thereby helping patent applicants, the courts and the PTAB have diverged over the application of the guidance with respect to invalidity challenges. While courts are not bound by the guidance, the PTAB is, and it has adopted the guidance as the governing framework for 101 analyses in AIA reviews—which has led to questions about whether the guidance properly interprets the underlying caselaw.

Berkheimer* and *Aatrix*: Narrowing the Application of *Alice

The *Alice* decision historically served as a key defensive tool for nearly four years after its June 2014 issuance, allowing defendants to keep legal costs down by challenging patents early in the course of litigation. However, in February 2018, the Federal Circuit significantly constrained the early application of *Alice* through *Berkheimer* and *Aatrix*.

In *Berkheimer*, the court [held](#) that summary judgment of patent ineligibility is premature where a party raises questions of fact as to whether the patent's claims contain an inventive concept, as required for the claims to survive the second step of *Alice*. The court then applied this same reasoning as to Rule 12 decisions in its [companion ruling](#) in *Aatrix*, holding that such factual disputes could also preclude resolution of Section 101 challenges at the Rule 12 stage.

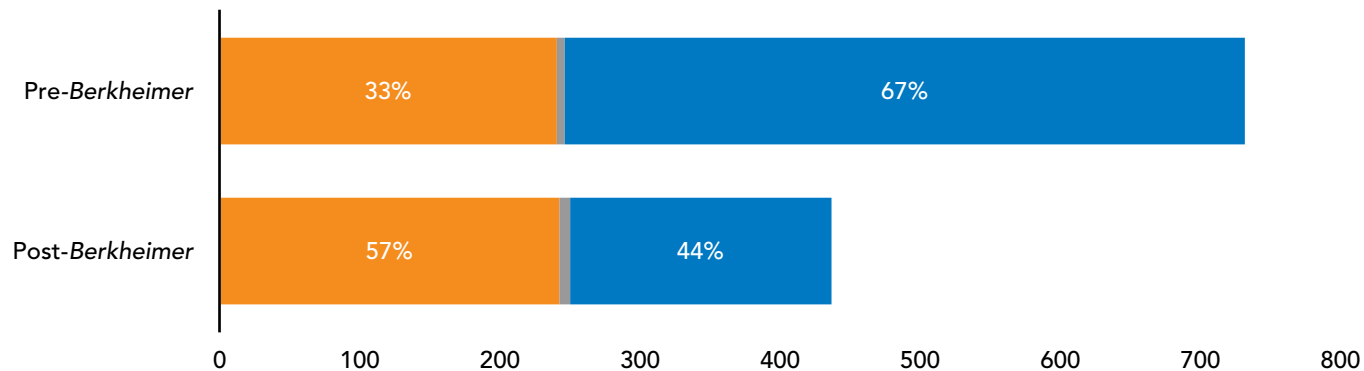
Data Update: Alice Outcomes Since *Berkheimer* and *Aatrix*

Berkheimer and *Aatrix* have contributed to a sharp decrease in the rate of patents being held ineligible in district court proceedings. As shown in Figure 1, 44% of patents challenged under *Alice* that have seen rulings since *Berkheimer* and through Q1 2020 have had all claims at issue invalidated, whereas 67% of the patents adjudicated since *Alice* but before *Berkheimer* saw the invalidation of such claims (excluding the small number of decisions per patent with mixed-by-claim outcomes).

Figure 1: Patents Invalidated Under *Alice* Before and After *Berkheimer*

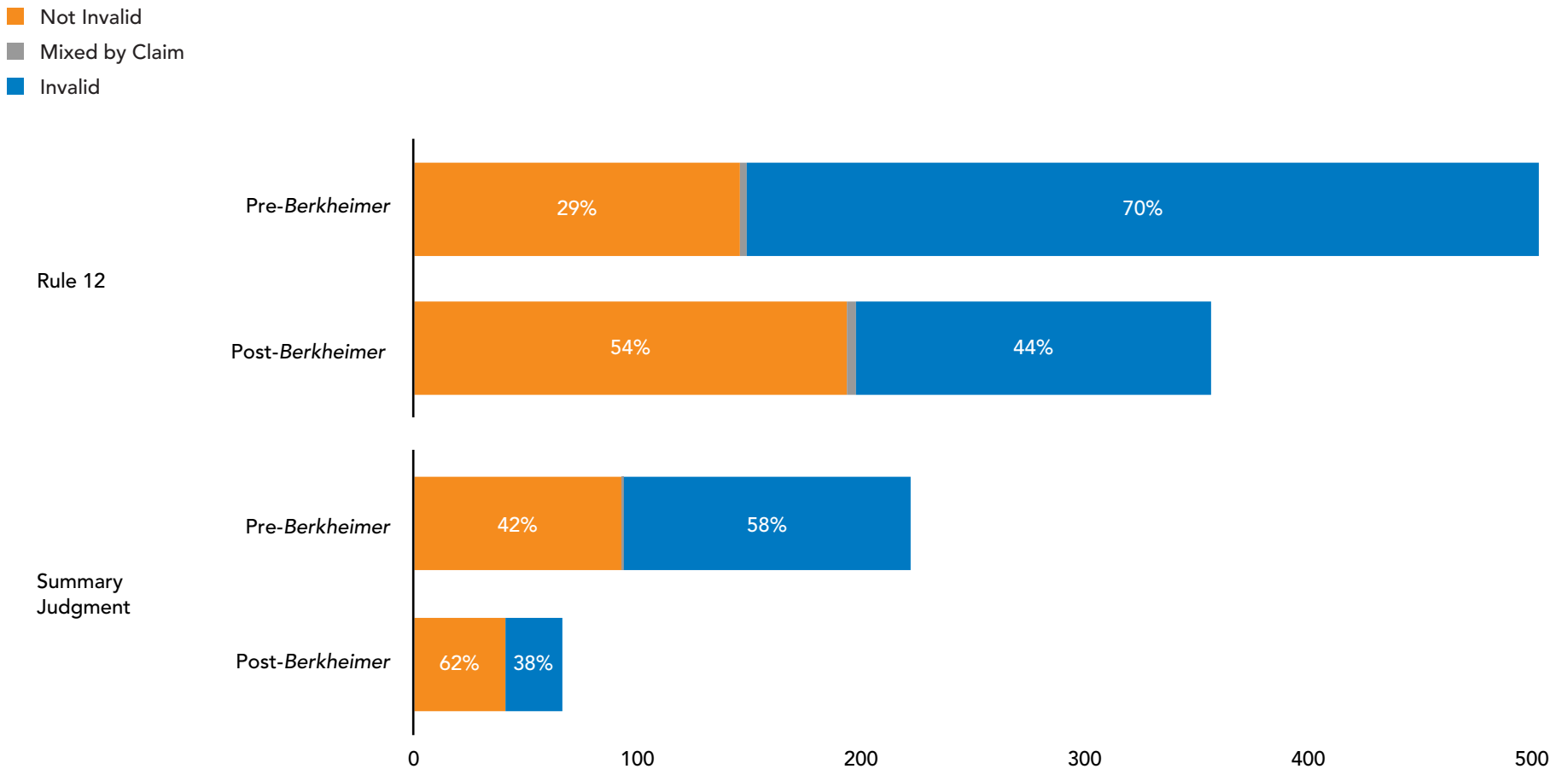
Note: Some percentages add up to more than 100%, as patent claims occasionally see multiple *Alice* rulings with different outcomes. (For example, a claim may be found not invalid in one case and invalid in another.)

