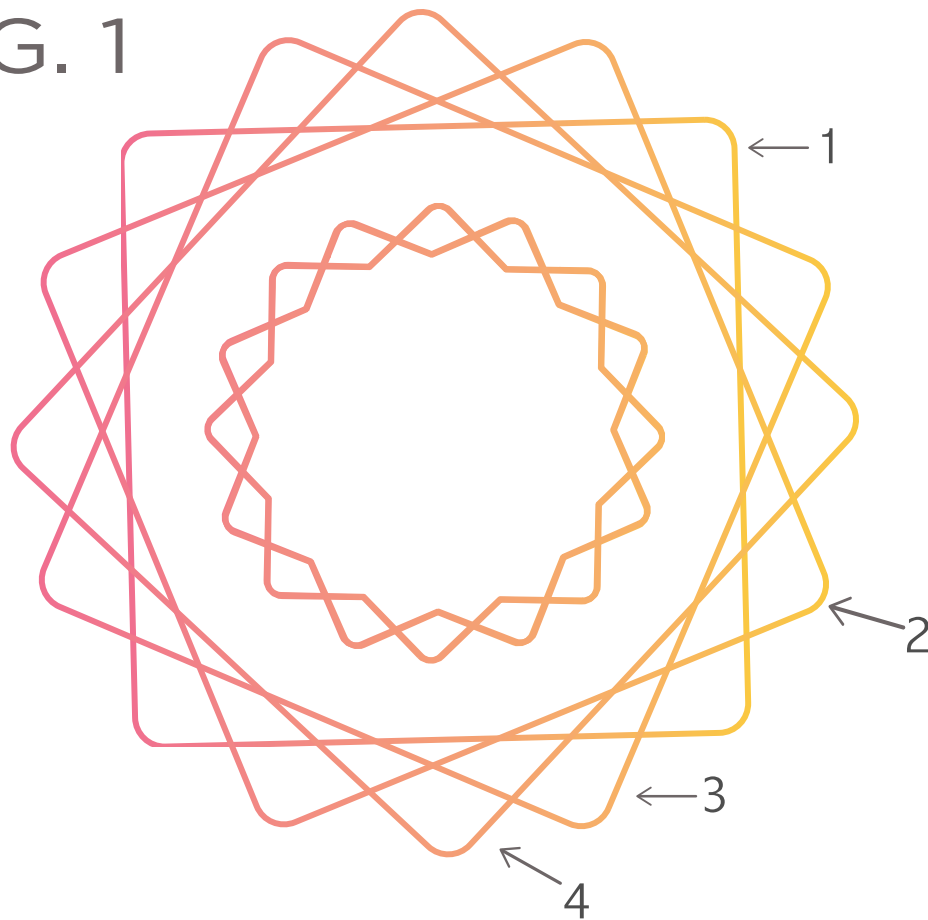


Startups & the U.S. Patent System:

*Prioritizing Quality and Balance
to Promote Innovation*

FIG. 1



July 2021



Engine is a non-profit technology policy, research, and advocacy organization that bridges the gap between policymakers and startups. Engine works with government and a community of thousands of high-technology, growth-oriented startups across the nation to support the development of technology entrepreneurship through research, policy analysis, and advocacy.

We believe that entrepreneurship and innovation have stood at the core of what helps build great societies and economies, and such entrepreneurship and invention has historically been driven by small startups. Working with our ever-growing network of entrepreneurs, startups, venture capitalists, technologists, and technology policy experts across the U.S., Engine ensures that the voice of the startup community is heard by policymakers at all levels of government.

When startups speak, policymakers listen.



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Introduction

Patent policy has an important role to play in supporting some of the nation's youngest, emerging innovators: high-growth, high-tech startups. These companies make exciting, essential contributions to technology and the economy. While entrepreneurship is very risky and challenging, the startup ecosystem is still poised to thrive, especially when policymakers are focused on balance and quality in the patent system. And now is a pivotal time for policymakers to (re)focus on those themes.

Over the past 15 years there had been a series of positive developments in law and policy which created a more startup-friendly patent system. Scores of startups have been able to obtain high-quality U.S. patents, and it had been increasingly difficult for bad actors to wield low-quality patents in ways that hurt startups and innovation. But unfortunately more recent policies have charted a different course, and startups are experiencing an uptick in abusive patent assertion.

To support startups now, policymakers should consider several guiding principles and specific actions to promote balance and quality. Importantly, policymakers must prioritize patent quality, and not patent quantity. High-quality patents can be a vital asset, while low-quality patents drain innovation and stand in the way of startup success. It's important that startup patent applicants have the resources and services they need to file strong applications and that policymakers establish and maintain high standards for patentability, to promote these goals.

Likewise, efficient and affordable mechanisms to weed out low-quality patents can help create the balance in the patent system. It is an unfortunate reality that low-quality patents will occasionally be granted (and perhaps more than occasionally). And patent assertion entities—or so called “patent trolls”—will continually find ways to leverage those weak patents and imbalance in the system to threaten startups. But if startups can afford to fight back, it helps them succeed and makes abuse less profitable and less common.

It all comes down to this: our country faces a long road of economic recovery, and we need startups to be able to survive and thrive after the COVID-19 pandemic. But if startups are forced to waste time with low-quality patents and frivolous patent assertions—assertions that can be lethal—they will not be able to grow at such a pace as before.

In this report, we aim to explore patent policy through the lens of a startup, demystify the underlying legal concepts that can often be challenging to understand, and offer concrete solutions to advance a patent system that prioritizes innovation for all.

The state of the startup ecosystem

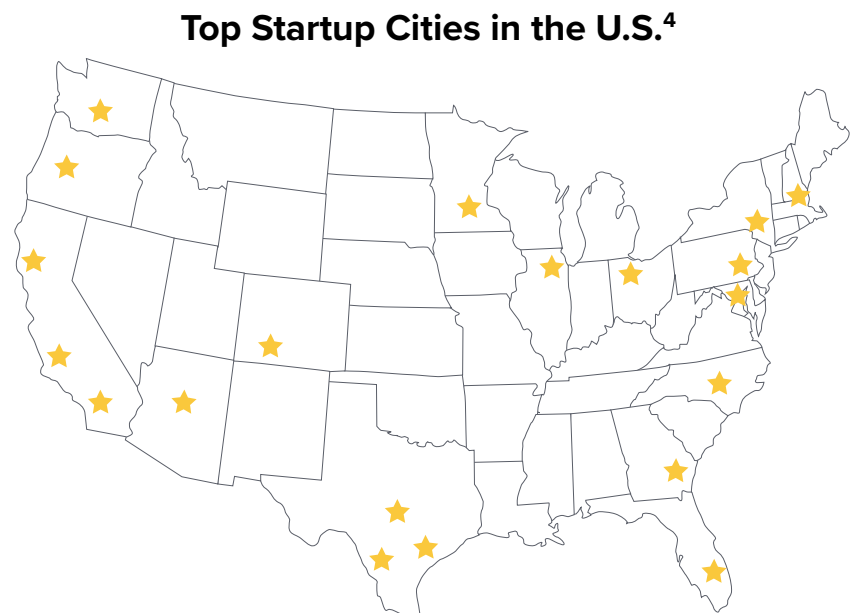
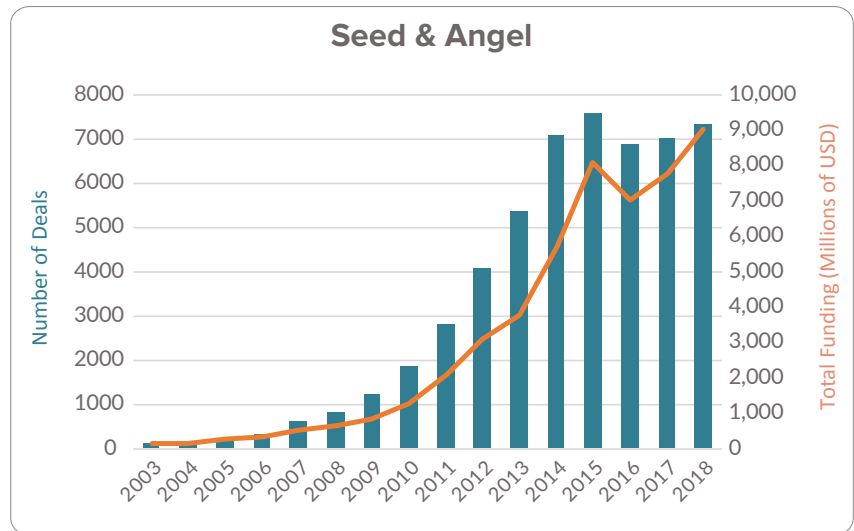
Startups are major drivers of innovation, economic growth, and U.S. competitiveness. They play a critical role in emerging technologies and routinely set out to improve the everyday lives of people across the country. As relentless problem solvers, startups develop innovative products and services in industries ranging from healthcare to education, transportation, and clean energy.

The nation's startup ecosystems include thousands of young, innovative, tech-enabled, high-growth companies. Across technology areas and market sectors—from advanced manufacturing and robotics to artificial intelligence, agtech, cybersecurity, and fintech—the number and value of startup financing deals have grown consistently over the past decades.¹

The U.S. also continues to be a world leader when it comes to startup growth and success. While Silicon Valley is still the most developed startup ecosystem, startups operate in every state.² And the volume of venture capital funding has been growing and shifting outside of the nation's largest startup ecosystems over the last fifteen years.³

Emerging tech companies are not only essential to advancing technology, but they make outsized contributions to economic progress and net job creation.⁵ Across the U.S., firms in their first year of existence create an average of three million new jobs per year,⁶ and that positive trend is especially true for high-tech, information, and communications tech companies.⁷

Startups make such critical and impressive contributions to the nation, but also operate on thin margins and must be able to focus on what they do best—innovating, hiring, growing, and launching novel products and services. It is essential—especially as the nation and economy recover from the COVID-19 pandemic—that the patent system supports this work, and it is vital that the U.S. patent system does not raise unwarranted barriers to startup success. There are many recent improvements to the patent system which have contributed to progress for startups discussed throughout this report. But there have also been more recent efforts to scale back positive progress, and recent policy changes are unfortunately opening up cracks in the patent system, and exposing startups to more or new risks and costs.



Patents: What are they, and why do we have them?

A patent is a limited right granted by the government—and it is granted in exchange for an inventor (1) disclosing her invention to the public, (2) doing so in a way that is clear and detailed enough that others can understand and figure out how to use the it, and (3) allowing the public to freely use the invention once the patent expires (i.e., after 20 years).⁸

The U.S. Constitution authorizes our patent system, allowing Congress “To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”⁹ And from this foundation, it is apparent how critical balance in patent law is—

promoting progress requires not just exclusivity, but the use of ideas in the public domain, the ability to design around existing technology, and the opportunity to improve upon previous work. Using patents as a tool to spur genuine innovation and invention is thus also “balanced against the important public interest in permitting full and free competition in the use of ideas which are in reality a part of the public domain.”¹⁰

Different government entities are responsible for various aspects of patent law and policy, e.g.:

	Congress	Writes & amends patent laws; oversees certain patent office operations; and authorizes the office to collect and spend fees associated with patent applications and patent reviews
	U.S. Patent and Trademark Office	Reviews all patent applications to determine whether they meet the standards for patentability; grants valid patents, maintains public patent records; reviews issued patents upon request to assess validity; develops regulations; and advises other branches of government on IP policy
	Courts	Adjudicates disputes over, e.g., patent infringement, patent validity and enforceability, damages for infringement, and patent ownership or inventorship; interprets laws and regulations; reviews certain patent office decisions

What's in a patent?

