IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Eligibility Jurisprudence Study

Docket No. PTO–P–2021–0032

COMMENTS OF INTERNET ASSOCIATION

William G. Jenks
Jenks IP Law PLLC
1629 K ST NW, Suite 300
Washington, DC 20006

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I. Commenter's Interest and Initial Statement

Internet Association is the unified voice of the internet economy, representing the interests of America's leading internet companies and their global community of users. Internet Association is dedicated to advancing public policy solutions to strengthen and protect internet freedom, foster innovation, promote economic growth, and empower users through the free and open internet.

Internet Association members have long been integral to the economy of the United States. This was never more evident than during the recent pandemic when many businesses, large and small, leveraged our members' technology to stay afloat in a rapidly changing economy. Internet Association members provided food delivery, secure payments, online meetings, and many other remote services that became essential to the nation's continuing response to Covid.[1]

Internet Association members bring expertise in artificial intelligence, software, computing (including quantum computing), networking, data processing and display, and numerous other technical areas related to the internet. Every year, members collectively invest billions of dollars in research and development in these areas. They own tens of thousands of patents and regularly appear in the PTO's annual "Top Organizations" patenting reports.

The PTO requests information regarding patent eligibility jurisprudence.[2] Internet Association appreciates the opportunity to comment on this area of the law. The members of Internet Association have extensive experience with the application of patent eligibility jurisprudence in patent prosecution, litigation, and post-grant proceedings. They have closely observed and frequently participated in the development of caselaw and administrative procedures involving patent eligibility.

The *Alice/Mayo* test for subject matter eligibility has been applied in many cases involving computer technology: Software, networking, data processing and communication, among others. In these areas, Internet Association members have particular expertise.[3] And in

[1] Internet Association's members include Airbnb, Amazon, Ancestry, Discord, DoorDash, Dropbox, eBay, Etsy, Eventbrite, Expedia, Facebook, Google, Grubhub, Handy, IAC, Indeed, Intuit, LinkedIn, Match Group, Microsoft, Newsbreak, Notarize, PayPal, Pinterest, Postmates, Rackspace, Rakuten, Reddit, Rocket Mortgage, Snap Inc., Spotify, Stripe, SurveyMonkey, Thumbtack, TripAdvisor, Turo, Twitter, Uber, Upwork, Vrbo, Zillow, and Zip Recruiter.

[2] *See* Request for Information, Patent Eligibility Jurisprudence Study (PTO–P–2021–0032), 86 Fed. Reg. 36257 (July 9, 2021) ("RFI").

[3] Internet Association does not comment on the smaller, though significant, number of court cases addressing medical diagnoses and treatment.

these areas, the Federal Circuit has generally applied the *Alice/Mayo* test in a consistent, predictable manner that is true to the Supreme Court's recent and historical jurisprudence.

The *Alice/Mayo* test has encouraged patent prosecutors to file more complete disclosures and better claims directed to the inventor's technical advance. It has reduced litigation over e-commerce and has provided defendants an opportunity (now threatened) to end meritless cases early. Internet Association members have not cut back on research and development in response to recent patent eligibility jurisprudence. And they continue to rely on patents and other intellectual property to protect their investments.

Finally, the RFI requests that all respondents identify themselves by "categories."[4] Internet Association members fall into several designated categories, including: (1) patent owners; (2) licensees and users of patented technology; and (4) recipients of demand letters concerning alleged patent infringement and defendants in patent lawsuits. Internet Association itself falls into category (9) nonprofit advocacy organization.

II. The Current State of Patent Eligibility Jurisprudence in the United States

A. *Alice* and its progeny have clarified subject matter eligibility

The Supreme Court's two-part eligibility test established in *Mayo*, developed in *Alice*, and adapted and applied by the Federal Circuit, leads to sound, predictable outcomes in the courts.[5]

Under *Alice* step one, a court must first determine whether the claims at issue are directed to a patent-ineligible concept, such as an abstract idea.[6] Step two is a "search for an 'inventive concept'—*i.e.*, an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself."[7] Under step two, the court must "examine the elements of the claim to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a patent-eligible application."[8]

In practice, the *Alice*/*Mayo* test turns on whether the claims recite a technological contribution that provides a method or mechanism for achieving a desired result. That is to say, there are two key principles to determining patent ineligibility: (1) whether the claims recite a

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[4] RFI at 36,259, col. 1.
[5] *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012); *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208 (2014).
[6] 573 U.S. at 212.
[7] 573 U.S. at 217-218 (quoting *Mayo,* marks omitted).
[8] 573 U.S. at 221 (quoting *Mayo*).

mere result, and (2) whether the claims fail to recite the inventor's technical contribution, sometimes termed a "technological solution" to a "technological problem."

Applying these principles, the courts have clarified that certain types of claims are eligible, while other types of claims are ineligible. In cases regarding computers and communications—the majority of cases—the courts have developed distinct categories that are relatively easy for practitioners to understand and apply.