- Not Invalid
- Mixed by Claim
- Invalid



A further breakdown by case stage shows that invalidation rates are similarly affected for patents with *Alice* challenges decided at Rule 12 and summary judgment, falling well below 50% for both stages: as indicated in Figure 2, 44% of patents have had claims invalidated at Rule 12 since *Berkheimer*, compared to roughly 70% before; and just 38% for summary judgments issued post-*Berkheimer*, versus 58% previously.

Figure 2: Patents Invalidated Under *Alice* Before and After *Berkheimer* by Procedural Stage



The analyses above include all decisions issued since *Berkheimer*, regardless of whether the court’s ruling actually turned on factual disputes. Limiting the data to the latter type of decision, outcomes diverge by procedural stage and plaintiff type.

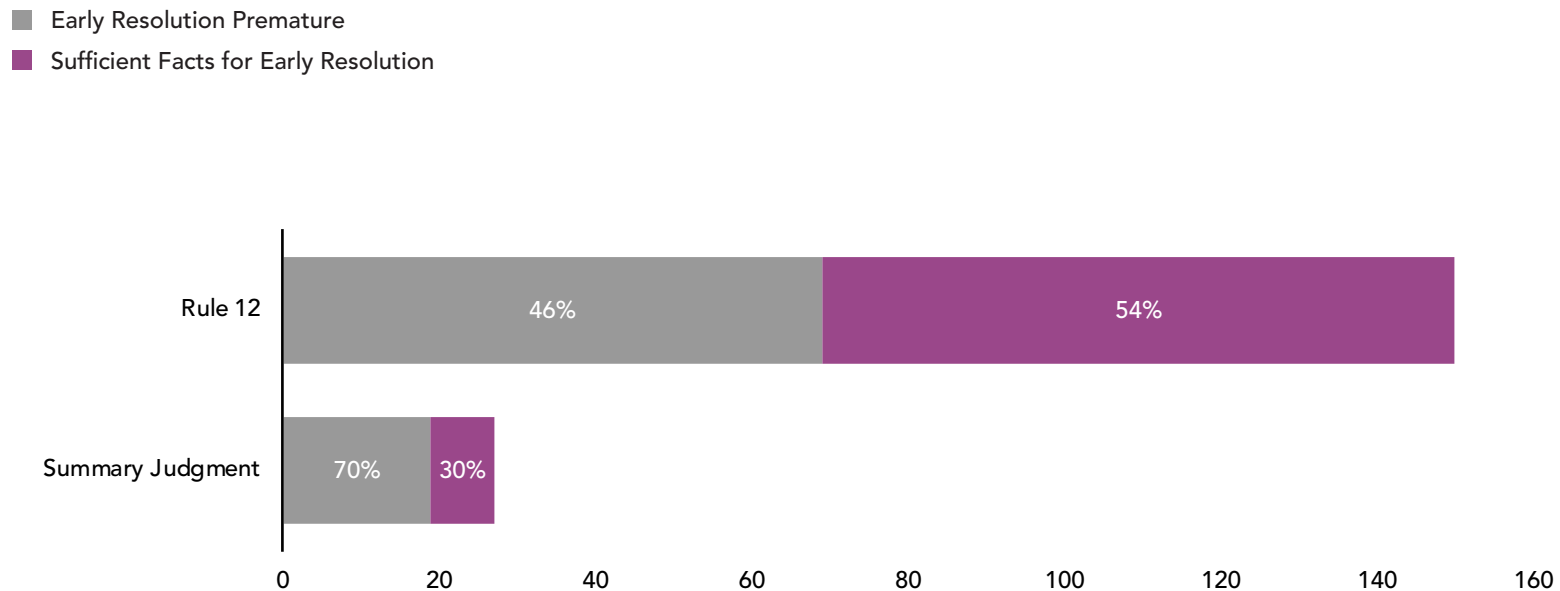
A breakdown by procedural stage (see Figure 3) shows that defendants who file *Alice* motions are more successful in overcoming *Berkheimer/Aatrix* at the Rule 12 stage than they are at summary judgment.

For Rule 12 *Alice* decisions that issued through Q1 2020, courts found sufficient facts for early resolution 54% of the time (81 of 150 patents

challenged) where orders turned on factual disputes under *Berkheimer/Aatrix*. Of those decisions, the ensuing ruling on the merits resulted in the invalidation of claims for all but two challenged patents.

In contrast, for summary judgment decisions turning on *Berkheimer/Aatrix*, courts found that they had sufficient facts to rule just 30% of the time (or just eight patents out of 27). However, all eight of those patents saw claims invalidated.