The patent document itself has three main pieces: a specification, drawings, and claims—the most important part that defines the actual, specific invention.¹¹



Specification describes the invention. It must provide a sufficient description so that a person of skill in the relevant art can understand what the patent claims, and be able to practice the invention. It can include examples, and needs to provide sufficient support for the claims. The specification can provide definitions, but cannot be used to expand the scope of what is claimed.

Drawings help illustrate the patented invention. While it is not required, patent applicants can provide drawings if it helps the understanding of the patent. The drawings are supposed to relate to the specification, and also cannot be used to expand what is claimed.

Claims define the actual invention. At the end of the specification there is a series of numbered paragraphs that define what the patent actually claims. These paragraphs must be written in concise terms and identify what the actual claimed invention is. These claims are what actually define the legal bounds of what the patentee “owns”—or what it can exclude others from doing.

How to get a patent?

To obtain a patent, you have to submit an application to the U.S. Patent and Trademark Office (USPTO). The Office employs thousands of patent examiners, who are mostly engineers and scientists in various fields, and they are tasked with reviewing each patent application to determine whether it sufficiently describes a truly new, useful invention.¹² Examiners go back and forth with applicants and attorneys, to understand the technology claimed, look for and assess prior art (information that is already known), and evaluate the adequacy of the specification. At the end of the process, the examiner determines whether to issue the patent, although applicants can dispute the examiner’s findings and appeal her decisions.¹³ While the patent examination process can take years of back-and-forth, studies show that on average examiners only have approximately 19 hours total (spread out over those years) to spend with each patent application, including applications that claim very complex, cutting-edge technology.¹⁴

The law defines what can (and cannot) be patented—to be granted, a patent should be (or have) the following:¹⁵

35 U.S.C.	Statutory Standards for Patentability
§ 101	Useful: Patents must have at least some minimal practical utility.
	Patent eligible subject matter: A person is not allowed to patent (i.e., own and exclude others from using) abstract ideas, laws of nature, or natural phenomenon.
§ 102	Novelty: A patent cannot claim something that has already been invented, something that has already been described in a publication, or something that is already on sale or available to the public.
§ 103	Nonobviousness: Patents should reflect more than a trivial advance—patents should not cover things that would have been obvious to a skilled person working in the relevant field.
§ 112	Sufficient description: Patents must contain a good enough description. Skilled people working in the relevant field need to be able to understand and practice what is claimed.
	Definiteness: Claims must use clear language, not vague, ambiguous terms.

What is infringement?

To understand patents, it is also important to understand the concept of infringement. Patent law grants inventors the right to exclude—which means anyone who makes, sells, uses, or offers to sell a patented invention without their permission, is infringing. It does not matter if the infringer knew about the patent, and it does not matter if she meant to infringe—even accidental or innocent infringement is infringement.¹⁶ Indeed, a person can independently invent something that she thinks is entirely new without any knowledge of someone else’s work, but if that other person owns a patent, what seemed like an independent invention actually becomes infringement.¹⁷

Startups and high quality patents

High-quality patents can be a vital asset for many high-growth, high-tech startups.¹⁸ But low-quality patents—those that are written in vague terms or language that is difficult to understand or that merely claim things that were already known—are just the opposite. Low-quality patents drain innovators and throw-up unwarranted barriers to research and development, competition, and successful commercialization of new technologies and business ideas.¹⁹

There are a lot of reasons a startup might want to obtain a high-quality patent. For startups, patents are reportedly only a moderate to weak incentive to engage in innovation.²⁰ But, especially depending on the industry, patent protection can be an important way to prevent copying that would otherwise undermine the non-patent-based incentives to innovate. Many early stage companies seek high-quality patents to: attract investors, obtain some competitive advantage, improve prospects for exit, or enhance their reputation in the market.

Many companies, including startups, also consider patenting as a means to cross-license or to prevent or mitigate infringement lawsuits by others. For example, if a startup has its own patent portfolio, and is accused of infringement by a competitor or other operating company, the portfolio could improve the startup's negotiating position when resolving disputes or threats.²¹



Startup Spotlight

fyiio

Lincoln, NE

[Alex Kuklinski, Founder](#)

“Advice-wise, I would say do some research and talk to other founders who have gotten patents. Find out what it was like for them. Find out why they pursued a patent or why they didn’t, and understand the costs involved up front. While I had some hesitations up front about patent trolls and other concerns, I think when it comes to protecting what you’re doing, I think it is nice to say we have some legal protections with the patents.”



Startup Spotlight

GridRastr

Mountain View, CA

[Rishi Ranjan, CEO](#)

Compared to international patent filing in some countries, “it can be relatively easier to file a U.S. patent, and we can be confident that it will be protected by the court system. So far, we have filed six patents with GridRastr, and have successfully relied on these patents. I would say that the U.S. patent system has done very well.”

Startups and low quality patents

On the other hand, low-quality patents lack value and are particularly detrimental to startups. These patents claim things that were already known or that are written in vague, overbroad terms that are difficult to understand. They are the type of patents that should not have issued in the first place, and when they do routinely stand in the way of innovation. The mere existence of a low-quality patent can distort commercial and innovation markets, operating—as the Supreme Court has noted—like “scarecrows.”²² Even if they are never asserted, “invalid patents can create unacceptable litigation risks for potential entrants, raise entry costs, delay entry, deter customers and business partners from contracting with new entrants, and impose inefficiencies while distorting innovation.”²³

Yet, low-quality patents are a reality our nation’s innovators face. And in recent years, the country’s global rankings in quality have dropped.²⁴ One study even revealed that 43 percent of patents that were challenged in court were found invalid.²⁵ Another study estimated that, if challenged, 28 percent of all patents would fail to meet the novelty and nonobviousness requirements, and that jumps to 39 percent for software patents and 56 for patents covering business methods.²⁶

Regrettably, low-quality patents can be (and are) weaponized against startups and small businesses in ways that slow them down and have forced many to close up shop altogether.²⁷ Startups are more vulnerable than established firms to the costs and risks of abusive patent assertion, making them an attractive and unfortunately common target. And it is a sad truth that the only way many startups will interact with the patent system is through abusive litigation.

Low-quality patents can also pose problems for startup patent owners. It is frustrating for a company to learn that, after spending time and money, its patent is easily invalidated; if the applicant knew about prior art or disclosure problems sooner, it could have amended its patent during examination, resulting in a higher-quality patent at the end.



Abusive patent assertion

As noted above, many startups will only interact with the patent system by way of abusive patent assertion which is rooted in low-quality patents and/or weak infringement allegations. And instead of trying to adjudicate legitimate claims of infringement or assert valid patent claims, many have found ways to misuse the patent system to coerce startups, restrict innovation, and harm competition.²⁸

For example, patent assertion entities (PAEs)—also referred to as “patent trolls”—are notorious for trying to coerce startups to make quick payments in order to get weak accusations to go away.²⁹ Startups and small businesses are all-too accustomed to receiving demand letters from PAEs, who make vague claims of infringement over low-quality patents. Those PAEs know the costs and risks of litigation are more than most small businesses can afford. And with that leverage, PAEs ask startups to pay nuisance value settlements that are less than the cost of litigation. While this is wasteful on its face, many startups also report significant operational impacts, like changes in business strategy, business or business line exits, or delays in hiring upon receipt of demand letters from PAEs.³⁰

Likewise, established competitors can use meritless patent litigation to distract, slow, or stall new market entrants.³¹ In those circumstances, companies file patent suits against early-stage competitors who have developed different technology and are offering unique products or services, but are operating in the same market. Those lawsuits distract startups and force them to divert resources from hiring and product development, to legal fees. And the existence of the accusations cost startups critical market opportunities as these lawsuits deter new customers and business partners, can cause steep drops in a startup’s valuation, and have led to some to close up shop altogether.³²



Startup Spotlight

TheraTec

Bloomington, MN

[Tony Hyk, CEO](#)

“Earlier this [a patent troll] sued us, and at the same time sued several of our competitors and suppliers, trying to assert a meaningless patent. The patent was just to the process of anonymizing data, not a patentable exercise. It was a nuisance because we had to pause our development and spend resources defending the meritless suit. We eventually got it dismissed and spent as little as we could in the process, but if we had had more money, I would have wanted to go forward and invalidate the patent. I could not really justify spending a lot more money on the case, but would have rather paid our lawyers than pay the troll.”



Startup Spotlight

Unaliwear

Austin, TX

[Jean Anne Booth, CEO](#)

“I had to stop publicizing positive news about UnaliWear because every time I did, we would get hit with a demand or lawsuit from a patent troll. It does not matter that we do not violate their patents—they still threaten to sue. The whole business model feels like legalized extortion. . . . Patents should be there for the people who are doing something meaningful and implementing novel ideas. With [PAEs], it is just a waste of time and investors’ money. . . . There are good things that I and my company could be doing in the world besides dealing with patent trolls.”

Flavors of Patent Abuse

1

Asserting a low-quality (invalid) patent: In many cases, the patent underlying a demand letter is invalid and should not have issued in the first place. Because the costs of challenging a patent are so high, though, even invalid patents can lead startups to pay for a license or settlement.

- **Example:** *Washington's Attorney General recently filed suit against a PAE under the state's "Patent Troll Prevention Act." The PAE had sent 1,892 demand letters over 18 months (averaging 24 per week), threatening to sue small businesses across the country unless they paid \$65,000. The asserted patent was directed to basic data processing for business and financial transactions, and in 2014 the USPTO had said the patent was likely invalid. But the PAE continued trying to coerce people to license that likely invalid patent for at least six more years.*³³

2

Suing end-users of technology when someone has already paid for a license: In so-called "customer suits," patent owners can sue end-users like startups and small businesses that use technology developed by other companies. By suing end-users, there are more potential defendants, and those targets know less about the technology and are less-equipped to challenge the accusation. And in many cases, the company that developed the technology has already paid for a license or proved it does not infringe—a fact that end-users might not know, but which means they are licensed or non-infringing, too.

- **Example:** *In 2011, a PAE sued Amazon for infringement based on a feature of Amazon Web Services. After several months, Amazon resolved the case in its favor when the PAE dismissed its suit and promised not to sue Amazon again. Then, a few years later, the PAE filed new lawsuits against over 50 of Amazon's customers, raising the same infringement allegations based on the same patent. Those cases were eventually resolved, as the PAE's suit against the customers was barred by Amazon's previous win.*³⁴

3

Accusing non-infringers: Unfortunately, sending demand letters has become so common that PAEs will send letters without doing any diligence on the accused infringer. The result is sending demand letters to companies where there's no colorable argument they infringe.