Alice itself provides two examples that the Federal Circuit treats as eligibility safe harbors. Claims that "improve the functioning of the computer itself" or "effect an improvement in any other technology or technical field" are generally eligible under the *Alice/Mayo* test.[9] The Federal Circuit has applied these examples in multiple cases to hold eligible claims directed to improvements in computer-related fields or other technologies.[10]

The courts have applied the same test to hold certain types of claims ineligible at the other end of the spectrum—far from improved technology. These include: (1) Claims that are directed to a mere desired result[11]; (2) pure data manipulation claims[12]; and (3) business methods, e.g., monetary transactions or the creation of legal/financial obligations through software.[13]

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[9] *See Alice*, 573 U.S. at 225.

[10] *See, e.g.*, *Uniloc USA, Inc. v. LG Elecs. USA, Inc.*, 957 F.3d 1303, 1307 (Fed. Cir. 2020) ("In accordance with this precedent, we hold the claims at issue are directed to a patent-eligible improvement to computer functionality, namely the reduction of latency experienced by parked secondary stations in communication systems"); *Ancora Technologies, Inc. v. HTC America, Inc.*, 908 F.3d 1343, 1347–49 (Fed. Cir. 2018); *Core Wireless Licensing S.A.R.L. v. LG Electronics, Inc.*, 880 F.3d 1356, 1359–63 (Fed. Cir. 2018); *SRI Int'l, Inc. v. Cisco Sys., Inc.*, 918 F.3d 1368, 1376 (Fed. Cir. 2019); *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335-36 (Fed. Cir. 2016).

[11] *See, e.g.*, *Yu v. Apple Inc.*, No. 2020-1760, slip Op. at 5 (Fed. Cir. Jun. 11, 2021); *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1244 (Fed. Cir. 2016); *Affinity Labs of Texas, LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1265 (Fed. Cir. 2016); *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1316 (Fed. Cir. 2016); *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1348 (Fed. Cir. 2015).

[12] *See, e.g.*, *PersonalWeb Tech. LLC v. Google LLC, et al.*, No. 2020-1543, slip Op. at 9-10 (Fed. Cir. Aug. 12, 2021); *Univ. of Fla. Research Found., Inc. v. Gen. Elec. Co.*, 916 F.3d 1363, 1369 (Fed. Cir. 2019); *SAP America, Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1167 (Fed. Cir. 2018).

[13] *See, e.g.*, *Universal Secure Registry LLC v. Apple Inc.*, No. 2020-2044, slip Op. at 12-13 (Fed. Cir. Aug. 26, 2021); *Inventor Holdings, LLC v. Bed Bath & Beyond, Inc.*, 876 F.3d 1372, 1378 (Fed. Cir. 2017); *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350, 1355 (Fed. Cir. 2014); *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 717 (Fed. Cir. 2014).

B. *Alice* and its progeny follow long-standing Supreme Court caselaw

The key principles discussed above come not only from *Alice* and *Mayo* but from over 150-years of Supreme Court caselaw. That Court has long distinguished claims that merely recite a result achieved from those that specify the method and mechanism for achieving that result. For example, Samuel Morse famously invented and patented the telegraph. But one of his claims failed because, as he wrote, "I do not propose to limit myself to the specific machinery or parts of machinery described in the foregoing specification."[14] Instead, he claimed "electro-magnetism, however developed for marking or printing intelligible characters, signs, or letters, at any distances, being a new application of that power of which I claim to be the first inventor."[15] The claim was "void" because it covered "an effect produced by the use of electro-magnetism distinct from the process or machinery necessary to produce it."[16] The Supreme Court has relied on *O'Reilly* in the course of determining subject matter eligibility for centuries.[17]

Moreover, the Federal Circuit has explicitly incorporated this principle in its post-*Alice* Section 101 analysis. Indeed, many Federal Circuit cases make explicit the review of claim language to determine whether the claims merely recite a result (or equivalent functional language) or the mechanism by which the result is accomplished. Claims that recite only a desired result are generally directed to an abstract idea and are therefore ineligible. In *Internet Patents*, for example, the Federal Circuit held ineligible a claim that merely recited a desired "effect or result dissociated from any method by which [the result] is accomplished."[18] The "character of the claimed invention [was] an abstract idea" because the claim at issue contained "no restriction on how the result is accomplished."[19] And the "mechanism" for achieving that result "[was] not described, although this [was] stated to be the essential innovation."[20] Such claims are "not directed to patent-eligible subject matter."[21]

Similarly, *Electric Power* holds that claims defining "a desirable information-based result and not limited to inventive means of achieving the result, fail under § 101."[22] The court in *Electric Power* explained that the "essentially result-focused, functional character of claim