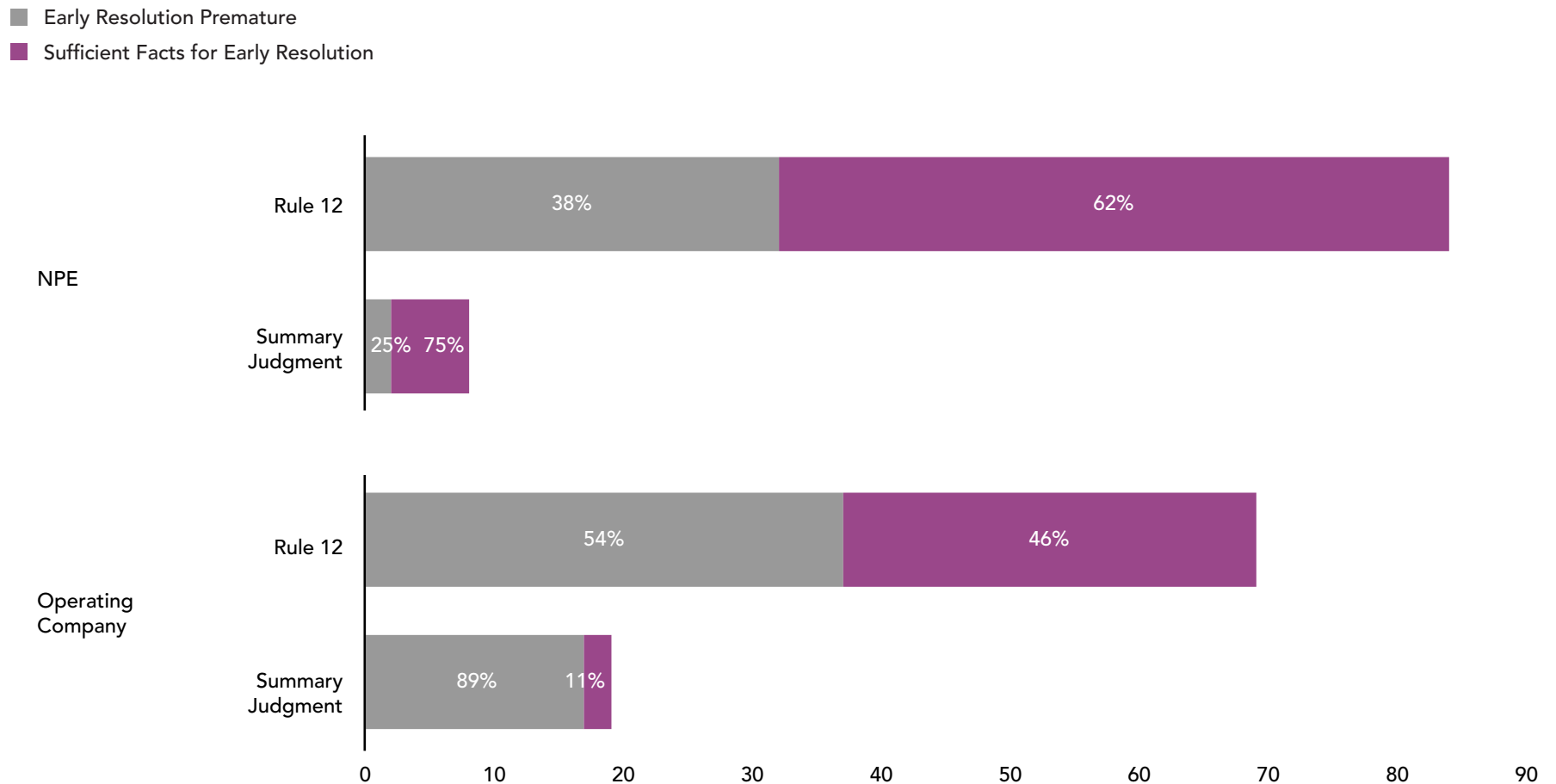
Figure 3: Patents with *Alice* Orders Addressing *Berkheimer* by Procedural Stage



Furthermore, as shown in Figure 4, adding a filter for plaintiff type as well as procedural stage shows that NPEs are far less successful than operating companies at blocking *Alice* motions under *Berkheimer/Aatrix*. From the date of *Berkheimer's* issuance and through Q1 2020, courts found sufficient facts for early resolution 62% of the time for motions against NPEs but 46% of the time for those against operating companies. NPEs fare even worse at the

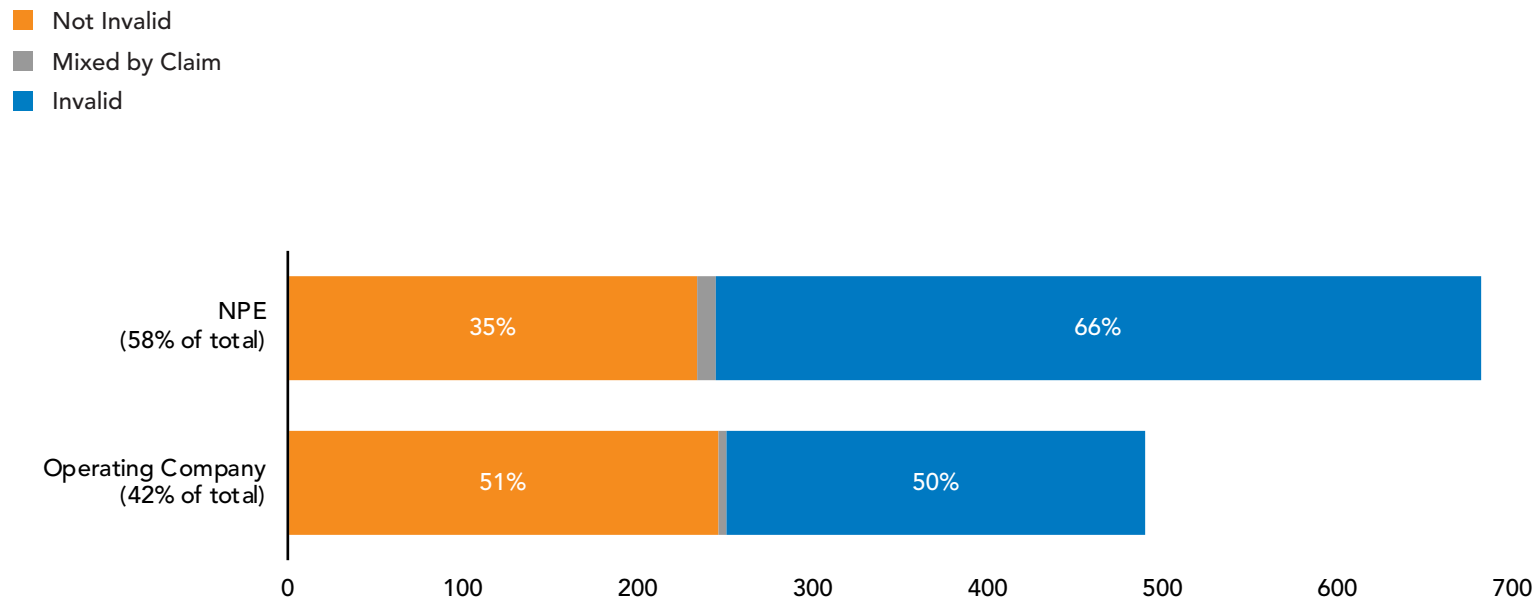
summary judgment stage, as courts found sufficient facts to rule in 75% of *Alice* summary judgment motions against NPEs—whereas for summary judgment motions against operating companies, courts found sufficient facts just 11% of the time.

Figure 4: Patents with *Alice* Orders Addressing *Berkheimer* by Procedural Stage and Plaintiff Type



Overall, since *Alice* (June 2014) and through the end of Q1 2020, 61% of patents litigated in district court have seen claims invalidated under its rationale. Outcomes diverge based on plaintiff type, as shown in Figure 5; while operating company patents were invalidated under *Alice* half of the time during that period, around two thirds of NPE patents were invalidated.