- **Example:** *In a 2012 suit, a Chicago startup was accused of infringing a patent directed to reserving purchases of goods and services. Instead of paying a PAE to settle over that low-quality patent, the startup founder defended himself in court. Ultimately, the court not only ruled in the startup's favor, but the court also awarded the founder his attorney's fees because the PAE had failed to conduct even minimal diligence before suing.*³⁵

4

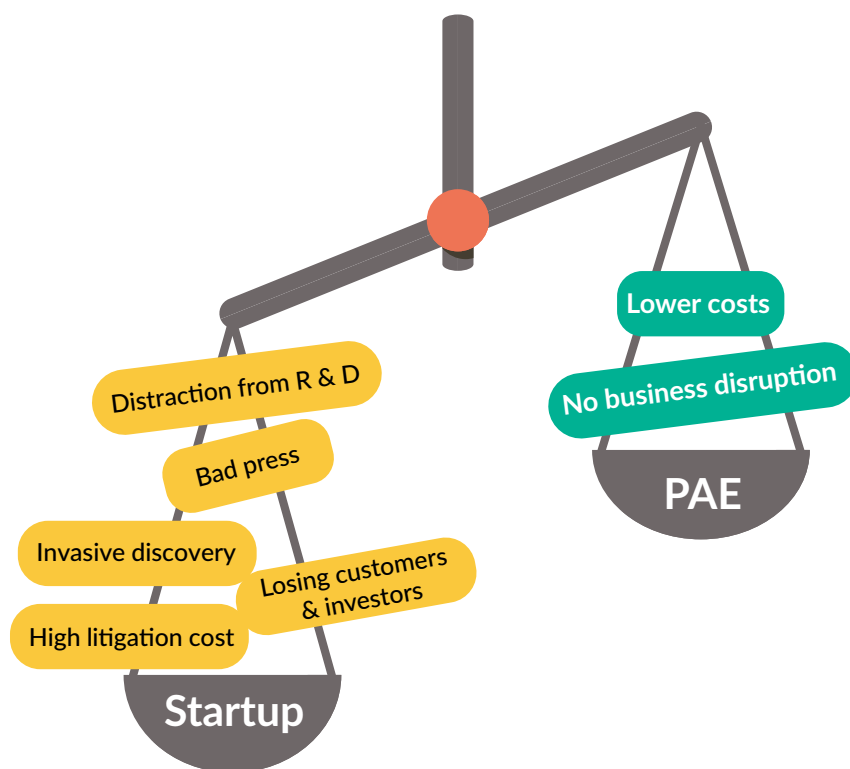
Adopting broad or shifting claim constructions to try and cover new, non-infringing products: Because claims are at the core of patent law, it is critical to understand specifically what the terms in patent claims mean. But because the actual language of a patent's claims will always be open to interpretation, it means patent owners can adopt a shifting approach to defining claim terms (and scope) throughout the life of a patent, including when bringing, or even threatening to bring, an infringement lawsuit.

- **Example:** *A patent claim may say that the patentee invented a method of manufacturing a known product, and that specific method involves melting plastic at a certain temperature and using a designated technique. After the patent issues, though, the patent owner could try to assert its patent against everyone manufacturing that known product—regardless of the melting details. This sort of assertion would (likely improperly) expand the scope of the claim.*

Abusive patent assertion (cont'd)

Startups are particularly vulnerable to abusive patent assertion, which makes them an unfortunately attractive target.³⁶ Part of this has to do with the high costs of and imbalances within litigation. The average seed-stage startup raises \$1.2 million, a sum that is expected to cover its costs for nearly two years.³⁷ And most startups have far less money than that. But defending a lawsuit filed by a PAE can easily cost \$1-5 million.³⁸ Moreover, the costs of litigation are not symmetrical—even in a frivolous case, the accused infringer faces much more substantial costs and risks than the entity asserting the patent.³⁹ Because startups cannot afford the cost of a defense, PAEs know they have a greater incentive to settle.

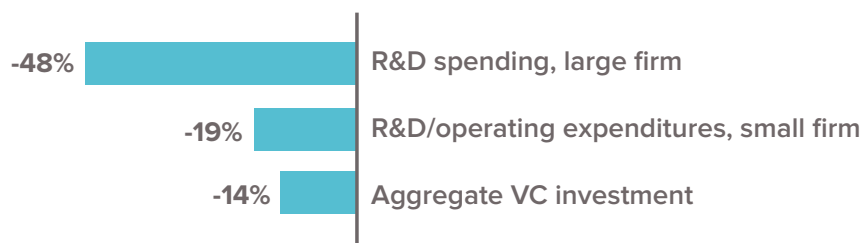
Beyond just cost, startups face unique risks in the face of litigation, which increases the leverage PAEs hold and the impact of PAE demands on smaller companies. Startups already operate in a risky environment, and for them to survive and succeed, they need to focus on things like product development, hiring, customer discovery, early marketing, and securing financing. Yet patent demands stand in the way of all of that. For example, in one study 100% of investors surveyed reported that an existing patent demand against a startup could deter them from investing.⁴⁰ Indeed, evidence suggests extensive patent demand activity around the time a company is considering an initial public offering (IPO)—a particularly public and vulnerable time in a startup's life.⁴¹



There is ample evidence of the ways abusive patent assertion hinders innovation. PAEs cost accused infringers an estimated \$29 billion per year, falling primarily on innovative firms. And as these targets are forced to spend

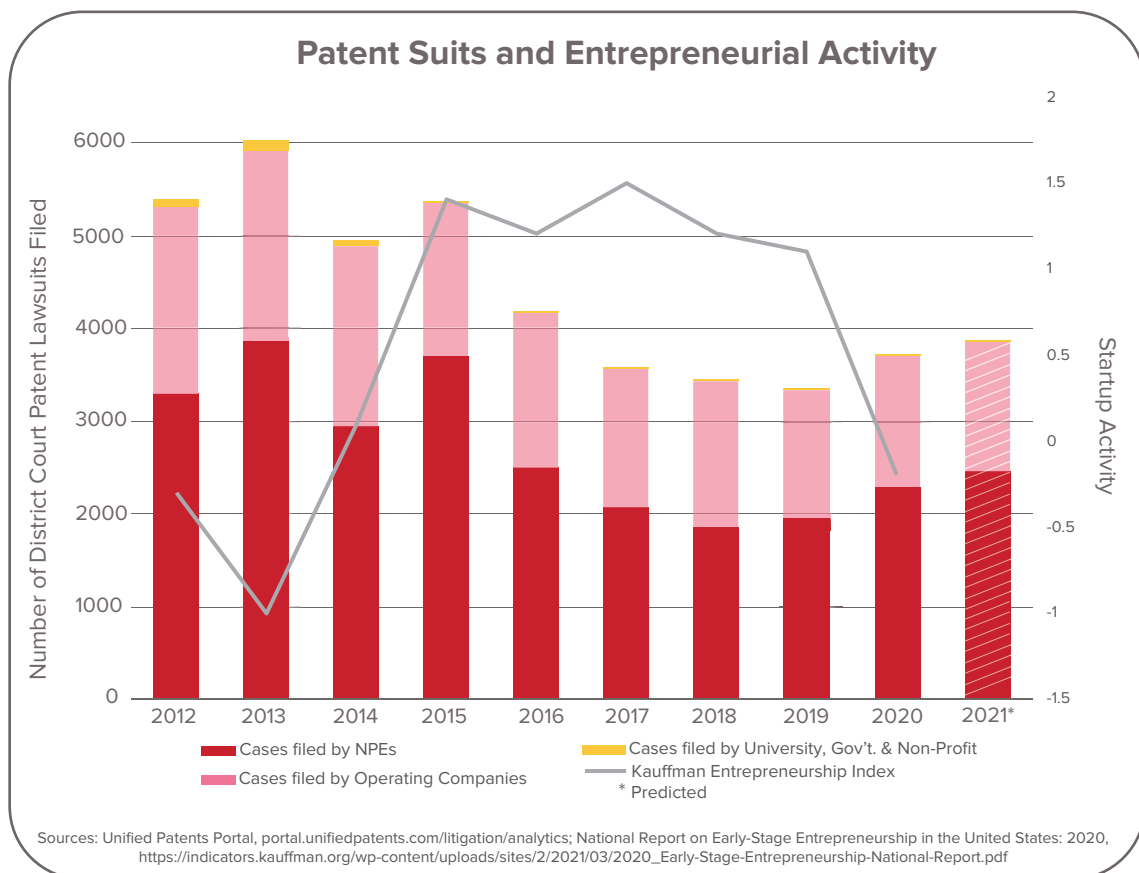
on abusive litigation, they also have to reduce spending on productive things like research and development. Studies estimate that publicly traded companies sued by PAEs reduce R&D spending to the tune of \$211 million. Of particular relevance to startups, lawsuits filed by frequent patent plaintiffs (largely PAEs) led to a decline in \$22 billion in venture investing over a five-year period.⁴² And startups are more likely to forgo R&D in areas that low-quality patents improperly cover.⁴³

EFFECT OF PAE LITIGATION ON INNOVATION



James Bessen, *The Evidence is In: Patent Trolls Do Hurt Innovation*, Harv. Bus. Rev. (Nov. 2014), <https://hbr.org/2014/07/the-evidence-is-in-patent-trolls-do-hurt-innovation> (citing research by Catherine Tucker, Roger Smeets, Lauren Cohen, Umit Gurun, & Scott Kominers).

Against this backdrop, it is unsurprising that as PAE litigation increases, startups suffer; and they can thrive when they can avoid abusive litigation. There have been a number of policy interventions over the past decade that made abusive litigation more difficult or less profitable, each of which contributed to a decline in PAE filings. And over that same time startup activity had been on a steady upward trend. However, more recently some have sought to unravel those beneficial policies, which is contributing to a resurgence in abusive patent assertion.



Venue & Forum Shopping:

In a tactic known as “forum shopping,” PAEs frequently file lawsuits in patentee-friendly courts, because that makes it easier to coerce startups into settling frivolous cases. Things like default case schedules and local court rules can make the risks and costs startups face even higher. For this reason, a disproportionate number of patent cases were (and still are) filed in two towns in far-east Texas. Then, in 2017, the Supreme Court decided *TC Heartland LLC v. Kraft Foods Group Brand LLC*, 137 S. Ct. 1514, confirming that companies can only be sued for infringement in places where they are incorporated or have a regular and established place of business. This made it much harder for PAEs to sue startups in eastern Texas. But now the same forum shopping tactic has shifted, with PAEs filing a shocking number of cases—including against startups and small businesses—in Waco, Texas, another patentee-friendly court where PAEs have a lot of leverage. And because Waco is close enough to Austin, there are now a lot more tech companies and startups within a PAE’s reach.

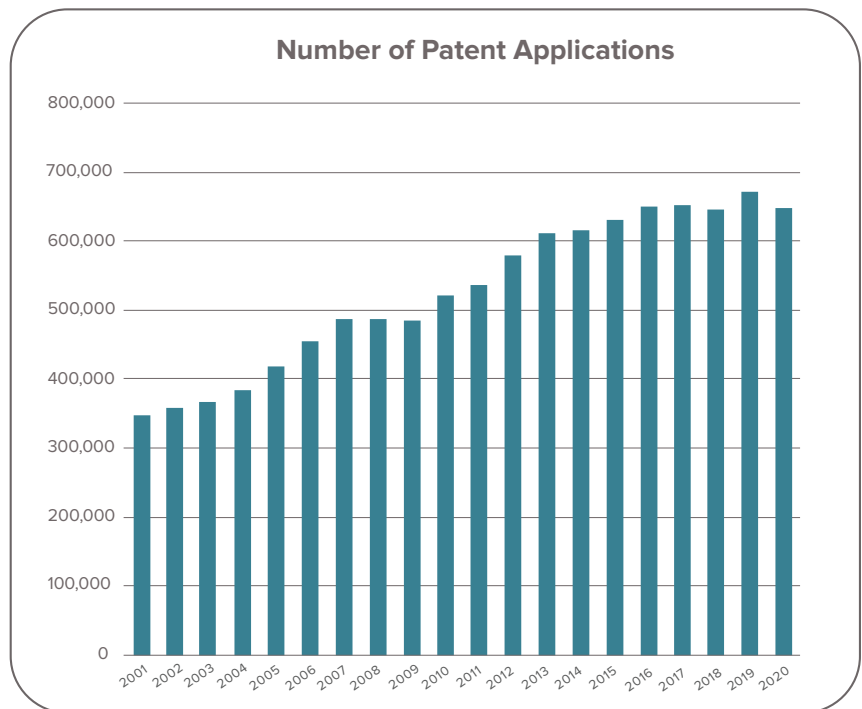
Improving patent quality

Because low-quality patents are often at the core of abusive patent assertion, one of the most important things policymakers can do to combat the problem is improve the quality of issued patents and prevent the enforcement of invalid ones. The USPTO has an enormous task of reviewing hundreds of thousands of new patent applications each year.⁴⁴ And, as noted, under that workload examiners have on average 19 hours to spend with those applications throughout the examination process.⁴⁵