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[14] *O'Reilly v. Morse*, 56 U.S. 62, 112 (1853).
[15] *Id*.
[16] *Id.* at 120; *see also The Telephone Cases*, 126 U.S. 1, 534 (1888).
[17] *See, e.g.*, *Mayo*, 132 S. Ct. at 1301; *Bilski v. Kappos*, 561 U.S. 593, 649 (2010); *Parker v. Flook*, 437 U.S. 584, 592 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 68-69 (1972); *The Telephone Cases*, 126 U.S. at 534.
[18] *Internet Patents*, 790 F.3d at 1348.
[19] *Id.*
[20] *Id.*
[21] *Id.*
[22] *Elec. Power Grp. v. Alstom S.A.*, 830 F.3d 1350, 1351 (Fed. Cir. 2016).

language has been a frequent feature of claims held ineligible under § 101."[23] This is especially so "in the area of using generic computer and network technology to carry out economic transactions."[24] The *Electric Power* court approved the district court's invocation of "an important common-sense distinction between ends sought and particular means of achieving them, between desired results (functions) and particular ways of achieving (performing) them."[25]

These cases are clear: merely claiming a result or function does not impart patent eligibility. Conversely, software claims that recite the mechanism whereby desirable results are achieved support patent eligibility. In *McRO*, the Federal Circuit held claims eligible after looking to "whether the claims in these patents focus on a specific means or method that improves the relevant technology or are instead directed to a result or effect that itself is the abstract idea and merely invoke generic processes and machinery."[26] The claims were not directed to an abstract idea because the "specific, claimed features … allow[ed] for the improvement realized by the invention."[27] The *McRO* court further explained that this principle is rooted in more than a century of Supreme Court caselaw.[28]

As to the second principle, the Supreme Court—well before *Alice*—generally held eligible claims directed to improved technology. For example, nearly a century ago, the Court found patentable an improvement to a paper-making machine despite the inventor's recitation of the principle of gravity in the claims. The Court found that the inventor improved the machine by application of a law of nature to increase the speed of paper stock "whereby the stock is caused to travel by gravity, rapidly in the direction of movement of the wire, and at a speed approximately equal to the speed of the wire, substantially as described."[29] The Court later relied on *Eibel* to explain "that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection."[30]

The Court drew a clear line between claims that invoke a mathematical principle or algorithm for mere calculation and those that improve a technological process. In *Flook*, claims to a computerized method for updating the value of an alarm limit were ineligible because—outside of the method of calculating the limit—the patent application contained nothing new. In the Court's view "'if a claim is directed essentially to a method of calculating'" it is not eligible

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[23] *Id.* at 1356 (citing *Loyalty Conversion Sys. v. American Airlines, Inc.*, 66 F. Supp. 3d 829, 837–38, 840, 843, 845 (E.D. Tex. 2014) (Bryson, J., sitting by designation)).
[24] *Id.*
[25] *Id.*
[26] *McRO*, 837 F.3d at 1314 (citing *Enfish*, 822 F.3d at 1327).
[27] *Id.* at 1313.
[28] *Id.* at 1314 (citing *O'Reilly*, 56 U.S. at 113, *Mayo*, 133 S. Ct. at 2116, *LeRoy v. Tatham*, 55 U.S. 156, 175 (1853), and *Diamond v. Diehr*, 450 U.S. 175, 182 n.7 (1981)).
[29] *Eibel Process Co. v. Minnesota & Ontario Paper Co.*, 261 U.S. 45, 50, 64-65 (1923).
[30] *Diamond v. Diehr*, 450 U.S. 175, 187–88 (1981) (citing *Eibel*, et al.); *see also Parker v. Flook*, 437 U.S. 584, 590 (1978) (citing *Eibel*, et al.).

"'even if the solution is for a specific purpose.'"[31] *Flook*'s claims contrast with the claims in *Diehr*, which also contained an algorithm but claimed an improved method of operating a rubber-molding press with results that "the industry has not been able to obtain."[32] As *Alice* makes clear "the claims in *Diehr* were patent eligible because they improved an existing technological process."[33]

C. Critics that decry a supposed lack of clarity in the caselaw tend to rely on the few difficult cases between well-established poles

Difficult or close cases are to be expected when applying a legal standard to different factual scenarios that vary across technologies. Patent eligibility, at the Federal Circuit, is a question of law with underlying facts. While the occasional case arises in which both sides have a reasonable argument, the PTO should not discount the vast majority of cases that fall into well-defined categories.

1. Any perceived schism in the Federal Circuit's eligibility caselaw involves these borderline difficult cases, not the established areas

American Axle is frequently cited as justification for Congressional action in this area.[34] The case may have been a close one, but the Federal Circuit panel relied on established caselaw. The panel majority first mapped the claim at issue onto the ineligible claim in *O'Reilly*.[35] They also meticulously compared the claim at issue to the claims in two more recent Supreme Court cases that preceded *Alice*.[36]

Moreover, the majority countered the dissent's argument that they had departed from existing patent eligibility precedent by pointing out they were "faithfully following" existing precedent "in the narrow circumstances of this case."[37] Dissenting judges warned of the "far-reaching consequences of the court's flawed Section 101 jurisprudence."[38] But in the year-plus since *American Axle* (and since the court denied en banc review), it appears that the panel majority was correct. *American Axle* has not expanded the scope of ineligibility law, nor has it had far-reaching consequences.