Figure 5: Patents Invalidated Under *Alice* Since the Decision’s Issuance and Through Q1 2020

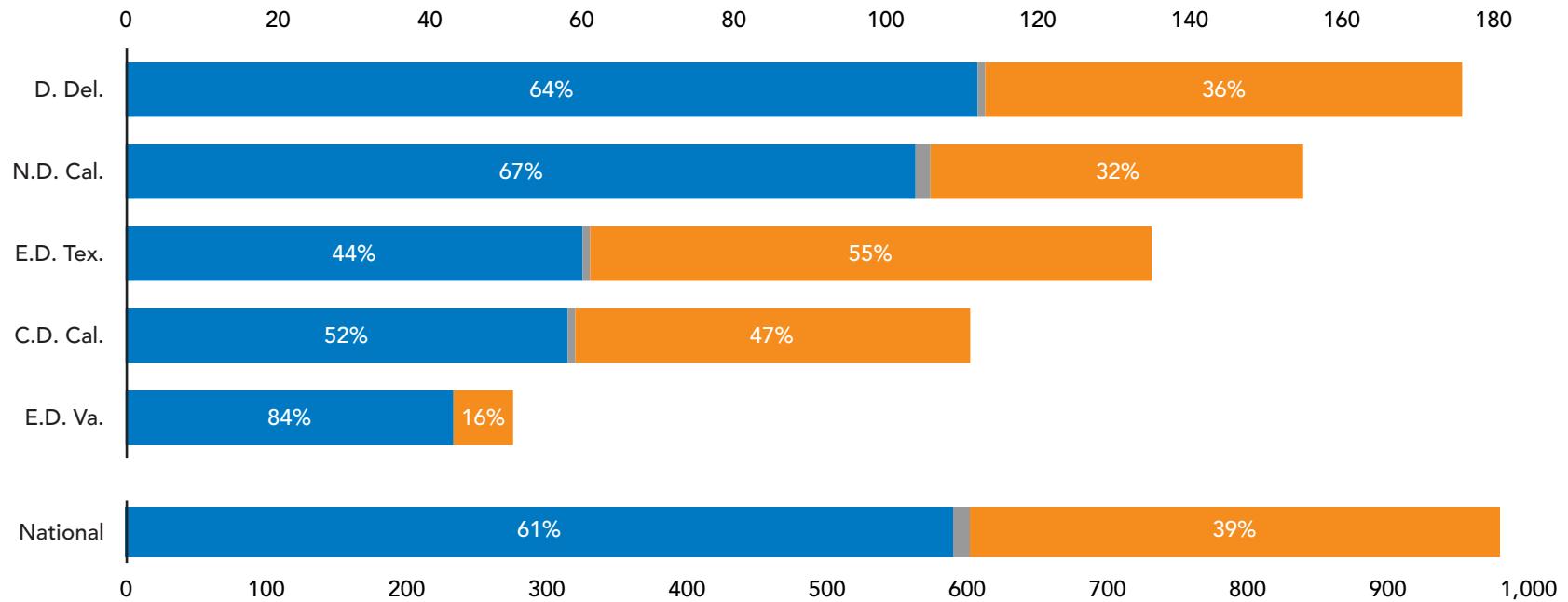


Data Update: Alice Outcomes Since *Berkheimer* and *Aatrix*

Figure 6 compares the nationwide invalidation rate to those for the districts that have issued the most *Alice* rulings by patent. Of those districts, Delaware’s overall invalidation rate remains closest to the national average at 64%, while the Eastern District of Texas has a lower overall invalidation rate of 44%.

Figure 6: Top Districts (and National Breakdown) by Patents Challenged Under Section 101, Decisions Issued Since *Alice* and Through Q1 2020

- Invalid
- Mixed by Claim
- Not Invalid



Judicial Update: The Federal Circuit Further Extends *Berkheimer* and *Aatrix*, While the Supreme Court Preserves the Status Quo

As district courts and litigants have continued to adjust to *Berkheimer* and *Aatrix*, the Federal Circuit issued two rulings in 2019 that further extended the decisions' reach. That June, in *CellSpin Soft v. Fitbit*, the Federal Circuit ruled that factual allegations in an amended complaint, even without citations to the specification, are sufficient to preclude dismissal under *Berkheimer/Aatrix*. In that same decision, the Federal Circuit also held for the first time that the presumption of validity extends to Section 101 eligibility—reversing the district court's award of attorney fees to the defendants, which had been based in part on the adjudged weakness of the plaintiff's *Alice* case. Additionally, the Federal Circuit held in its August 2019 decision in *MyMail v. ooVoo* that under *Aatrix*, courts must resolve claim construction disputes prior to issuing a ruling on patent eligibility, holding that doing so may sometimes be necessary for the court to form a "full understanding of the basic character of the claimed subject matter".

Meanwhile, *Berkheimer* itself is all but certainly here to stay, as the Supreme Court declined to review the Federal Circuit's decision in that case in January 2020. The first quarter also saw the Supreme Court deny a number of other petitions challenging the *Alice* test itself—including one appeal denied on January 27, *Trading Technologies v. IBG*, after the US Solicitor General filed an amicus brief on behalf of the US government opposing the grant of *certiorari*,

arguing that the case was "not a suitable vehicle" for addressing broader issues with Section 101. Other denied petitions attacking the *Alice* test included *ChargePoint v. SemaConnect* (also denied on January 27), *Cisco Systems v. SRI International* (denied on February 24), and *Morris Reese v. Sprint Nextel* (denied on March 23).

Stakeholders hoping that Congress will tackle Section 101 reform received conflicting signals from the legislature during the first quarter, despite progress toward a bill in the Senate in 2019. While Senator Thom Tillis (R-NC), the Senate cosponsor of a hotly debated draft bill, struck a pessimistic note about the bill's prospects in a January interview, one of Tillis's counterparts in the House—Rep. Hank Johnson (D-GA)—later insisted that the House and Senate had continued to work on such a bill. Time will tell if this legislation regains traction in this or subsequent Congresses.

The USPTO has issued three significant updates to its examination procedures and guidelines since *Berkheimer* and *Aatrix* to reflect the current state of Section 101 jurisprudence, and to make it easier for examiners to consistently apply that body of caselaw. First came an April 2018 memorandum that clarified the factual showing required for the *Alice* step two “inventive concept” analysis, followed by a January 2019 guidance designed to refine the step one “abstract idea” determination—with an update released in October 2019 in response to stakeholder feedback.

While these updates have reduced examination rejection rates based on Section 101, a split has been developing between the PTAB and the courts as a result of the January Guidance in particular. Being bound by the Guidance under USPTO internal policy,¹ the PTAB has adopted it as the overarching framework for analyzing claims challenged under *Alice* in AIA reviews, while courts—not bound by the Guidance under its very terms—have shown them little deference. A pending AIA review appeal, moreover, has raised the question of whether the Guidance properly interprets the underlying caselaw, which could cast doubt over prior PTAB rulings.