What Policymakers Can Do

Increase & improve resources available to support patent applicants of all sizes:

- **Meet innovators where they are at.** The Leahy-Smith America Invents Act (AIA) established regional USPTO offices in four cities across the country. Before that, there had only been one USPTO office, in Alexandria, VA. Now there are offices in Detroit, San Jose, Dallas, and Denver.⁴⁶ This regional presence makes it easier for innovators across the country to access the USPTO's resources. Policymakers should consider further expanding the reach of the Office, either through additional regional offices or other satellite presence.⁴⁷
 - Creating a regional office in the southeastern U.S., near Atlanta for example, could add great value, especially since that region is home to several historically Black colleges and universities (HBCUs) and a burgeoning startup scene. Creating a USPTO presence in Atlanta could provide better access to resources for startup founders from diverse backgrounds and innovators in the region, allowing them to file more high-quality applications.
- **Ensure ready access to the resources, tools, and advice needed to prepare and file high-quality applications.** The USPTO already makes resources available to patent applicants. For example, there is a public search facility in the Alexandria office and resource centers across the country.⁴⁸ Also, USPTO staff have noted how applicants may benefit from accessible online tools for the pre-submission process.⁴⁹ Policymakers should evaluate what of these offerings are working, and seek to replicate successes across the country.
- **Expand pro bono offerings and make existing programs more visible.** The AIA also created a patent pro bono program to assist under-resourced inventors and small businesses.⁵⁰ But many do not know the program exists.⁵¹ The pro bono program should be more accessible, expanded to reach innovators in more parts of the country, and expanded to aid in, e.g., trademark applications.
- **Give applicants earlier information about applications and prior art.** Many patent applicants may not know about relevant prior art early in the process or may not have a patentable idea, which could mean wasted time and money on an ultimately unsuccessful application. To solve this, the USPTO could implement procedures to give applicants an earlier assessment of prior art and patentability. For example, the Office should consider pilots to provide this type of information to certain applicants at the outset of examination.⁵²



Institutionalize a focus on quality at USPTO:

- **Position the focus on all stakeholders.** The USPTO largely interacts with people and entities that apply for patents and has few (if any) mechanisms for interacting with the rest of the Office's stakeholders.⁵³ But because a patent is the right to exclude everyone in the country from doing what a patent claims, the public has a vital stake in the Office's decisions. The USPTO should embody a culture that balances the interests of these myriad stakeholders—ranging from patent owners and applicants, to innovators and entrepreneurs who only interact with the patent system when they are accused of infringement.
- **Restore quality-oriented infrastructure and leadership positions.** In 2015, the USPTO instituted a number of organizational and functional changes to prioritize quality. For example, the Office launched the Enhanced Patent Quality Initiative and created the position of Deputy Commissioner for Patent Quality. Among other things, the Deputy Commissioner oversaw improved training for examiners, conducted regular conversations about advancing and measuring quality, and invested in improved IT. Last year, however, the USPTO eliminated quality-focused leadership positions.⁵⁴
- **Ensure examiners have the resources and technology needed to fully evaluate patent quality.** Just doubling the amount of time examiners have to evaluate patent applications could save nearly \$300 million annually.⁵⁵ While the USPTO would have to spend more to allow for that doubling, the increased costs at the USPTO would be more than offset by savings in litigation, post-grant patent review, and examination. And this does not even account for the benefit of having money reinvested in R&D instead of wasted over low-quality patents.⁵⁶

Startup Spotlight

Stylaquin

Providence, RI

[Sarah Fletcher, Co-Founder](#)

"I would like to see the U.S. government do something though, like create a program for women and minorities, because it's just such a heavy [lift, to apply for a patent]. . . . If you think about minority women, for example, their ideas matter, and they should be nurtured and cherished. So I think the government should consider setting up programs to help reduce some of the financial burdens of the patent process."

Identify and correct incentives for the issuance of low-quality patents:

- **Improve the USPTO's cost structure.** Right now, the USPTO charges applicants, but the fees applicants pay are far below what is needed to cover the costs of examination. Instead of relying on application fees to cover those expenses, the USPTO relies on issuance fees (paid when the patent is granted) and maintenance fees (paid periodically during the life of a patent). This structure creates the risk that the USPTO will be unable to cover its expenses and also creates troubling incentives that can lead to granting low-quality patents. Policymakers should consider restructuring to increase examination fees for large applicants, who can also subsidize applications from smaller businesses.⁵⁷
- **Encourage earlier clarity during patent examination.** As noted, some patent owners game the system, strategically shifting their theory about claim construction and the definition of key terms after the patent issues—which allows them to take a shifting approach to assertion.⁵⁸ USPTO could help reduce this problem by encouraging patent owners to take more clear positions about claim construction earlier in examination. For example, examiners could write short statements about claim terms and scope when they decide to issue a patent. Or courts could impose a penalty when patent owners try to alter claim scope.⁵⁹

Efficient & affordable challenges to low quality patents

One essential way to combat patent system abuse is to empower third-parties to challenge low-quality patents—but these patent validity challenges have to be accessible. Most startups cannot afford the \$1-5 million (or higher) cost of defending against a low-quality patent in court. When there are more affordable defenses—within reach for startups and small businesses—it levels the playing field in patent litigation, and it makes abuse less profitable and therefore less common.⁶⁰

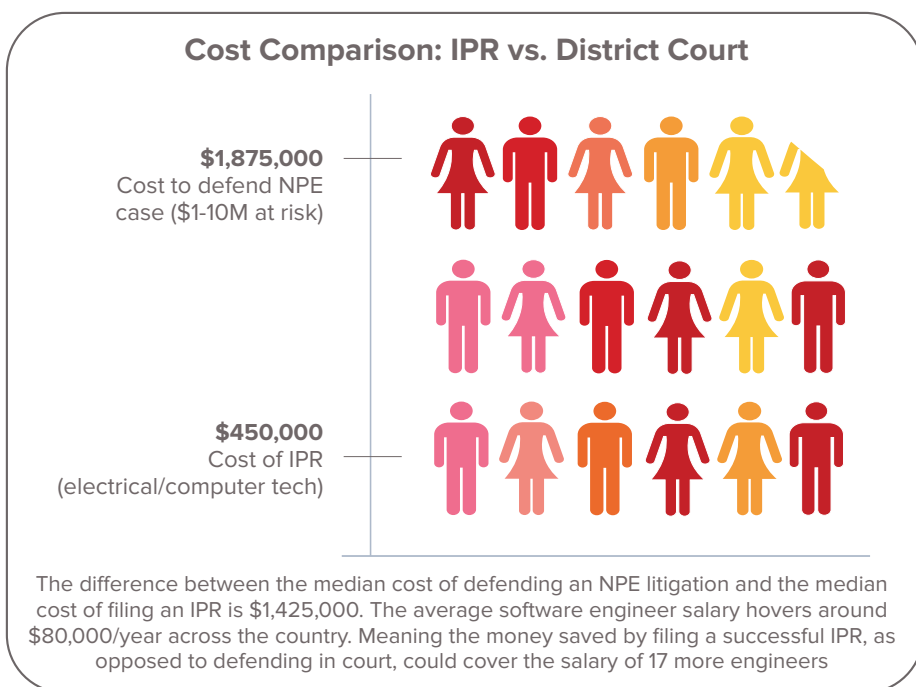
What is IPR?

Inter partes review (IPR) is a more efficient, affordable alternative to challenge low-quality patents. With IPR, a third-party can go back to the patent office's Patent Trial and Appeal Board (PTAB) and petition it to take a second look at a patent. The PTAB is made up of administrative judges that have a particular expertise in patent law, making them especially well-suited to perform this second look review. The PTAB can then assess whether the patent was (in)correctly granted, i.e., whether it fails to claim a truly new invention.⁶¹ (In other words, while very valuable, IPR is limited to prior art-based patent challenges, i.e., assessing whether a patent is novel or obvious.) And all of this is done within 18 months, much faster than a court case—which means startups accused of infringement can get out from under the cloud of litigation faster.

Congress created IPR as part of the AIA, by an overwhelming majority and after almost a decade of careful consideration.⁶² Congress's goal was to improve patent quality, weed out invalid patents that hinder innovation, and reduce abusive litigation.⁶³ And for years, IPR had been working as intended. Yet recent policy changes unfortunately cabined access to IPR, and policymakers should restore this mechanism so it can continue to serve startups and innovators across the country.

Why does it matter to startups?

Pursuing an IPR costs an order of magnitude less than invalidating a patent in court—with IPRs costing on average less than \$500,000.⁶⁴ That price may still be out of reach for many startups, but for those that can afford to file an IPR, the savings is substantial. Indeed, the difference between the median cost of filing an IPR and defending a lawsuit filed by a PAE is \$1,425,000. The average software engineer's salary hovers around \$80,000 per year.⁶⁵ This means that a startup choosing to file an IPR instead of defending a case in court could hire over 17 engineers with the money saved in IPR.



More broadly, since IPR was introduced, the costs of district court patent cases had started to decline.⁶⁶ Startups were able to respond to patent demands with a credible IPR petition, and get PAEs to walk away or settle for less.⁶⁷ As IPR reduced costs, it also reduced the settlement value of low-quality patents.⁶⁸ Overall, thanks to IPR, it was becoming more difficult to leverage the high costs of litigation to coerce startups into settling frivolous cases.

Finally, IPR advances the broader goal of weeding out invalid patents—because when an invalid patent claim is deemed unpatentable, that creates a public good in clearing out innovation space that anyone can now occupy.⁶⁹ Indeed, there are many examples where one IPR petition could (or did) benefit numerous others. This saves other emerging tech companies from being accused of infringing the same invalid patent. For example:

	Multiple defendants were being accused of infringement based on using the Google Play store to distribute an app, and then, after ten lawsuits had already been filed, the patent was deemed invalid in an IPR . ⁷⁰
	A now-invalid patent was being asserted against small podcasting entities in a way that could have threatened everyone in the podcasting industry, but a public-interest group filed a successful IPR challenging its validity. ⁷¹
	An IPR was used to invalidate a patent that had been asserted against more than 100 defendants in the sports tech industry . ⁷²
	Another IPR challenged patents being asserted against open source software users . ⁷³
	IPR also allows larger companies that make technology to protect their users and customers by efficiently weeding out invalid patents. ⁷⁴

Efficient & affordable challenges to low quality patents (cont'd)

Startup Spotlight

X-Plane

Columbia, SC
Austin Meyer, Creator

“I was sued by a Patent Troll that ... offered to go away if I just gave them \$50,000 cash. My only defense in this situation was to... demonstrate the patent was invalid, and never should have been approved in the first place! Which I and my co-defendants did though IPR. At a cost of about \$750,000 and three years. Taking away IPR would literally take away my ability to prove that the accusations being made against me were frivolous.”⁷⁵

IPR has been a success.