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[31] *Flook*, 437 U.S. at 595 (quoting *In re Richman*, 563 F.2d 1026, 1030 (C.C.P.A. 1977).
[32] *Diehr*, 450 U.S. at 178.
[33] *Alice*, 573 U.S. at 223.
[34] *See Am. Axle & Mfg., Inc. v. Neapco Holdings LLC*, 967 F.3d 1285, 1297–98 (Fed. Cir. 2020).
[35] *See id.* at 1297.
[36] *See Am. Axle*, 967 F.3d at 1297–98 (Fed. Cir. 2020) (comparing and contrasting the claims at issue with the eligible claims in *Diamond v. Diehr* and ineligible claims in *Parker v. Flook*).
[37] *Id.* at 1301.
[38] *Am. Axle & Mfg., Inc. v. Neapco Holdings LLC*, 966 F.3d 1347, 1357 (Fed. Cir. 2020) (Newman, J., et al., dissenting from rehearing en banc).

Neither the appellate court nor the district courts appear to require clarification of patent eligibility following *American Axle*. The Federal Circuit has cited *American Axle* in only one case, and only for the unremarkable proposition that a functional claim "must identify 'how' that functional result is achieved by limiting the claim scope to structures specified at some level of concreteness, in the case of a product claim, or to concrete action, in the case of a method claim."[39]

Similarly, a Westlaw search reveals that few district courts have cited *American Axle*, and only two have examined it in depth. The first denied a motion to dismiss for ineligible patent claims.[40] The second denied a summary judgment motion for ineligibility, though it limited the inventive concepts patentee could assert at trial.[41]

2. Close cases arise in other patent contexts without raising cries of inconsistency

Both nonobviousness and claim construction are questions of law with underlying facts, like patent eligibility at the Federal Circuit. Both these areas have given rise to disparate—even contentious—opinions by judges of the Federal Circuit. But these decisions have not generated cries for supposed clarification. Instead, it is understood that in patent law, cases will occasionally arise over which reasonable minds may differ.

The nonobviousness of particular claims under Section 103 has been the subject of genuine dispute at the Federal Circuit. For example, in the court's first en banc case regarding obviousness since 1990, the en banc court reversed a panel without identifying a legal issue or requesting additional briefing.[42] Three judges filed separate dissents, each decrying the posture of the case. As then-Chief Judge Prost wrote, "I share Judge Dyk's and Judge Reyna's concerns as to the procedural irregularities surrounding this case at the en banc stage."[43] And the en banc majority did not appear to contest that point, stating: "We did not take this case en banc to decide important legal questions about the inner workings of the law of obviousness. We have applied existing obviousness law to the facts of this case."[44]

A fair reading of the decision is that the question of obviousness was close, but a majority of judges felt strongly enough that the en banc court was compelled to correct the panel's view. While this is extreme, similar disputes frequently happen in Section 103 between panel

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[39] *Free Stream Media Corp. v. Alphonso Inc.*, No. 2019-1506, 2021 WL 1880931 (Fed. Cir. May 11, 2021) (quoting *Am. Axle*, 967 F.3d at 1302).
[40] *See Fortinet, Inc. v. Forescout Techs., Inc.*, No. 20-CV-03343-EMC, 2021 WL 2412995, at *20 (N.D. Cal. June 14, 2021).
[41] *See Cellspin Soft, Inc. v. Fitbit, Inc.*, No. 17-CV-05928-YGR, 2021 WL 1421612, at *18 (N.D. Cal. Apr. 14, 2021).
[42] *See Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034 (Fed. Cir. 2016).
[43] *See id.* at 1063 (Prost, CJ, dissenting).
[44] *Id.* at 1039.

members. A review of Federal Circuit cases issued in 2020 shows at least four cases where the panels disagreed strongly enough to require a dissent on Section 103.[45]

Similarly, claim construction at the Federal Circuit has often been contentious. A study of claim construction and reversals found that roughly 25% of published cases reversing a district court's construction include a dissent. The three Federal Circuit judges could not agree on a claim's meaning in one-fourth of cases that turn on claim construction.[46] And, although the study was conducted before *Teva v. Sandoz*, "[t]he data strongly suggests that deferring more to district courts on subsidiary factual issues will do very little to address the inconsistency in claim construction."[47]

Finally, the PTO should understand that mere disagreement regarding what should be eligible for patenting does not create a lack of clarity. To the extent critics feel that Congress or the courts should expand patent eligibility to encompass business methods, data manipulation, and results-only claiming, they should so argue. The agency should not accept calls for "clarification" at face value.