The *Berkheimer* Memorandum

The USPTO’s April 2018 *Berkheimer* [memorandum](#) addressed the effect of that opinion on Step 2B of the examination process, which encompasses step two of the *Alice* analysis. The memorandum states that for the “inventive concept” analysis, an examiner must now show specific evidence for a determination that a claimed limitation amounts to a “well-understood, routine, and conventional activity”—evidence that can include prior art. Here, the USPTO tightened the evidentiary requirements for such a determination by an examiner, clarifying that the cited prior art cannot just disclose the element at issue, as for a 102 or 103 analysis; rather, it must show that the

Being bound by the Guidance under USPTO internal policy, the PTAB has adopted it as the overarching framework for analyzing claims challenged under *Alice* in AIA reviews, while courts—not bound by the Guidance under its very terms—have shown them little deference.

element is “widely prevalent or in common use in the relevant industry”. This shift effectively created a presumption that an element amounts to “significantly more” absent a specific showing to the contrary and could theoretically reduce the subjectivity of the “inventive concept” analysis.

The January 2019 Eligibility Guidance and the October 2019 Update

The USPTO then turned to the first step of *Alice* in a new [guidance](#) for examiners published on January 7, 2019 (the “January Guidance”, or “Guidance”). While the January Guidance addressed the Section 101 analysis in its entirety, the most significant changes related to the determination of whether a patent is directed to an abstract idea.

Among the most notable changes from the January 2019 Guidance are those made to examination Step 2A (encompassing the first step of *Alice*), which has now been broken down into two subparts. Under the first subpart, the examiner must determine if a claim “recites” an abstract idea or other judicial exception; if it does, the examiner then applies the second subpart, under which one must determine if the claim contains a “practical application” of that idea, in which case it is not “directed to” the idea itself.

In October 2019, following a public comment period on the January Guidance, the USPTO issued an [update](#) that included a variety of clarifications and examples based on stakeholder feedback (the “October Update”, or “Update”).

The January Guidance and changes made in the October Update are summarized together below.

Step 2A, Substep 1

For the first substep, the Patent Office stated in the January Guidance that it has synthesized the various types of subject matter found by courts to be abstract into three categories and establishes that any claim falling within those categories “recites” an abstract idea. The October Update provided further details on how to evaluate whether claims fall into the three categories (or “groupings”).

- **“Mathematical concepts”**, including “mathematical relationships, mathematical formulas or equations, [and] mathematical calculations”.

October Update: Stakeholders subsequently requested further clarification about this grouping and asked that the USPTO consider distinguishing between different types of math. While the October Update opted to keep the grouping in its current form, it provided more explicitly distilled examples of each subcategory based on the cases already cited in the January Guidance.

Clarifying details added in the October Update include a distinction drawn between a claim that “*recites a mathematical concept* or merely includes *limitations that are based on or involve a mathematical concept*” (emphasis added), with claims containing the latter type of limitation falling outside the “mathematical concept” grouping. The October Update also explained that “mathematical relationships”, “formulas and equations”, and “calculations” fall within the “mathematical concepts” category and may each be “expressed in words or using mathematical symbols”.

- **“Certain methods of organizing human activity”**, including “fundamental economic principles or practices”, “commercial or legal interactions”, and “managing personal behavior or relationships or interactions between people”.

October Update: The October Update emphasized the relatively limited scope of this grouping and clarified that the term “certain” served as a qualifier, in that “not all methods of organizing human activity are abstract ideas”; and that the grouping should not be expanded beyond the above subgroups “except in rare circumstances”.² However, the Update explained that the “number of people involved in the activity is not dispositive”, as the grouping encompasses activities involving a single person or multiple people.

- **“Mental processes”**, namely “concepts performed in the human mind (including an observation, evaluation, judgment, [or] opinion)”.

October Update: The October Update clarified that claims do not recite mental processes if they cannot “practically be performed in the human mind”, such as “when the human mind is not equipped to perform the claim limitations”.

However, the October Update explained that claims may still recite a mental process even if they are performed on a generic computer, explicitly rejecting calls to limit the mental processes grouping to claims “performed entirely in the human mind”—explaining the current grouping is “consistent with current case law”. Claims with limitations that can be performed in the human mind but that require the use of a physical aid like pen and paper still qualify as mental processes.

Where claims do not recite matter in those categories, the January Guidance states that they “should not be treated as reciting abstract ideas”, except when the examiner can convince the Technology Center Director otherwise. This expanded framework replaced a shorter set of criteria for the abstractness analysis—a “Eligibility Quick Reference Sheet Identifying Abstract Ideas”³—previously made available to examiners.

Other October 2019 Changes to Step 2A, Substep 1

The October Update also included details on the definition and application of the term “recites” (as used to describe a “claim that recites a judicial exception”), which was not defined in the January Guidance—clarifying that the January Guidance had not changed the definition of that term from how it is used in the Manual of Patent Examining Procedure (MPEP), which equates “recites” with “sets forth” or “describes”. The October Update further explained that the different language in the latter two terms indicates that there are two ways that a claim may recite a judicial exception, defining the difference by way of two examples: claims in *Diamond v. Diehr* “clearly stated a mathematical equation in the repetitively calculating step, such that the claims ‘set forth’ an identifiable judicial exception”; whereas the claims considered in *Alice* merely “‘described’ the concept of intermediated settlement without ever explicitly using the words ‘intermediated’ or ‘settlement’”.

Additionally, the Update detailed the proper treatment of claims that include subject matter falling within multiple judicial exceptions (e.g., an abstract idea and a law of nature), explaining that examiners must show that a “claimed concept...aligns with at least one judicial exception”. Where claims are directed to multiple categories within one exception (e.g., multiple abstract ideas or multiple laws of nature), the Update explained that examiners

should note all categories for the record (e.g., “both a mental process and a mathematical concept”) but, where possible, “should consider the limitations together to be an abstract idea for Step 2A Prong Two and Step 2B (if necessary) rather than a plurality of separate abstract ideas to be analyzed individually”.

Step 2A, Substep 2

For the second substep, the January Guidance lays out a revised set of criteria for determining if a claim is “directed to” an abstract idea or another judicial exception. A claim is not so directed if it integrates the judicial exception into a “practical application” of that idea, meaning that it implements that idea “in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception”. As with the above criteria for evaluating abstractness, the guidance draws on judicial opinions (as well as other USPTO publications citing those decisions) to provide examples of “additional elements” that save the claim at step one of *Alice*. These examples include:

- Claim elements that provide an “improvement in the functioning of a computer” or other technology (citing [MPEP 2106.05\(a\)](#), which lists several exemplary Federal Circuit decisions where such claims survived;⁴ and an April 2018 USPTO memorandum (the “*Finjan* Memorandum”) that highlighted two other Federal Circuit decisions that upheld patents containing such improvements with respect to antimalware technology and graphical user interfaces).⁵

October Update: The October update clarified that under such an “improvement” analysis, an examiner should look to whether the specification contains “sufficient detail” showing that “one of ordinary skill in the art would recognize the claimed invention as providing an improvement”, and that the claims actually reflect this improvement.