Over 12,000 petitions have been filed with the PTAB. That is a very small fraction of the nearly 4 million active U.S. patents.⁷⁶ Yet, thanks to IPR, companies report fewer frivolous patent demands.⁷⁷ Studies estimate that innovators have saved over \$2 billion thanks to PTAB review, and it has led to a \$2.95 billion increase in U.S. business activity and to the creation of over 13,500 job years.⁷⁸ Indeed, since IPR went into effect in 2012, abusive PAE litigation started to decline while startup activity simultaneously increased.⁷⁹

Startup Spotlight

Mycroft

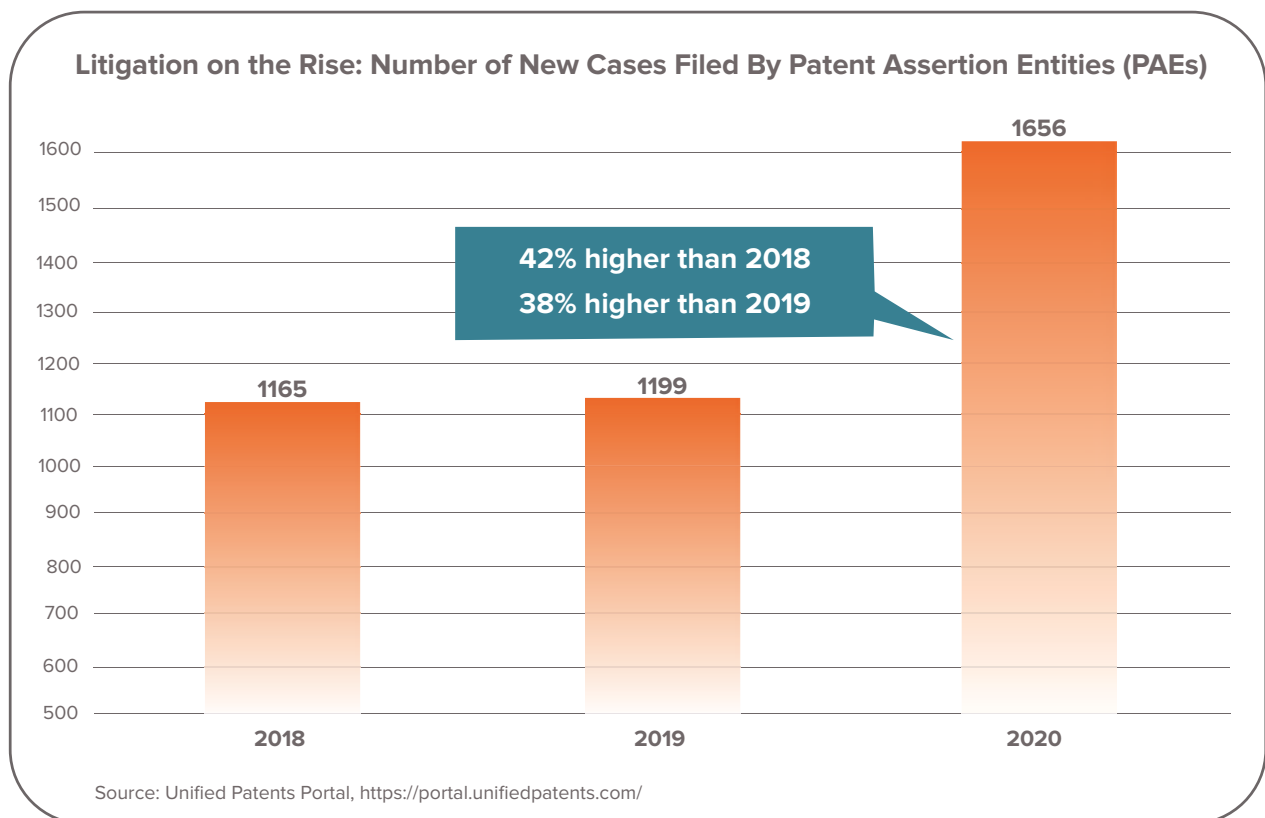
Kansas City, MO
[Joshua Montgomery, Founder](#)

“The inter partes review (IPR) system is really important, but it needs to be reformed....What we are finding now, under the current policy, is that a company that files with the [PTAB] within 30 days of being sued has their IPR thrown out because of parallel litigation. This is not what Congress intended in passing the law creating IPR, and it creates a series of challenges for startups. When IPR isn't there to invalidate a bad patent, startups are looking at \$2 million in costs. That creates a big disincentive to fight back against frivolous claims. ”

What Policymakers Can Do

While IPR had proven very successful, recent policies have weakened it and there is room to revisit the AIA now. Specifically, in recent years the USPTO instituted policies restricting access to IPR, and policymakers should act now to restore it. For example, the PTAB is exercising its so-called “discretion” and refusing to institute otherwise-meritorious IPR petitions for purely procedural reasons. As a result, the office is protecting low-quality patents from scrutiny, and this means more invalid patents remain in force—a trend that has contributed to a sharp increase in litigation numbers and costs.⁸⁰

Congress and the USPTO should reverse these recent policies—especially in the area of discretionary IPR denials—as they have improperly cabined access to IPR and bolstered low-quality patents. But policymakers need to go further, exploring ways to strengthen IPR and weed-out invalid patents more efficiently. One thing Congress could do is allow IPR petitioners to raise more types of invalidity arguments and mandate that parallel patent litigation should be paused when IPR is instituted.



Prohibiting patenting abstract ideas

In patent law, Section 101 is the threshold that prevents people from obtaining patents on abstract ideas, laws of nature, and natural phenomena. And this framework for patent subject matter eligibility promotes innovation in ways that are especially relevant to startups—both because it prevents people from trying to own basic concepts and business activities and because it provides an early opportunity to curtail abusive litigation.⁸¹

In 2014, the Supreme Court decided *Alice Corp. v. CLS Bank*, which is a key case in this area confirming that patents can be granted for actual inventions but not for abstract ideas.⁸² This reaffirmed over 150 years of case law and set forth an analytical framework for assessing patent eligibility.⁸³ First, courts and examiners ask whether a patent claim is directed to an abstract idea, and then, if it is, they ask if the claim contains some inventive concept above and beyond that underlying idea. If the answer to the latter question is “no,” the claim is not eligible. For example, using a generic computer to collect data, analyze it, and generate a result is not patent eligible: the underlying idea of analyzing data is abstract, and merely doing that on a computer adds nothing.⁸⁴





This prohibition on patenting abstract ideas is vital to startups. Allowing such patent claims would harm innovation and create barriers to entry because it would permit one patent holder—who had contributed nothing truly inventive—to prevent others from using basic technology to analyze information, organize images, transmit data, or perform other routine functions. Even if those companies wanted to offer innovative new technologies, they would be restricted due to another’s weak, overbroad patent to an abstract idea.

Section 101 also plays a critical role in litigation, as a tool to weed out the low-quality patents that are routinely asserted against startups. Broad, preemptive patents that are directed to abstract ideas (and appropriately ineligible under current law) can be and are asserted against numerous accused infringers. But accused infringers can raise patent eligibility as a defense very early in litigation, through a so-called “motion to dismiss.”

Practically speaking, this is an affordable defense within reach for startups. Recent Supreme Court decisions on patent eligibility have helped reduce the costs of litigation and helped defendants to “nip cases in the bud and lessen litigation costs.”⁸⁵ Federal judges across the country have noted the same, for example explaining:

Addressing 35 U.S.C. § 101 at the outset not only *conserves scarce judicial resources* and *saves litigants the staggering costs* associated with discovery and protracted claim construction litigation, it also works to *stem the tide of vexatious suits* brought by the owners of vague and overbroad business method patents.⁸⁶

How Section 101 Saved These Startups

	<p>A game developer avoided litigation threatened by a PAE, where a game it had developed allowed users collect rubies and gold for their accomplishments. On that basis, the PAE sought \$35,000 over a patent directed to “the acquisition and utilization of electronic tokens.” Before the PAE even filed suit, the developer wrote a series of letters explaining that, “after Alice, buying and using tokens for transactions (like a kid would do at Chuck E. Cheese’s), cannot be patented by simply reciting computers and the Internet.”⁸⁷</p>
	<p>In 2015, a PAE sued a company that connects other startups with investors. The PAE claimed to have invented the concept of online equity funding. The startup challenged that claim, arguing the abstract idea of crowdfunding was not patentable because it was being done on the Internet. A district court agreed, ruling the patent ineligible under Alice and forcing the PAE to reimburse the startup’s legal fees.⁸⁸</p>
	<p>A startup that offers a nutrition calculator and database to restaurants so that they can offer their guests more accurate nutrition information was sued by a PAE. It was accused of infringing a patent directed to using menus on a computer. In 2014, days after Alice was decided, a district court threw out the patent, explaining that it did not add anything that transformed the abstract idea into a patent-eligible invention.⁸⁹</p>
	<p>In 2017, a PAE sued a company that offers a cloud network platform and provides web optimization and security services. It accused the startup of infringing a broad patent targeted to monitoring and modifying data streams. By early 2018, the startup succeeded in having the case dismissed through a district court decision that relied on several recent Section 101 cases finding similar claims ineligible.⁹⁰</p>

What Policymakers Can Do

The law of subject matter eligibility is working well for startups. Courts and patent examiners remain in the best position to interpret claims on a case-by-case basis, applying over 150 years of court decisions like *Alice* to identify what deserves patent protection. Overhauling, or even tweaking, the statutory framework would create confusion for innovators and restrict the flexibility needed to accommodate future innovation. That said, there is USPTO policy guidance that is out-of-step with the case law,⁹¹ and should be realigned.

Preserving balance in damages

Imbalances in litigation beyond the costs of a defense can also create problems for startups. Any startup accused of infringement, for instance, faces a (potentially small, but non-zero) risk of being found to infringe, meaning it would be on the hook for damages—a risk that creates leverage in abusive assertion. In some cases, a patent will cover a very small component of a larger product, and while that patent could be valid and infringed, the patent owner may seek damages wholly disproportionate from the value of the underlying technology. And litigants can try to game the court process and grossly over-estimate damages in a way that prolongs litigation that should have been resolved quickly. But when patent damages are balanced and rooted in solid evidence the overall system works better.

In patent law, there are three types of relief an infringer can be ordered to pay a patent owner:⁹²

- **Lost profits:** A patent owner can recover for the damage it sustained as a result of the infringement—i.e., it can recover the profits it would have made if the infringer had not infringed.
- **Royalty:** If a patent owner cannot prove its lost profits, e.g., if it does not sell a product in the U.S., it can ask for a “reasonable royalty.” This means the court can set a reasonable licensing rate and order the infringer to pay the amount it would have paid to license the patented technology.
- **Injunction:** Courts can enjoin infringement, or enter an injunction against an infringer to prevent them from making more infringing goods. In simpler terms, a court can tell infringers that they are not allowed to engage in any more of the conduct a patent owner complained about.

Balanced law and policy around patent damages can help level the playing field in litigation. If patent owners—including those that own low-quality patents—can threaten startups with very high damages awards or injunctions, they have more leverage to coerce nuisance value settlements.

How injunctions work

Similar to other areas of the law (beyond patents), the Supreme Court has explained when to issue injunctions in patent cases. In a decision referred to as “*eBay*”—since eBay was one of the litigants—the Court explained why injunctions should not be automatic in patent cases, but instead why injunctions should be awarded when it makes sense based on the specific facts of a case.⁹³

Before a court enters an injunction, it should ask:

1. Whether the patent owner would be irreparably harmed without an injunction;
2. Whether a patent owner could instead seek monetary damages, and whether those would be adequate;
3. Whether the injunction is in the public interest (or antithetical to it); and
4. Whether on balance, between the parties, an injunction is favored.

Some of the upshots of this balanced approach include that operating companies—which would include startups that make products or offer services—can usually get injunctions when they assert patents against others.⁹⁴ This can be an especially powerful form of relief in the face of actual infringement. And it is a bit harder for PAEs to get injunctions, because those PAEs do not make or sell anything, and only have money to lose if others are infringing.