III. Patent Prosecution and Patent Eligibility Jurisprudence[48]

A. Patent eligibility jurisprudence encourages more complete disclosure and more accurate claim drafting

The key principles developed in patent eligibility jurisprudence have improved patent prosecution by encouraging more complete disclosures and more accurate claim drafting. Before *Alice*, patent applicants and their representatives were taught that "[i]t is the claim drafter's job to have written the claims in the application to . . . cover competitive products which neither the inventor nor the attorney thought of or *could even have imagined* at the time."[49] And that clearly

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[45] *See Cochlear Bone Anchored Solutions AB v. Oticon Medical ABEyeglasses*, 958 F.3d 1348 (Fed. Cir. 2020); *FanDuel, Inc. v. Interactive Games LLC*, 966 F.3d 1334 (Fed. Cir. 2020); *Genentech, Inc. v. Hospira, Inc.*, 946 F.3d 1333 (Fed. Cir. 2020); *Choirock Contents Factory Co. v. Saucier*, 801 F. App'x 754, 768 (Fed. Cir. 2020).

[46] *See* Thomas W. Krause & Heather F. Auyang, *What Close Cases and Reversals Reveal About Claim Construction at the Federal Circuit*, 12 J. Marshall Rev. Intell. Prop. L. 583, 600 (2013).

[47] *Id.* at 602; *see also Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318 (2015).

[48] The RFI asks for information related to "the body of patent subject matter eligibility decisions issued by the U.S. Federal Judiciary." RFI at 36259, col. 1. Internet Association, therefore, does not address the PTO's 2019 Revised Patent Subject Matter Eligibility Guidance. Internet Association expressed its concerns regarding that guidance document elsewhere. *See* Comments of Internet Association (Mar. 9, 2019) *addressing* 2019 Revised Patent Subject Matter Eligibility Guidance, Dkt. No. PTO-P-2018-0053, 84 Fed. Reg. 50 (Jan. 7, 2019).

[49] Robert C. Faber, Faber on Mechanics of Patent Claim Drafting 10-3 (6th ed. 2011) (emphasis added).

defining "the invention" or the "present invention" in a patent specification amounts to "patent profanity" among patent drafters.[50]

Following *Alice*, patentees are incentivized to focus on their technical advance, detail it in their disclosure, and recite it in their claims.

The principle that claims should recite more than a mere result encourages patent prosecutors to write more specific claims directed to technical advances. This can be seen, for example, in the literature advising patent prosecutors to focus claims on technological improvements. The AIPLA, for example, published "tips" for patenting software.[51]

The AIPLA's tips focused on claiming the technical improvements invented:

- "Wherever possible, claim software that causes something tangible to happen, and consider focusing patenting resources on software that causes hardware/computer operation improvements (e.g., improvements to the processor, memory, displays, etc.)";

- **"Recite the improvement steps.** Recite the steps for improvement in the claim language."[52]

Similarly, the principle that claims should recite the inventor's technical contribution, sometimes termed a "technological solution" to a "technological problem," encourages patentees to draft more robust, technical specifications and claims. The literature emphasizes this as well.

IP Watchdog, for example, published a "how to" for patent preparation and prosecution in view of *Alice*.[53] The how-to focused on increasing the technical disclosure in the specification:

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[50] David Pressman, *Patent It Yourself* 196 (15th ed. 2011) (describing the words "the invention" or the "present invention" as "patent profanity"); *see also id.* ("Never refer to 'the invention.'")
[51] Katie Bates and David Cornett, *Eleven Tips to Securing Software-Related Patent Protection Post-Alice*, Innovate Magazine (Sep. 24, 2018) *available at* https://www.aipla.org/innovate/eleven-tips-to-securing-software-related-patent-protection-post-alice.
[52] *See id.*
[53] Robert Levy, *How to Prepare and Prosecute Patents in Light of the USPTO's Post-Alice Focus on Eligibility*, IP Watchdog (Dec. 1, 2019) *available at* https://www.ipwatchdog.com/2019/12/01/prepare-prosecute-patents-light-usptos-post-alice-focus-eligibility/id=116472/.

- "The specification should provide a complete description of the invention, including both its structure and function, as well as how the invention achieves its intended goals";

- "The specification and claims should describe how the invention improves computer functionality";

- "The specification and claims should describe how the invention constitutes an unconventional and unique combination of elements solving a practical problem."[54]

And the AIPLA authors agreed:

- **"Name the specific technical benefit.** Tailor your application and claims to a specific technical benefit afforded by the claimed invention (e.g., faster search times within a database, smaller memory requirements for a database, more dynamic information filtering, more efficient information filtering, producing more accurate image-sound synchronization, producing more realistic expressions or movement in animated characters than have been created by human animators). Include a clear definition of the problem solved, and lay out the specific technical solution to that problem. As a corollary, *don't* argue that the computer generally improves an existing system; instead, *teach* how the claimed invention improves the existing technology."[55]

A layperson might think that prosecutors would always disclose the technical benefits of their client's inventions, describe how claimed invention improves functionality, etc. But these disclosures—that unquestionably benefit the public and clarify the patent claims—were not always favored by prosecutors.