- Claim element(s) that apply a “judicial exception to effect a particular treatment or prophylaxis for a disease or medical condition”.⁶
- Claim element(s) that “implement...a judicial exception with, or uses a judicial exception in conjunction with, a particular machine or manufacture that is integral to the claim”, citing primarily [MPEP 2106.05\(b\)](#).⁷

- Claim element(s) that “effect...a transformation or reduction of a particular article to a different state or thing”, citing the example from *Diamond v. Diehr* of a process that uses a mathematical algorithm to control a mold in order to transform “raw, uncured synthetic rubber into precision-molded rubber products”, as well as [MPEP 2106.05\(c\)](#).
- A catch-all category where the claim(s) apply or use “the judicial exception in some other meaningful way beyond generally linking the use of the judicial exception to a particular technological environment, such that the claim as a whole is more than a drafting effort designed to monopolize the exception”—again citing the example of *Diehr*, in the context of the specific combination of steps (“including installing rubber in a press, closing the mold, constantly measuring the temperature in the mold, and automatically opening the press at the proper time”) that, together, amount to more than just a patent on the mathematical formula used.⁸

Unlike the three abstract idea categories, however, the January Guidance states that the above-listed examples of a “practical application” are nonexhaustive. Furthermore, the Guidance “specifically excludes consideration of whether the additional elements represent well-understood, routine, conventional activity”. That analysis, instead, is now to be confined to examination Step 2B (or *Alice* step two), the consideration of whether a claim contains an inventive concept, or whether the claim contains “significantly more” than the abstract idea. Step 2B is relatively unchanged from prior guidance and refers back to the *Berkheimer* memorandum.

Additionally, in response to stakeholder feedback, the October Update emphasized that the examiner holds the burden of establishing a *prima facie* case of ineligibility, reviewing the various aspects of the 101 analysis that the examiner must address with particularity and the requirements for doing so.

The Examination Impact of Post-Berkheimer Reforms

In April 2020, the USPTO's Office of the Chief Economist released a [study](#) that detailed both the impact of the *Alice* decision itself and the effect of the agency's post-*Berkheimer* reforms on two particular examination metrics: the percentage of first office actions that included Section 101 rejections for certain "*Alice*-affected technology areas" (defined as patents with the same United States Patent Classifications as those addressed in Supreme Court and Federal Circuit 101 rulings compiled by the USPTO's Office of Patent Legal Administration) and "uncertainty in patent examination" ("measured as variability in patent subject matter eligibility determinations across examiners in the first action stage of examination").

According to USPTO data, the likelihood of receiving a first office action with a Section 101 rejection increased by more than 31% in the 18 months following the *Alice* decision's June 2014 issuance, which in the USPTO's view was the result of "expanding the application of the *Alice* standard to other technology areas" and the difficulty examiners faced in consistently applying that standard. However, the USPTO's post-*Berkheimer* guidance reversed the upward trend observed prior to that decision: the *Berkheimer* memorandum causing a "statistically significant drop" in the relevant rejection rate, while the January Guidance had an even greater impact—"reduc[ing] the chances of receiving a first office action rejection for patent-ineligible subject matter by 25% for *Alice*-affected technologies".

The examiner uncertainty metric saw a similar effect: while such uncertainty grew by 26% in the 18 months after *Alice*, it decreased by 44% in the 12 months after the release of the January Guidance, according to the USPTO study.

The Application of USPTO Eligibility Guidance in Litigation

Of even greater importance to patent litigants is the manner in which the January Guidance (as well as the October Update) may impact validity challenges, as post-*Alice* patent eligibility rulings depend in significant part on the application of prior Section 101 caselaw—including the rulings interpreted by the Guidance. The PTAB and the courts have differed dramatically thus far in their treatment of the Guidance.

PTAB Application of the Guidance

An RPX analysis shows that the PTAB has cited the January Guidance in all 28 AIA review final written decisions addressing patent eligibility under *Alice* that have issued since the January Guidance's release,⁹ including 16 covered business method (CBM) reviews, nine post-grant reviews (PGRs), and three IPRs. (While IPR petitions are limited to Sections 102 and 103, the PTAB has addressed Section 101 in AIA reviews when a patent owner proposes new or amended claims, holding that it must do so to determine whether those claims are patent-eligible for them to issue. The issue of whether the PTAB has the authority to do so in an IPR is currently being litigated before the Federal Circuit.) Decisions began acknowledging the October Update starting about two weeks after its October 17, 2019 publication date.

Those decisions effectively treat the January Guidance as the canonical distillation of Section 101 judicial caselaw, typically framing the Board's *Alice* analysis as being governed by the Guidance (e.g., "Under the Guidance", "When viewed through the lens of the Guidance", etc.) and following the Guidance's two-pronged Step 2A analysis (addressing the Guidance's abstract idea "groupings" first, followed by its "practical application" approach). Those citations to the Guidance are often accompanied by citations to the underlying court rulings (i.e., the cases cited by the PTAB as forming the bases for the Guidance's abstract idea groupings), with occasional nods to the Board's efforts to ensure consistency with those rulings (e.g., "Consistent with Supreme Court and Federal Circuit precedent...").

The PTAB has also [rejected](#) a patent owner's [argument](#) that it may not cite to judicial precedent contradicting the January Guidance, emphasizing in one decision that the Guidance "does not require us to depart from the 101 analysis provided by precedent" and that through the Guidance, the "USPTO...aims to clarify the analysis...[i]n accordance with judicial precedent and in an effort to improve consistency and predictability" (emphasis in original; citation to the January Guidance)..

The PTAB's approach appears consistent with the manner in which the Board has publicly described the role of the Guidance in AIA review patent eligibility decisions, treating the Guidance's language setting an expectation that USPTO personnel will follow it as effectively binding. For example, APJs have described it as binding in hearings (e.g., "[O]bviously we are bound by the

Office’s guidance”), while PTAB officials have stated that the Board follows the Guidance when addressing subject matter eligibility, treating it as consistent with judicial precedent. In a May 2019 webinar, Lead Administrative Patent Judge Michael Kim stated that the PTAB “follow[s] the revised guidance as a framework...for subject matter eligibility” and that it does so with a “caselaw heavy” approach (apparently drawing a contrast from the Guidance’s application by examiners) that reflects its role as an adjudicatory body—emphasizing that the Board interprets the Guidance “in light of Federal Circuit and Supreme Court precedent”.