What Policymakers Can Do

Policymakers should continue to preserve the existing balance—and as possible, promote more—in patent damages. Changing the law, and making injunctive relief automatic in patent cases, would breathe more life into abusive litigation, and give patent owners (including PAEs and those that own low-quality patents) the power to shut down—or at least threaten to shut down—startups.⁹⁵ An automatic injunction would arbitrarily inflate the value of all patents—including low-quality ones or those that cover trivial features of complicated products and services. This creates substantial leverage to settle even frivolous patent cases.⁹⁶

eBay leveled the playing field, freeing accused infringers to proceed with invalidity and non-infringement defenses without the risk of having a product pulled from the market.⁹⁷ This is particularly important for, e.g., single-product startups, because an injunction barring the sale of that single-product would put the company out of business. Many startups may, understandably, be unwilling to risk that existential threat, and instead err on the side of paying high settlements in cases of questionable merit. *eBay*, and awarding injunctions based on equitable considerations, gives startups more freedom to fight back against frivolous claims.

The need for more transparency:

For many startups, the experience of being sued by a PAE can feel both scary and isolating. Some companies are understandably reluctant to speak publicly about being targeted in this way. But there can be a lot of value in sharing information about who is asserting which patents and how they are targeting startups and small businesses in large numbers. For example, in many cases a PAE will send a nearly-identical demand letter to many companies—yet, if one of those companies knows the assertion is bogus, sharing that could benefit others. And in recent years, a new form of abusive patent litigation has emerged in force—where large investment firms amass and/or control large portfolios of weak, overbroad patents that they monetize through actual or threatened litigation.⁹⁸ Knowing who is backing these efforts can be a useful tool for litigants, and the overall patent system, in painting these campaigns of mass litigation involving low-quality patents for what they are.

Creating some risk for bad actors

As noted, a stark asymmetry of costs and risks gives PAEs substantial leverage in patent assertion—especially when it comes to startups.⁹⁹ Not only is the accused infringer in a frivolous case very vulnerable, but “PAEs have nothing to lose and much to gain by litigating aggressively.”¹⁰⁰ Unlike defendants and other patentee-plaintiffs, PAEs “do not risk disruption to their core business’ because ‘patent enforcement is their core business.’”¹⁰¹ Bringing some symmetry to patent assertion could reduce the leverage PAEs command.

There are policy levers that do (or could) create risk for abusive litigants, in turn reducing the volume of the problem.

- **Attorney Fees:** Usually in the U.S. legal system, each party pays its own fees, regardless of who wins. But when a court thinks a patent case is “exceptional,” it can order the losing party to pay the winning party’s fees.¹⁰² For example, a case may be exceptional if the plaintiff filed a frivolous suit or litigated in an unreasonable manner (e.g., withholding discovery, unreasonably delaying progress in a case, and/or sending repeated nuisance value settlement demands). Fee awards can help deter this type of conduct.¹⁰³
- **Patent Misuse:** If patent plaintiffs attempt to overreach too much, they may be guilty of patent misuse—an equitable doctrine that is supposed to prevent using patents as a tool to unfairly secure more rights than granted.¹⁰⁴ If a plaintiff does misuse its patent, the court can declare it unenforceable. But this is only a defense to infringement, and misuse has “become increasingly irrelevant” as it has been narrowed by statute and case law.¹⁰⁵
- **Abusive Litigation as Unfair Competition:** Unfair competition and/or consumer protection laws can

provide causes of action which allow victims of abusive assertion to sue bad actors. For example, many states have passed so-called “anti-patent troll” laws that place limits (and can impose damages) on bad-faith patent assertions.¹⁰⁶

Startup Spotlight

The Sandbox

Santa Barbara, CA

[Kyle Ashby, Co-Founder](#)

“[L]ocal startup Find The Best (now Graphiq) received a demand letter from [a PAE] alleging that Find The Best had infringed on one of their patents. But instead of paying Lumen the \$50,000 that the letter demanded, Find The Best CEO Kevin O’Connor hit the troll with a RICO suit and pledged to spend up to \$1 million of his own money to fight back. Long story short, Find The Best ended up winning a settlement of almost \$300,000. This was a huge victory for the startup and elevated the issue of patent reform within our community.”

What Policymakers Can Do

While each of these tools can help restrict abusive litigation, experience paired with current volumes of abusive litigation confirm more must be done to deter bad behavior. To accomplish this, Congress could reinvigorate patent misuse and create an affirmative cause of action based on misuse, and it could revisit the attorney fee statute to assess whether the term “exceptional case” strikes the right balance, or sets the bar too high for victims of abusive litigation.

Endnotes

¹ *The State of the Startup Ecosystem*, Engine 19-20 (2021), <https://engineis.squarespace.com/s/The-State-of-the-Startup-Ecosystem.pdf>.

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³ *Startup Ecosystem*, *supra* note 1, at 8.

⁴ *Global Startup Ecosystem Index 2021*, StartupBlink 30-32, 47-49 (June 2021), <https://www.startupblink.com/startupecosystemreport.pdf>.

⁵ *The Economic Impact Of High-Growth Startups*, Kauffman Found. (June 7, 2016), https://www.kauffman.org/wp-content/uploads/2019/12/PD_HighGrowth060716.pdf.

⁶ Tim Kane, *The Importance of Startups in Job Creation and Job Destruction*, Kauffman Found. 2 (July 2010), https://www.kauffman.org/wp-content/uploads/2019/12/firm_formation_importance_of_startups.pdf.

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⁹ U.S. Const. art. I, §8, cl. 8.

¹⁰ *Lear Inc. v. Adkins*, 395 U.S. 653, 670 (1969).

¹¹ See generally Matthews, *supra* note 8, §§ 1:21-24.

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¹³ E.g., *Patent Prosecution*, Justia (Apr. 2018).

¹⁴ Josh Landau, *Granted in 19 Hours*, Patent Progress (Mar. 6, 2018), <https://www.patentprogress.org/2018/03/06/granted-19-hours/>.

¹⁵ 35 U.S.C. §§ 101, 102, 103, 112; see also, e.g., Robert P. Merges et al., *Intellectual Property in the New Technological Age* 130-31 (5th ed. 2010).

¹⁶ See, e.g., Matthews, *supra* note 8, §§ 9:1-9:4 (discussing 35 U.S.C. § 271).

¹⁷ Josh Landau, *Protecting Inventors—Independent Invention As A Defense*, PatentProgress (Aug. 23, 2019), <https://www.patentprogress.org/2019/08/23/protecting-inventors-independent-invention-as-a-defense/>.

¹⁸ Engine has articulated similar positions in the past. This section draws from previous materials, including, e.g., Letter to Members of the Subcommittee on Intellectual Property of the Senate Committee on the Judiciary from Engine (June 22, 2021), available at https://static1.squarespace.com/static/571681753c44d835a440c8b5/t/60d0b8fa5f735079d8dfaf40/1624291578608/2021.06.22_Engine+Letter+to+SJC+Subcomm+on+Patent+Quality.pdf.

¹⁹ See, e.g., Jason Wiens & Chris Jackson, *How Intellectual Property Can Help or Hinder Innovation*, Kauffman Foundation (Apr. 6, 2015), [https://www.kauffman.org/resources/entrepreneurship-](https://www.kauffman.org/resources/entrepreneurship-policy-digest/how-intellectual-property-can-help-or-hinder-innovation/)

[policy-digest/how-intellectual-property-can-help-or-hinder-innovation/](https://www.kauffman.org/resources/entrepreneurship-policy-digest/how-intellectual-property-can-help-or-hinder-innovation/) (summarizing how IP “can increase productivity and firm valuations,” but also “be inefficient and hinder innovation if they are too weak or too strong,” and calling for a “Goldilocks” approach to IP frameworks).

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²¹ *Id.*

²² *Cardinal Chem. Co. v. Morton Int'l, Inc.*, 508 U.S. 83, 96 (1993) (quoting *Bresnick v. U.S. Vitamin Corp.*, 139 F.2d 239, 242 (2d Cir. 1943) (Hand, J.)).

²³ Christopher R. Leslie, *The Anticompetitive Effects of Unenforced Invalid Patents*, 91 Minn. L. Rev. 101, 114 (2006).

²⁴ E.g., Liz Rutherford-Johnson, *European Patent Office Still Top for Quality and Service*, New IAM Benchmarking Report Finds, IAM (May 27, 2020), <https://www.iam-media.com/law-policy/epo-continues-dominate-in-quality-and-service-new-iam-benchmarking-report-finds> (U.S. ranks 4th out of 5 patent offices for quality).

²⁵ John R. Allison et al., *Our Divided Patent System*, 82 U. Chi. L. Rev. 1073, 1099 (2015).

²⁶ Shawn P. Miller, *Where's the Innovation: An Analysis of the Quantity and Qualities of Anticipated and Obvious Patents*, 18 Va. J. L. & Tech. 1, 6-7 (2013). The numbers reported in this study are likely an underestimate of issued-yet-invalid patents, as the study only looked at prior-art-related invalidity and did not consider how many patents are likely invalid under, e.g., 35 U.S.C. § 112.

²⁷ See, e.g., Joe Mullin, *New Study Suggests Patent Trolls Really Are Killing Startups*, Ars Technica (June 11, 2014), <https://arstechnica.com/tech-policy/2014/06/new-study-suggests-patent-trolls-really-are-killing-startups/> (startup's valuation dropped by \$4 million during a patent suit that was ultimately dismissed); Amy L. Landers, *The Antipatent: A Proposal for Startup Immunity*, 93 Neb. L. Rev. 950, 979-80 (2015) (recounting examples of two former startups who won patent cases but lost market opportunities); Engine, *Startups Need Comprehensive Patent Reform Now* 7-14, <https://perma.cc/8E7R-S46Q> (recounting additional stories of startups harmed by assertion of wrongly-issued patents).

²⁸ Engine has articulated similar positions in the past. This section draws from previous materials, including, e.g., Comments of Engine Advocacy in Response to *Request for Comments on Discretion to Institute Trials Before the Patent Trial and Appeal Board*, Docket No. PTO-C-2020-0055 (Dec. 3, 2020), available at https://static1.squarespace.com/static/571681753c44d835a440c8b5/t/5fca4fad1a258d244fec7ba7/1607094191551/2020.12.03_Comments+to+Docket+PTO+C+2020+0055.pdf.

²⁹ E.g., Collen Chien, *Startups and Patent Trolls*, 17 Stan. Tech. L. Rev. 461, 461-62 (2014) (“most unique defendants to troll suits are small”).

³⁰ *Id.* at 474-75.

³¹ E.g., Ted Sichelman, *The Vonage Trilogy: A Case Study in “Patent Bullying”*, 90 Notre Dame L. Rev. 543 (2014) (describing how

“incumbents [are] able to exploit defects in the patent system in order to prevent disruptive technologies from competing with their outmoded products and services”); Colleen V. Chien, *Of Trolls, Davids, Goliaths, and Kings: Narratives and Evidence in the Litigation of High-Tech Patents*, 87 N.C. L. Rev. 1571, 1587-89 (2009) (describing “patent predation”).

³² E.g., id.; Amy L. Landers, *The Antipatent: A Proposal for Startup Immunity*, 93 Neb. L. Rev. 950, 979-80 (2015) (recounting stories of two startups that lost key market opportunities to litigation).

³³ Press Release: AG Ferguson Files Lawsuit Against “Patent Troll” Targeting Small Businesses, Washington State Office of the Attorney General (May 14, 2021), <https://www.atg.wa.gov/news/news-releases/ag-ferguson-files-lawsuit-against-patent-troll-targeting-small-businesses>.