B. The macro effect of recent cases on innovation—as measured by the number of patents issued—appears to be negligible or positive

If there were a crisis in patent eligibility law, we should see a radical reduction in the number of patents issued by the PTO. On the contrary, the PTO has been issuing record numbers of patents.[56]

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[54] *See id.*
[55] Bates & Cornett (citations removed).
[56] *See* USPTO, FY 2020 Performance and Accountability Report 192, Table 6.

The following table—adapted from the PTO's annual report—shows PTO patents issued by year against the Supreme Court patent eligibility cases.

Fiscal Year	Issued Utility Patents	Supreme Court Decision
2010	207,915	Bilski v. Kappos (Jun. 28, 2010)
2011	221,350	
2012	246,464	Mayo v. Prometheus (Mar. 20, 2012)
2013	265,979	AMP v. Myriad Genetics (Jun. 13, 2013)
2014	303,930	Alice v. CLS Bank (Jun. 19, 2014)
2015	295,460	
2016	304,568	
2017	315,366	
2018	306,909	
2019	336,846	
2020	360,784	

The number of patents issued in fiscal 2010—the year *Bilski* was decided—was a then-record 207,915. The Supreme Court issued its most recent patent eligibility decision, *Alice*, in 2014. In the six years since *Alice*, the PTO has averaged over 300,000 patents per year. Each year the PTO has set a new record or come second to only the immediately preceding year. In the decade since *Bilski*, the number of patents issued has increased nearly 75%.

The increased level of patent issuances in recent years may have several explanations. But it is clear that any supposed uncertainty in patent eligibility jurisprudence has not prevented a surge in issued patents.

To be sure, patent issuance has not gone up uniformly across every PTO art unit. But the PTO's increase in eligibility rejections resulting from the recent caselaw has largely been confined to art units examining business methods and medical diagnostics.[57] This increase reflects that *Bilski* overturned Federal Circuit precedent favoring the patenting of business methods and that *Alice* provides a test for reviewing the same.

An overall analysis of the PTO database shows the limited impact of *Alice* and *Mayo*. Indeed, "the vast majority of inventions examined by the office are not significantly impacted by

[57] *See* C. Chien and J. Wu, *Decoding Patentable Subject Matter*, 2018 PatentlyO Patent Law Journal 10, 15.

101."[58] And a more recent study concluded that there has been "no noticeable decline" in software applications following *Alice*.[59]

C. The effect on patenting artificial intelligence and quantum computing likewise appears negligible

Studies have shown an explosion in artificial intelligence patenting. A study published by IEEE found that the PTO granted nearly five times as many AI-related patents in 2018 compared to 2008. [60] And while overall patenting has increased, as shown in the table above, the percentage of AI-related patent grants has more than doubled during these years.[61]

The PTO performed its own in-depth study of AI patenting—using a broader definition of AI than in the IEEE study—and reached similar conclusions. The PTO study found that "both the volume and share of AI patent applications generally increased" from 2002 through 2018.[62] According to the PTO study, AI patent applications grew from a 9% share in 2002 to over 15% by 2018.[63]

Internet Association members are active (and leading) in both artificial intelligence and quantum computing and have not seen a decline in their ability to patent in these areas.[64]

IV. Patent Litigation—Impact in Limited Areas

Internet Association members saw a reduction in patent litigations in some areas—particularly e-commerce—following *Alice*. Though even there, cases continue to be brought.[65] And overall, patent litigation is once again on the rise.

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[58] Chien & Wu at 17.
[59] *See also* C. Chien et al., *Parsing the Impact of Alice and the PEG*, 2020 PatentlyO Patent Law Journal 20 (2020).
[60] *See* H. Habibollahi, N. Abadi & M. Pecht, *Artificial Intelligence Trends Based on the Patents Granted by the United States Patent and Trademark Office*, 8 IEEE Access 81633, 81634 (May 14, 2020).
[61] *See* Habibollahi at 81634.
[62] *See* USPTO, Inventing AI, 4 (Oct. 2020).
[63] *Id.* at 5.
[64] *See also* Habibollahi at 81636.
[65] *See, e.g.*, *Universal Secure Registry*, slip Op. at 12-13 (ineligible claims to financial transactions using third-party intermediary akin to claims in *Alice*).

A. Generally, in the years since *Alice*, patent litigation has continued apace

In 2020, patent holders filed over 4,000 patent suits.[66] This reflects a three-year high in the number of suits.[67] Of particular concern to Internet Association members are the activities of patent assertion entities (PAEs). The percentage of PAE complaints—not including non-practicing small entities or universities—has grown in each of the last three years. In 2018, PAEs brought 1,179 of the 3,657 patent suits filed in the district courts (32%). In 2019, it was 1,199 PAE suits out of 3,576 total suits (34%). In 2020, PAEs brought 1,656 patent suits out of 4,042 (41%).[68] Thus, PAE assertions now form roughly forty percent of all U.S. patent suits.