Courts Have Largely Rejected the Guidance

In contrast to the PTAB, district courts appear to have given far less deference to the January Guidance—not unexpectedly, given that it is not binding upon them. (Indeed, by its very terms, the January Guidance “does not constitute substantive rulemaking and does not have the force and effect of law”.) RPX data reflect just four district court *Alice* decisions that have addressed the January Guidance, two of which have rejected the Guidance as nonbinding.

The [first](#) of those decisions, issued in mid-February 2019 by District Judge Leonard Stark of Delaware in *Citrix Systems v. Avi Networks*, acknowledged the similarity of the challenged claims to one of the examples published alongside the January Guidance but noted that the Guidance is nonbinding. The second [decision](#), issued in April 2019 by District Judge Lucy Koh of the Northern District of California in *Uniloc USA v. LG Electronics*, went further in its refusal to consider the January Guidance. After citing the aforementioned language from the Guidance that it shall not have the “force and effect of law”, Judge Koh then observed that the Guidance was nonbinding under Supreme Court precedent, which establishes that “interpretations ‘contained in policy statements, agency manuals, and enforcement guidelines . . . lack the force of law . . . [and] do not warrant *Chevron*-style deference” (citing the Supreme Court’s 2000 decision in *Christensen v. Harris County*). However, the [third](#) and [fourth](#) decisions, issued in November 2019 and January 2020 by District Judge Vince Chhabria, both cite the Guidance in concluding that the challenged claims are directed to an abstract idea (each noting that the claims fall into the Guidance’s “organizing human activity” category). (A fifth [decision](#), adjudicating a “natural law” 101 challenge under *Mayo/Myriad* in *United Cannabis Corporation v. Pure Hemp Collective*, acknowledged the

Guidance as one of several cited supplementary authorities—the others comprised of judicial opinions—that did not “inform the Court’s analysis”.)

The Federal Circuit, meanwhile, has twice held that the Guidance is not binding upon it. In April 2019, the appeals court addressed the issue somewhat delicately in *Cleveland Clinic Foundation v. True Health Diagnostics*, [holding](#) that “[w]hile we greatly respect the PTO’s expertise on all matters relating to patentability, including patent eligibility, we are not bound by its guidance. And, especially regarding the issue of patent eligibility and the efforts of the courts to determine the distinction between claims directed to [judicial exceptions] and those directed to patent-eligible applications of those [exceptions], we are mindful of the need for consistent application of our case law.”

The court reiterated this principle more forcefully a year later, holding in its April 2020 *In re: Rudy* [decision](#) that “we apply our law and the relevant Supreme Court precedent, not the Office Guidance, when analyzing subject matter eligibility. To the extent the Office Guidance contradicts or does not fully accord with our caselaw, it is our caselaw, and the Supreme Court precedent it is based upon, that must control.”

Deputy Commissioner for Patent Examination Policy Robert Bahr, speaking at the PTAB’s May 2019 eligibility webinar alongside Lead Judge Kim, stated in response to a question that he was “not surprised” by the *Cleveland Clinic* decision in light of prior Federal Circuit rulings that USPTO Guidance is not binding on that court. Bahr reiterated the Board’s position that the Guidance follows judicial precedent, and is merely designed to identify common themes among those decisions: “Our guidance is, to some degree, a large reflection on the caselaw of the Supreme Court and the Federal Circuit, [and is] our best effort . . . at making a pattern out of all of the cases.”

Courts and the PTAB Collide

Of course, the PTAB’s firm statements on this issue notwithstanding, litigants have not always agreed with the Board that the Guidance properly interprets caselaw. This has led to multiple appellate challenges: the patent owners in *Cleveland Clinic* and *In re: Rudy* both unsuccessfully raised that issue, while another litigant—pharmaceutical company Mylan—is currently testing those same waters.¹⁰

Should such a challenge lead to further appellate scrutiny of the Guidance, it is unclear what standard of deference would apply to the USPTO's interpretation of Section 101—including *Chevron* deference, under which courts must accede to an agency's reasonable interpretation of an ambiguous statute; or the less deferential *Skidmore* framework, under which an agency must show persuasive reasoning as to its position. The parties debated the applicability of *Skidmore* in this context in the *Cleveland Clinic* litigation, but the Federal Circuit declined to reach the issue in that decision.

- 1 The Guidance itself states that while the Guidance does not have the "force and effect of law", USPTO personnel are expected to follow it, though the failure to do cannot form the basis of a legal claim for relief. ("All USPTO personnel are, as a matter of internal agency management, expected to follow the guidance. Failure of USPTO personnel to follow the guidance, however, is not, in itself, a proper basis for either an appeal or a petition.")
- 2 See January Guidance, Section III.C (covering how examiners should address claim limitations that they do not believe to fall into one of the enumerated groupings, but that should "nonetheless be treated as reciting an abstract idea ('tentative abstract idea')").
- 3 Last updated in July 2018; available at <https://www.uspto.gov/sites/default/files/documents/ieg-qrs.pdf>.
- 4 See *DDR Holdings v. Hotels.com* (Fed. Cir. 2014, [2013-1505](#)) (holding that claims were directed to "modification of conventional Internet hyperlink protocol to dynamically produce a dual-source hybrid webpage", as summarized by the USPTO), *Enfish v. Microsoft* (Fed. Cir. 2016, [2015-1244](#)) (claims directed to a self-referential database that "improved the way the computer stores and retrieves data in memory in combination with [a] specific data structure"), *BASCOM Global Internet v. AT&T Mobility* (Fed. Cir. 2016, [2015-1763](#)) (claims directed to an "[i]nventive distribution of functionality within a network to filter Internet content"), *Research Corporation Technologies v. Microsoft* (Fed. Cir. 2010, [2010-1037](#)) (claims directed to a "method of rendering a halftone digital image"), *Amdocs v. Openet Telecom* (Fed. Cir. 2016, [2015-1180](#)) (claims directed to a "distributed network architecture operating in an unconventional fashion to reduce network congestion while generating networking accounting data records"), *Visual Memory v. NVIDIA* (Fed. Cir. 2017, [2016-2254](#)) (claims directed to a "distributed network architecture operating in an unconventional fashion to reduce network congestion while generating networking accounting data records"), and *Apple v. Ameranth* (Fed. Cir. 2016, [2015-1703](#)) (claims directed to a "particular way of programming or designing software to create menus"); but see *TLI Communications v. AV Automotive* (Fed. Cir. 2016, [2015-1372](#)) (claims directed to "[t]echnical details as to how to transmit images over a cellular network or append classification information to digital image data", but held invalid under *Alice* step one because they "fail to provide requisite technical details necessary to carry out the function", and also under step two, as the "[p]articular structure of a server that stores organized digital images" found in the claims constitutes merely the use of a generic server, insufficient to add an inventive concept).
- 5 See *Finjan v. Blue Coat Systems* (Fed. Cir. 2018, [2016-2520](#)) (antimalware patent held eligible for claiming an improvement in computer functionality through a method that "generates a security profile that identifies both hostile and potentially hostile operations, and can protect the user against both previously unknown viruses and 'obfuscated code'", as summarized by the USPTO) and *Core Wireless Licensing v. LG Electronics* (Fed. Cir. 2018, [2016-2684](#)) (graphical user interface claims found eligible for "contain[ing] precise language delimiting the type of data to be displayed and how to display it, thus improving upon conventional user interfaces to increase the efficiency of using mobile devices").
- 6 See, e.g., *Classen Immunotherapies, Inc. v. Biogen IDEC* (Fed. Cir. 2011, [2006-1634, -1649](#)); see also *Vanda Pharmaceuticals v. West-Ward Pharmaceuticals* (Fed. Cir. 2018, [2016-2707, -2708](#)).
- 7 MPEP 2106.05(b) summarizes certain primary criteria for evaluating claims' integration of a machine or "apparatus", including its "particularity or generality" (where a specifically identified machine that relies on a judicial exception is more likely to be sufficient, such as a certain type of antenna and conductor system dependent on "standing wave phenomena" or a Fourdrinier machine dependent on gravity; but a general-purpose computer is not); whether the machine is "integral" to the performance of the claims, as opposed to merely serving as "an object on which the method operates"; and the extent to which the use of the machine meaningfully limits the claim(s).
- 8 See also MPEP 2106.5(e) (Aug. 2017), available at https://www.uspto.gov/web/offices/pac/mpep/s2106.html#ch2100_d29a1b_13d61_1a8.
- 9 This includes decisions issued as of May 5, 2020.
- 10 On April 10, 2020, Mylan briefly [argued](#) in its appeal of a Section 101 IPR ruling (addressing the patentability of proposed substitute claims) that the Guidelines are not entitled to "any deference" (emphasis added), citing the *Cleveland Clinic* holding that the Guidelines are non-binding. As a result, Mylan argues, it was "reversible error for the Board to follow non-binding USPTO Section 101 Guidelines instead of following Supreme Court precedent and Section 101 itself".