³⁴ See, e.g., Abby Rives, *IP Recap: PersonalWeb, Customer Suits, and What it Means for Startups*, Engine (Aug. 11, 2020), <https://www.engine.is/news/ip-recap-081120> (discussing Amazon suit in depth and flagging other instances of customer suits).

³⁵ *The PATENT Act: Finding Effective Solutions to Abusive Patent Litigation: Hearing Before the S. Comm. on the Judiciary*, 114th Congress 4 (2015) (testimony of Julie P. Samuels), available at <https://www.judiciary.senate.gov/imo/media/doc/05-07-15%20Samuels%20Testimony.pdf>.

³⁶ See, e.g., Chien, *Startups and Patent Trolls*, *supra* note 29, at 461-62 (in survey of startups, majority had received a demand and large percentage reported significant operational impact); Nathaniel Borenstein, Opinion, *More Patent Trolls Are Targeting Startups. Here's What You Can Do*, Entrepreneur (Apr. 10, 2018), <https://www.entrepreneur.com/article/310648> (“A disproportionate number of patent trolls target smaller companies To trolls, the whole point is to impose a costly and scary lawsuit, so that startups with limited resources to protect and defend themselves are more likely to settle than fight.”); Benjamin Lennett, *How Patent Trolls Are Crippling Startups*, Slate (Sept. 16, 2013), <https://slate.com/technology/2013/09/report-shows-how-patent-trolls-are-crippling-startups.html> (“Many startups simply do not have the financial resources to deal with a lengthy legal battle. When faced with a patent problem, they often decide to settle quickly . . . even in cases where the patent assertion is weak and could ultimately result in a favorable ruling by a court.”).

³⁷ *Startup Ecosystem*, *supra* note 1, at 17.

³⁸ Am. Intellectual Prop. Law Ass’n, 2019 Report of the Economic Survey 51-52 (2019) (reporting costs of litigation).

³⁹ E.g., Brian T. Yeh, Cong. Research Serv., R42668, *An Overview of the “Patent Trolls” Debate* 12 (2013); Steven Levy, *The Patent Problem*, Wired (Nov. 13, 2012), <https://www.wired.com/2012/11/ff-steven-levy-the-patent-problem/> (describing PAE litigation in particular as “asymmetric warfare”).

⁴⁰ Robin Feldman, *Patent Demands & Startup Companies: The View From the Venture Capital Community*, 16 Yale J.L. & Tech. 236, 280 (2014).

⁴¹ Robin Feldman & Evan Frondorf, *Patent Demands and Initial Public Offerings*, 19 Stan. Tech. L. Rev. 52 (2015).

⁴² James Bessen, *The Evidence Is In: Patent Trolls Do Hurt Innovation*, Harv. Bus. Rev. (Nov. 2014), <https://hbr.org/2014/07/the-evidence-is-in-patent-trolls-do-hurt-innovation>.

⁴³ Fed. Trade Comm’n, To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy 5 (2003); cf. Jean O.

Lanjouw & Mark Schankerman, *Enforcement of Patent Rights in the United States*, in Patents in the Knowledge-Based Economy 145, 146 (Wesley M. Cohen & Stephen A. Merrill eds., 2003) (“small firms avoid R&D areas where the threat of litigation from larger firms is high”).

⁴⁴ E.g., *U.S. Patent Statistics Chart: Calendar Years 1963-2019*, U.S. Patent and Trademark Office (May 2021), https://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm (reporting over 600,000 total patent applications filed each year since 2013).

⁴⁵ Landau, *19 Hours*, *supra* note 14.

⁴⁶ Michelle K. Lee, *Report on Satellite Offices*, U.S. Patent and Trademark Office (2014) https://www.uspto.gov/sites/default/files/aia_implementation/USPTO_AIASatelliteOfficesReport_2014Sept30_Online.pdf; USPTO Locations, U.S. Patent and Trademark Office (Feb. 19, 2021) <https://www.uspto.gov/about-us/uspto-office-locations>.

⁴⁷ Engine has articulated similar positions in the past. This section draws from previous materials, including, e.g., Engine’s Response to the Call for Comments on Expanding American Innovation, Docket No. PTO-P-2020-0057 (Feb. 23, 2021), available at https://static1.squarespace.com/static/571681753c44d835a440c8b5/t/5fca4fad1a258d244fec7ba7/1607094191551/2020.12.03_Comments+to+Docket+PTO+C+2020+0055.pdf.

⁴⁸ *Public Search Facility*, U.S.P.T.O. (May 7, 2021), <https://www.uspto.gov/learning-and-resources/support-centers/public-search-facility/public-search-facility>; *PTRC Locations by State*, U.S.P.T.O. (Dec. 10, 2020), <https://www.uspto.gov/learning-and-resources/support-centers/patent-and-trademark-resource-centers-ptrc/ptrc-locations>.

⁴⁹ E.g., *Patent Quality Chat, Application Readiness: Assessing Incoming Applications*, U.S. Patent and Trademark Office 20 (Feb. 19, 2020), https://www.uspto.gov/sites/default/files/documents/Patent%20Qual%20Chat%20Application%20Readiness%202_19_2020%20for%20posting.pdf.

⁵⁰ E.g., *Inventors*, U.S. Patent and Trademark Office (June 1, 2020), <https://www.uspto.gov/patents/basics/using-legal-services/pro-bono/inventors>.

⁵¹ *Improving Access and Inclusivity in the Patent System: Unleashing America’s Economic Engine*, Hearing Before the Subcomm. on Intellectual Property of the S. Comm. on the Judiciary, 117th Congress at 49:00 (2021) (testimony of Georgia Grace Edwards, Co-Founder, SheFly), available at <https://www.judiciary.senate.gov/meetings/improving-access-and-inclusivity-in-the-patent-system-unleashing-americas-economic-engine>.

⁵² E.g., Colleen V. Chien, *Rigorous Policy Pilots the USPTO Could Try*, 104 Iowa L. Rev. Online 1 (2019), available at <https://ssrn.com/abstract=3499202> (suggesting a pilot to give applicants all relevant prior art “up front”); *Improving Access and Inclusivity in the Patent System: Unleashing America’s Economic Engine*, Hearing Before the Subcomm. on Intellectual Property of the S. Comm. on the Judiciary, 117th Congress at 1:01:38 (2021) (testimony of Professor Lateef Mtima, Professor of Law, Howard University School of Law), available at <https://www.judiciary.senate.gov/meetings/improving-access-and-inclusivity-in-the-patent-system-unleashing-americas-economic-engine> (suggesting pre-prosecution patentability assessment for certain applicants).

⁵³ See, e.g., Priti Krishtel, Opinion, *The Path to Racial Justice Runs Through This Agency*, N.Y.T. (Feb 9, 2021), <https://www.nytimes>.

com/2021/02/09/opinion/biden-patent-office.html (“Few avenues exist for people to engage with the office, which, despite being a public agency, interacts almost exclusively with people and entities seeking patents for commercial reasons — businesses and universities, mostly — and very little with those who stand to suffer immensely from those monopolies.”).

⁵⁴ See, e.g., Abby Rives, *A Declining Focus on Patent Quality at the USPTO and What it Means for Startups*, Engine (Oct. 21, 2020), <https://www.engine.is/news/ip-recap-102120>.

⁵⁵ Michael D. Frakes & Melissa F. Wasserman, *Irrational Ignorance at the Patent Office*, 72 Vand. L. Rev. 975, 1021 (2019).

⁵⁶ Engine has articulated similar positions in the past. This section draws from previous materials, including, e.g., June 22 Letter, *supra* note 18; Letter to Members of the Subcommittee on Intellectual Property of the Senate Committee on the Judiciary from Engine (Mar. 16, 2021), *available at* <https://www.engine.is/news/startups-need-congress-to-focus-on-balance-quality-and-inclusion-when-it-comes-to-ip>; Letter to President-elect Biden and Vice President-elect Harris from Engine (Jan. 19, 2021), *available at* <https://www.engine.is/news/engine-asks-biden-harris-team-to-consider-startups-when-naming-next-uspto-director>.

⁵⁷ E.g., *Promoting the Useful Arts: How Can Congress Prevent the Issuance of Poor Quality Patents?: Hearing Before the Subcomm. on Intellectual Property of the S. Comm. on the Judiciary*, 116th Congress (2019) (testimony of Melissa F. Wasserman), *available at* <https://www.judiciary.senate.gov/imo/media/doc/Wasserman%20Testimony.pdf>.

⁵⁸ *Supra*; Greg Reilly, *Patent “Trolls” and Claim Construction*, 91 Notre Dame L. Rev. 1045 (2016).

⁵⁹ R. Polk Wagner, *Understanding Patent-Quality Mechanisms*, 157 U. Penn. L. Rev. 2135, 2165-68 (2009).

⁶⁰ Engine has articulated similar positions in the past. This section draws from previous materials, including, e.g., Discretionary Denial Comments, *supra* note 28; *Startups & the Value of Patent Review*, Engine (May 2021), https://static1.squarespace.com/static/571681753c44d835a440c8b5/t/60aa5c514dcb02030b60e3bf/1621777493029/Patent+Review_Startups+Two+Pager_Updated.pdf.

⁶¹ 35 U.S.C. §§ 311-319.

⁶² United States Senate, Roll Call Vote 112th Congress on H.R. 1249 (2011), *available at* https://www.senate.gov/legislative/LIS/roll_call_lists/roll_call_vote_cfm.cfm?congress=112&session=1&vote=00129.

⁶³ E.g., H.R. REP. 112-98, 39-40 (recounting goal to “improv[e] patent quality and provid[e] a more efficient system for challenging patents that should not have issued”); 157 Cong. Rec. S5356-S5357 (Sept. 7, 2011), *available at* <https://www.congress.gov/112/crec/2011/09/07/CREC-2011-09-07-pt1-PgS5356.pdf> (statement of Sen. Amy Klobuchar that “those low-quality patents clog the system and hinder true innovation”); 153 Cong. Rec. H10270-10307 (Sept. 7, 2007) (statement of Rep. Cannon, “[p]atents of questionable validity are limiting competition and raising prices for consumers”).

⁶⁴ AIPLA, *supra* note 38, at 50-52.

⁶⁵ *Startup Ecosystem*, *supra* note 1, at 17.

⁶⁶ AIPLA, *supra* note 38, at 52; Malathi Nayak, *Cost of Patent Infringement Litigation Falling Sharply*, Bloomberg BNA (Aug. 11, 2017), [https://biglawbusiness.com/cost-of-patent-infringement-](https://biglawbusiness.com/cost-of-patent-infringement-litigation-falling-sharply)

litigation-falling-sharply.

⁶⁷ See, e.g., *Patents Spur Innovation. Weak Patents Have the Opposite Effect.*, YouTube (Dec. 13, 2018), https://www.youtube.com/watch?time_continue=1&v=MvTAE5He9Cg&feature=emb_logo.

⁶⁸ Ryan Damon et al., *Five Years Later: Lessons Learned from the First Inter Partes Review*, ACC Docket (May 3, 2018), <https://www.accdocket.com/articles/supreme-court-decisions-inter-partes-review-cfm> (reporting data showing how “IPRs have reduced the cost to challenge questionable patents and also reduced their settlement value”).

⁶⁹ See, e.g., Megan M. La Belle, *Patent Law as Public Law*, 20 Geo. Mason. L. Rev. 41, 42-43 (2012) (explaining patent validity challenges “implicate important public interests and potentially affect many parties”); *see also, e.g., id.* at 52 (contrasting valid patents that provide the public with a new and useful technology with invalid patents where “the inventor gains exclusivity while society gets nothing in return because the invention was already part of the public domain”).