The growth in PAE assertions is of particular concern because such entities are more likely to bring and lose suits asserting patents of questionable eligibility than product companies.[69] The collective cost of PAE litigation creates a significant "tax on innovation."[70] "Not much of this [tax payment] goes to inventors or innovators."[71] Most of the money goes to the assertion entities and the lawyers.[72] Changes that weaken patent eligibility standards could mean an even higher tax on innovation than these litigations already create.

B. One benefit of patent eligibility jurisprudence has been the ability to bring a meritless suit to an early conclusion

Alice and its progeny have improved patent litigation by reducing the costs of defending a suit against ineligible claims. Often, defendants can assert their patent ineligibility defense at the pleadings stage—typically in a Rule 12 motion.

This is an effective tool because litigating patents through trial can cost millions of dollars. If an ineligible patent can be tested early in a case, it allows a defendant to eliminate the ineligible patent. If such patents cannot be tested, the defendant is more likely to settle, allowing the patentee to assert the ineligible patent again and again. Some PAEs leverage the nuisance value of their suits to collect settlement after settlement. Far too often, PAE suits are of little or no merit—either the patent is invalid, or the asserted infringement theory expansively misreads

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[66] *See* Unified Patents, 2020 Litigation Annual Report *available at* https://portal.unifiedpatents.com/litigation/annual-report ("2020 Litigation Report").
[67] *Id.*
[68] *Id.*
[69] *See* Mark A. Lemley and Samantha Zyontz, Does Alice Target Patent Trolls?, 18 Journal of Empirical Legal Studies 47, 70-71 (2020).
[70] *See* James Bessen and Michael J. Meurer, *The Direct Costs from NPE Disputes*, 99 Cornell L. Rev. 387, 416 (2014) (estimating a multi-billion dollar tax on innovation in 2011 from all non-practicing entity ("NPE") suits).
[71] *Id.* at 416.
[72] *Id.* at 416-17.

the asserted claims.[73] Patent eligibility jurisprudence helps limit the damage caused by such assertions.

C. The Federal Circuit recently undermined defendants' ability to bring an early eligibility defense in *Berkheimer*

Under *Berkheimer*, patent ineligibility may sometimes have to be decided at trial.[74] This threatens to undermine the efficiency gains by discouraging district courts from ruling on ineligibility without a full trial.[75] Further, it may allow a patentee to assert ineligible claims repeatedly until a defendant is willing to foot the bill—often millions of dollars—necessary to litigate the claims through trial.

Early developments in this area are concerning. For example, in *Aatrix Software*, the district court found a data processing claim ineligible, seemingly in line with prior decisions. But the panel majority ordered a remand to allow the patentee to file an amended complaint alleging that its data files represent an improvement in the importation of data.[76]

As Judge Reyna noted in dissent, however, "the majority opinion attempts to shift the character of the § 101 inquiry from a legal question to a predominately factual inquiry. The risk of this approach is that it opens the door in both steps of the *Alice* inquiry for the introduction of an inexhaustible array of extrinsic evidence, such as prior art, publications, other patents, and expert opinion."[77] "One effect of this approach is that a plaintiff facing a 12(b)(6) motion may simply amend its complaint to allege extrinsic facts that, once alleged, must be taken as true, regardless of its consistency with the intrinsic record."[78]

"The problem," as Judge Reyna noted, "is that the 12(b)(6) procedure is converted into a full blown factual inquiry on the level of § 102, § 103, and § 112 inquiries."[79] This result "would turn the utility of the 12(b)(6) procedure on its head, in particular in the context of § 101."[80]

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[73] *See* John R. Allison, Mark A. Lemley & David L. Schwartz, *How Often Do Non-Practicing Entities Win Patent Suits?*, 70 Berkeley Tech. L. J. 235, 270 (2017) (finding that PAEs that take their cases to conclusion win less than 10% of the time).
[74] *See Berkheimer v. HP Inc.*, 881 F.3d 1360, 1370–71 (Fed. Cir. 2018).
[75] *See* R. Davis, *Quick Alice Wins May Be Tougher After Fed. Cir. Ruling*, IP Law360 (Feb. 13, 2018).
[76] *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1129 (Fed. Cir. 2018).
[77] *Id.* at 1130 (Reyna, J., dissenting).
[78] *Id.*
[79] *Id.*
[80] *Id.* at 1130-31.

Another troubling development is district court judges—including Judge Albright, who hears more patent cases than any other judge—holding that 12(b)(6) motions are inappropriate for the disposition of patent eligibility questions.[81] Judge Albright's "general practice" is to "defer resolving § 101 related Rule 12(b) motions until after claim construction and after fact discovery opens."[82] Other district courts may be following suit.[83]

These developments undermine the efficiency inherent in bringing an eligibility challenge at the earliest stages of litigation.