Data and Methodology

RPX continuously strives to improve the accuracy and scope of its data and may make minor changes to the methodology and underlying data used in future analyses and reports. In addition, certain aspects of our methodology—such as the treatment of severances and consolidations, updates to entity data, and the identification of transactions based on recorded assignments—may result in slight changes to our data as time passes.

Data on US district court litigation and Federal Circuit appeals are based on PACER, and data on the Patent Trial and Appeal Board (PTAB) are based on the PTAB's End to End (E2E) system, both of which are publicly available. Through a combination of automated processes and human review, these data are normalized (for example, accounting for different spellings of the same party name) and supplemented with a rich metadata layer (for example, identifying campaigns, market sectors, and types of orders), enabling the granular analytics presented here.

General Methodologies

NPE Definition

For the purposes of this report, the following are considered NPEs:

- Patent assertion entities (PAEs): entities believed to earn revenue predominantly through asserting patents
- Universities and research institutions
- Individual inventors
- Noncompeting entities (NCEs): operating companies asserting patents outside their areas of products or services

NPE Identification

RPX identifies NPEs through a manual review process performed by experienced employees with sophisticated knowledge of the patent industry.

The process includes searching for evidence of operating or patent monetization activities on the Internet, including company websites; reviewing complaints, including allegations regarding products and/or services purportedly sold by the patent owner; consideration of the outside counsel entering appearances on behalf of the entity (in particular, assessing whether that counsel has a history of representing NPEs); and reviewing other public filings, including state incorporation records, USPTO assignment data, corporate disclosure statements filed in litigation, and securities filings.

While there are elements of subjectivity in this approach, we believe that the process is robust based on feedback from other patent professionals.

NPE Rollup

RPX's proprietary litigation database rolls up certain related NPEs to a single NPE entity. We manually identify these relationships by regularly reviewing public records, including state incorporation filings, corporate disclosures, and patent assignment data. As a result, all litigation filed by subsidiaries of a given NPE are attributed to its ultimate parent, both in RPX's litigation database and in this report.

Corporate Families

RPX has developed a proprietary database of corporate families. All entities in a corporate family are generally treated as a single unique entity. To the extent that multiple members of a corporate family are defendants in a lawsuit, RPX counts those entities as a single defendant. Corporate families may also change over time. For example, M&A activity may result in the consolidation of entities.

Cases

"Cases filed" refers to filed actions. A single case filed may include multiple defendants. The date for a case filed is the date that it was originally filed.

The date for determining total defendants added and unique defendants added is the date that a defendant was added to a case. This date may differ from the date the case was originally filed. For example, defendants added in amended complaints may be shown as having been added on a different date than the case's original filing date.

Litigation Campaigns

A "litigation campaign" is a group of cases (including district court, PTAB, ITC, Federal Circuit, and Chinese patent litigation) involving the same ultimate parent plaintiffs and one or more patents from the same family.

"Campaigns filed" refers to unique campaigns.

"Defendants added" counts new litigation by the total number of campaign-defendant pairings. Defendants are counted as added both through original and amended complaints, and transfers and litigation in multiple districts (with the same parties and patents) are not over-counted.

Market Sector Classifications

RPX has created a proprietary list of market sectors. The company manually categorizes each case filed into a market sector based on a review of the accused products, defendants, and asserted patents.

Declaratory Judgment Actions

Declaratory judgment actions are excluded unless otherwise expressly noted.

Section 101 and Alice

RPX's *Alice* data comprises a human-reviewed set of *Alice* orders separated by patent, culled from a raw database of cases automatically identified as citing to the Supreme Court's *Alice* ruling. The dataset includes district court orders addressing *Alice* challenges on the merits (excluding, for example, denials due to the need for claim construction, since those denials amount to a holding that the court needs additional information regarding what is claimed in the patent before it can address an *Alice* challenge). The dataset does not include orders on eligibility challenges asserting that patents are invalid as directed to natural law.

PTAB Proceedings

RPX's data on America Invents Act review proceedings includes all *inter partes* reviews, Covered Business Method reviews, and post-grant reviews made available through the PTAB's E2E system. As noted above, this data is supplemented with human-reviewed RPX metadata.

Patents

For the purposes of this report, "patents" refers to US issued patents unless otherwise noted.

USPTO Assignment Data Limitations

Assignments recorded with the USPTO are sometimes not reflected in publicly available assignment data for a significant amount of time after recordation. As a result, RPX's transaction data is limited to recorded patent assignments that are reflected in the USPTO's public assignment dataset.



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