⁷⁰ *Distinctive Developments, Ltd. v. Uniloc USA, Inc.*, IPR2013-00391, Paper 38 (PTAB Dec. 3, 2014); *see also, e.g., Uniloc USA Inc. v. Laminar Research, LLC*, No. 6:12-cv-468 (E.D. Tex. July 20, 2012) (complaint alleging infringement based on making Android based apps available on cell phones and/or tablets).

⁷¹ Daniel Nazer, *EFF Wins Final Victory over Podcasting Patent*, Elec. Frontier Found. (May 14, 2018), <https://www.eff.org/deeplinks/2018/05/eff-wins-final-victory-over-podcasting-patent>.

⁷² Aaron L. Parker et al., *How Sports Tech Companies Can Fight Back Against Patent Trolls*, Finnegan (July 27, 2018), <https://www.finnegan.com/en/insights/articles/how-sports-tech-companies-can-fight-back-against-patent-trolls.html>.

⁷³ Bart Eppenauer, *Sound View Escalates Patent Assault on Open Source Software with New Wave of Lawsuits*, Cloud IPQ (Apr. 30, 2019), <https://cloudipq.com/2019/04/30/sound-view-escalates-patent-assault-on-open-source-software-with-new-wave-of-lawsuits/>.

⁷⁴ See, e.g., *HP Inc. v. MPHJ Tech. Invs., LLC*, 817 F.3d 1339, 1342 (Fed. Cir. 2016) (after letters were “sent . . . to numerous small businesses, alleging that those businesses likely infringed the ‘381 patent,” and “[b]ecause the letters were sent to users of HP’s multi-function printers, HP petitioned for IPR of the ‘381 patent”).

⁷⁵ Comments of Austin Meyer, In re *Discretion to Institute Trials Before the Patent Trial and Appeal Board*, Docket No. PTO-C-2020-0055-0283 (Nov. 17, 2020), *available at* <https://www.regulations.gov/comment/PTO-C-2020-0055-0283>.

⁷⁶ Data collected from: *PTAB Trial Statistics FY20 End of Year Outcome Roundup*, U.S.P.T.O., *available at* https://www.uspto.gov/sites/default/files/documents/ptab_aia_fy2020_roundup.pdf (last visited July 16, 2021); *Trial Statistics*, U.S.P.T.O. (Sept. 2020), https://www.uspto.gov/sites/default/files/documents/trial_statistics_20200930.pdf.

⁷⁷ E.g. *Innovation Toolkit for Startups - Patreon*, YouTube (Dec. 18, 2018), https://www.youtube.com/watch?time_continue=1&v=JjFcZl_Ftpc.

⁷⁸ *An Assessment of the Impact of the America Invents Act and the Patent Trial and Appeal Board on the US Economy*, The Perryman Group ii, 4, 6 (June 2020), *available at* <https://www.unifiedpatents.com/insights/2020/6/23/the-perryman-group-releases-economic-report-an-assessment-of-the-impact-of-the-america-invents-act-and-the-patent-trial-and-appeal-board-on-the-us-economy>.

⁷⁹ *Supra* (chart showing decreasing rates of PAE litigation that correspond with increasing startup activity).

⁸⁰ E.g., *Engine Submits Comments to USPTO on Proposed Changes that Would Weaken Patent Review*, Engine (Dec. 4, 2020), <https://www.engine.is/news/engine-submits-comments-to-uspto-on-proposed-changes-that-would-weaken-patent-review>; *Companies Urge Congress to Investigate Policies Shielding Invalid Patents*, Engine (Oct. 14, 2020), <https://www.engine.is/news/companies-urge-congress-to-investigate-policies-shielding-invalid-patents>.

⁸¹ Engine has articulated similar positions in the past. This section draws from previous materials, including, e.g., Letter to Members of the Subcommittee on Intellectual Property of the Senate Committee on the Judiciary from Engine (June 21, 2019), available at https://static1.squarespace.com/static/571681753c44d835a440c8b5/t/5d113fdcc87dec0001da5457/1561411548600/2019.06.21_Engine+Comments.pdf; *Section 101 is Working for Startups*, Engine (June 2019), <https://innovatewithoutfear.engine.is/wp-content/uploads/2019/05/Section-101-is-Working-For-Startups.pdf>.

⁸² *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014).

⁸³ See, e.g., *O'Reilly v. Morse*, 56 U.S. 62 (1854).

⁸⁴ E.g. *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (2016).

⁸⁵ Nayak, *supra* note 66. Between 2015 and 2017 the median overall cost for a lower-stakes patent case declined 47 percent. These numbers have started to rise since 2017; and in 2019 the cost of even a lower-stakes case was still a steep \$1.5 million. AIPLA, *supra* note 38, at 51 (reporting costs of litigation with \$1-\$10 million at stake).

⁸⁶ *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1364-65 (Fed. Cir. 2015) (Mayer, J. concurring) (citations and quotations omitted) (emphasis added); see also, e.g., *Am. Well Corp. v. Teladoc, Inc.*, 191 F. Supp. 3d 135, 137 (D. Mass. 2016) (quotation omitted) (similar); *Roche Molecular Sys., Inc. v. Cepheid*, No. 14-CV-03228-EDL, 2017 WL 6311568, at *6 (N.D. Cal. Jan. 17, 2017) (similar); *Gaelco S.A. v. Arachnid 360, LLC*, 293 F. Supp. 3d 783, 789 (N.D. Ill. 2017) (“district courts should take Section 101 seriously, apply it early, and check the bona fides of the concept underlying the patent”) (quoting *O2 Media, LLC v. Narrative Sci. Inc.*, 149 F. Supp. 3d 984, 990 (2016); *Network Apparel Grp., LP v. Airwave Networks Inc.*, No. 6:15-CV-00134, 2016 WL 4718428, at *4 (W.D. Tex. Mar. 30, 2016) (quotations omitted) (“effects of resolving § 101 issues at the pleadings stage include ‘conserve[ing] scarce judicial resources,’ ‘provid[ing] a bulwark against vexatious infringement suits,’ and ‘weeding out ... patents that stifle innovation and transgress the public domain’”); *I/P Engine, Inc. v. AOL Inc.*, 576 F. App’x 982, 996 (Fed. Cir. 2014) (Mayer, J. concurring) (“an early determination that the subject matter of asserted claims is patent ineligible can spare both litigants and courts years of needless litigation”); *Wolf v. Capstone Photography, Inc.*, No. 2:13-CV-09573, 2014 WL 7639820, at *6 (C.D. Cal. Oct. 28, 2014) (similar); *Two-Way Media Ltd. v. Comcast Cable Commc’ns, LLC*, No. CV 14-1006-RGA, 2016 WL 4373698, at *3 (D. Del. Aug. 15, 2016) (“Early resolution of § 101 issues, where appropriate, is desirable.”).

⁸⁷ *No Hero Souls for Patent Trolls*, Engine Blog (Mar. 16, 2018), <https://medium.com/@EngineOrg/no-hero-souls-for-patent-trolls-7c5bca30168e>.

⁸⁸ *Gust, Inc. v. AlphaCap Ventures, LLC*, 226 F. Supp. 3d 232 (S.D.N.Y. 2016).

⁸⁹ *A Startup Runs Into a Patent on Picture Menus*, Elec. Frontier Found., <https://www.eff.org/alice/startup-runs-patent-picture-menus> (last visited July 16, 2021).

⁹⁰ *Less Litigation Means More Innovation - Cloudflare*, YouTube (Dec. 18, 2018), <https://www.youtube.com/watch?v=xhMuQ1nkwuA&v=2s>; Doug Kramer, *Winning the Blackbird Battle*, Cloudflare Blog (Feb. 14, 2019), <https://blog.cloudflare.com/winning-the-blackbird-battle/>.

⁹¹ See, e.g., *cxLoyalty, Inc. v. Maritz Holdings, Inc.*, 986 F.3d 1367 (Fed. Cir. 2021) (rejecting claims as ineligible, noting USPTO § 101 “guidance ‘is not, itself, the law of patent eligibility, does not carry the force of law, and is not binding on our patent eligibility analysis.’” In re *Rudy*, 956 F.3d 1379, 1382 (Fed. Cir. 2020). And to the extent the 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’”) (quoting In re *Rudy*, 956 F.3d 1379, 1382-83).

⁹² See generally 35 U.S.C. §§ 283, 284; Matthews, *supra* note 8, ch.30, 32.

⁹³ *eBay Inc. v. MercExchange, LLC*, 547 U.S. 388 (2006).

⁹⁴ Josh Landau, *Much Ado About Injunctions*, PatentProgress (Aug. 1, 2019), <https://www.patentprogress.org/2019/08/01/much-ado-about-injunctions/>.

⁹⁵ Engine has articulated similar positions in the past. This section draws from previous materials, including, e.g., Letter to Members of the Subcommittee on Intellectual Property of the Senate Committee on the Judiciary from Engine (Sept. 18, 2019), available at https://static1.squarespace.com/static/571681753c44d835a440c8b5/t/5d8293688746a245e575f716/1568838505085/2019.09.18_Engine+Comments.pdf.

⁹⁶ See, e.g., Yeh, *supra* note 39, at 12-14, 18 (describing leverage PAEs can exert when injunctive relief is available).

⁹⁷ See, e.g., *eBay Decision Levels Patent Litigation Playing Field*, Buchanan Ingersoll & Rooney (Apr. 5, 2011), <https://www.bipc.com/eBay-decision-levels-patent-litigation-playing-field>.

⁹⁸ Abby Rives, Opinion, *Fortress Patent Fight Shows Abusive Litigation Hurts Startups*, Law360 (Mar. 25, 2020), <https://www.law360.com/articles/1256250/fortress-patent-fight-shows-abusive-litigation-hurts-startups>.

⁹⁹ *Supra*.

¹⁰⁰ Yeh, *supra* note 39, at 13.

¹⁰¹ *Id.* (quoting Colleen V. Chien & Mark A. Lemley, *Patent Holdup, the ITC, and the Public Interest* 10–15 (Stanford Public Law Working Paper No. 2022168, 2012).

¹⁰² 35 U.S.C. § 285; Matthews, *supra* note 8, ch.33.

¹⁰³ See, e.g., Abby Rives, *Blackbird v. Health in Motion, Attorney Fees, and What It Means for Startups*, Engine (Jan. 9, 2020), <https://www.engine.is/news/ip-recap-010920?rq=blackbird> (summarizing Fed. Cir. case awarding fees to small fitness company targeted by PAE).

¹⁰⁴ Matthews, *supra* note 8, ch.28.

¹⁰⁵ Deepa Varadarajan, *The Uses of IP Misuse*, 68 Emory L.J. 739, 742 (2019); see also *id.* at 748-49, 756-58 (discussing history of patent misuse); 35 U.S.C. § 271(d) (limitations on misuse).

¹⁰⁶ *Supra* note 33 (describing suit under Washington’s anti-troll law); Press Release: AG Stein Fights Back Against Patent Trolls, Office of Attorney General Josh Stein, <https://ncdoj.gov/ag-stein-fights-back-against-patent-trolls/> (North Carolina’s Attorney General recently filed brief in support of law to curb abusive patent practices) (last visited July 16, 2021) (May 14, 2021); Eric Goldman, *Vermont Enacts the Nation’s First Anti-Patent Trolling Law*, Forbes (May 22, 2013), <https://www.forbes.com/sites/ericgoldman/2013/05/22/vermont-enacts-the-nations-first-anti-patent-trolling-law/?sh=1bd921ee51f8>.