V. Business Impacts

The internet sector contributes over $2 trillion annually to the U.S. GDP. This is roughly one-tenth of the overall U.S. GDP.[84] In 2018, U.S. internet-sector companies invested $64 billion into the economy through capital expenditures. Of that, IA's members invested over $42 billion.[85] A significant percentage of Internet Association members' investment goes to R&D across all internet-related fields.

A. Patent eligibility jurisprudence has had no discernable impact on research and development

Patent eligibility jurisprudence has had no discernable impact on research and development conducted by Internet Association members generally. Nor has it affected the amount spent on R&D regarding artificial intelligence or quantum computing. Members have invested heavily in both these areas and other computer-related research.

Members have used artificial intelligence to implement or facilitate numerous projects since *Alice*. These include:

- Natural language models and processing
- Translation
- Machine language models
- Robotics
- Improved search functions

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[81] *See Slyce Acquisition Inc. v. Syte - Visual Conception Ltd.*, No. W-19-CV-00257-ADA, 2020 WL 278481, at *8 (W.D. Tex. Jan. 10, 2020).
[82] *See VideoShare, LLC v. Google LLC*, No. 6-19-CV-00663-ADA, 2020 WL 6365543, at *5 n.2 (W.D. Tex. May 4, 2020).
[83] *See, e.g.*, *Ubiquitous Connectivity, LP v. Cent. Sec. Grp. - Nationwide, Inc.*, No. 18-CV-368-JED-CDL, 2021 WL 1970664, at *3 (N.D. Okla. May 17, 2021) (citing *Slyce*).
[84] *See* Christopher Hooton, Measuring the U.S. Internet Sector: 2019 3, Internet Association *available at* https://internetassociation.org/wp-content/uploads/2019/09/IA_Measuring-The-US-Internet-Sector-2019.pdf.
[85] *Id.* at 15.

- 3D imaging
- Personal assistants
- Maps and routing
- Autonomous and assisted driving
- Personalized data storage
- Pandemic forecasting
- Product analysis and purchases
- Health screenings

No projects have been reduced or diminished due to eligibility jurisprudence.

Similarly, Internet Association members have ongoing projects in quantum computing and intend to provide that massive computing power that will assist humanity in confronting the many challenges it faces. Patent eligibility jurisprudence has likewise not affected these projects.

Eligibility jurisprudence appears to have had no negative impact on the U.S. economy in the specific technical areas the PTO proposes to study. Indeed, the United States leads the world in the number of assignees of AI-related patents.

According to the IEEE study, during the ten years 2008-2018, U.S. assignees had the highest share (over 70%) of AI-related patent grants. And in the most recent year studied, U.S. companies—including multiple Internet Association members—dominated the list of top 10 assignees.[86] The PTO's study of artificial intelligence is consistent. The PTO found that U.S. companies—including multiple Internet Association members—dominated the list of Top 30 AI patent owners.[87]

Internet Association is unaware of any similar study of quantum computing. But its members have not delayed or reduced research in this area due to patent eligibility jurisprudence.

Patent eligibility jurisprudence has had little impact on the type of IP protection sought by our members. Internet Association members always consider various IP protection for their innovations, including copyright, patent, trademark, trade dress, and trade secret. Members routinely use patent protection for improvements in technology—*i.e.*, for progress in the useful arts.

B. Competition drives the U.S. economy

In considering the business impacts of patent eligibility jurisprudence, the PTO should consider that competition drives the U.S. economy and is protected from patent overreach. "It is

[86] Habibollahi at 81639.
[87] USPTO, Inventing AI, at 10.

as important to the public that competition should not be repressed by worthless patents, as that the patentee of a really valuable invention should be protected in his monopoly."[88]

The PTO should look to how patent eligibility jurisprudence has freed competition from ineligible patents that would otherwise stifle it. For a valid patent, the right to exclude is the reward for disclosing an invention that promotes the progress of the useful arts. But an invalid patent deters competition with no corresponding benefit.[89]

Thus, eligibility jurisprudence benefits the economy when it prevents the issuance or simplifies the removal of patents that claim mere results and preclude innovation in other ways of achieving those results. Similarly, it helps the economy when it does the same for patent claims that recite no technical innovation—*i.e.*, patents that do not progress the useful arts.

Changes in jurisprudence that would allow the issuance or bar the removal of such patents harm the economy. Such changes may also harm American competitiveness. Non-U.S. entities own over half of U.S. patents. Allowing domestic enforcement of overbroad or otherwise ineligible patents hurts the U.S. as a whole.

VI. Conclusion

Internet Association applauds the USPTO for its continued serious examination of the contours of patent eligibility law. But there is no need for any alteration or abrogation of patent eligibility jurisprudence. The law in this area is at least as clear as in other areas of patent law that require the application of legal standards to facts rooted in technology. It follows historical precedent dating back over a century. And it has encouraged patent applicants to provide more technical disclosure and more precise claims to the office, which benefit the public.

[88] *Pope Mfg. Co. v. Gormully*, 144 U.S. 224, 234 (1892).
[89] *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989).