**Comments of Innovation Alliance in Response to the USPTO's Request for Information on Patent Eligibility Jurisprudence (Docket No. PTO–P–2021–0032)**

**October 15, 2021**

The Innovation Alliance appreciates the opportunity to submit these comments in response to the Request for Information (RFI) issued by the U.S. Patent and Trademark Office (USPTO) regarding patent eligibility jurisprudence. The issues raised in the RFI are exceptionally important, and we appreciate the USPTO's careful attention to them, as well as the steps Senators Tillis, Hirono, Cotton, and Coons have taken to initiate this proceeding.

The Innovation Alliance is a coalition of research and development-based technology companies representing innovators, patent owners, and stakeholders from a diverse range of industries that believes in the critical importance of maintaining a strong patent system that supports innovative enterprises of all sizes. The Innovation Alliance is committed to strengthening the U.S. patent system to promote innovation, economic growth, and job creation, and we support legislation and policies that help to achieve those goals.

The members of Innovation Alliance design, engineer, and develop some of the most cutting-edge technologies on the market in their respective industries. They collectively have applications for, or obtained, well over 100,000 patents in the United States and internationally.

Below, Innovation Alliance addresses questions posed by the USPTO's RFI. The Innovation Alliance believes strongly that current Section 101 jurisprudence, which is resulting in patent ineligibility for large swaths of innovation, particularly in critical technology areas, including artificial intelligence, poses significant risks to U.S. competitiveness, economic growth, and national security. These areas are also of key importance to members of the Innovation Alliance. We appreciate the opportunity to share this information and would be glad to discuss it further.

## I. Developments in Section 101 Jurisprudence Have Upset Previously Settled Area of Law and Harmed Patent Holders

For many years, U.S. law has provided patent protection to inventions in a wide array of fields, encouraging exploration and discovery in all corners of science, engineering and medicine, and other disciplines. This is reflected in the text of Section 101 of the Patent Act, whose primary purpose is to define what subject matter is eligible for patent protection. Section 101 sets forth broad categories of the subject matter that is eligible for patent protection, and includes "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof . . . ."

Until recently, the law of Section 101 was relatively simple, predictable, and tied to identifiable policy objectives. The few implicit exceptions to what subject matter was eligible—laws of nature, natural phenomena, and abstract ideas—were sensibly confined. The laws of nature and natural phenomena exceptions were confined to claims that could be met entirely by nature, with no human intervention. Likewise, the abstract idea exception excluded claims that could be practiced entirely in the human mind. The case law thus defined these limited exceptions intelligibly.

But over the past decade, the law has changed substantially. In a recent quartet of Supreme Court cases[1]—most recently *Alice Corp. v. CLS Bank*, 573 U.S. 208 (2014)—the Supreme Court has greatly blurred the reach of the judicially created exceptions to patent eligible subject matter, and in so doing, has thrown into chaos the question of what subject matter is and is not patent eligible.

In these recent cases, the Supreme Court has continued to maintain that Section 101 contains an implicit exception for "laws of nature, natural phenomena, and abstract ideas." But the two-part test (the "*Alice/Mayo*" test) set forth in these cases has proven unworkable. The first step of this test—whether a patent claim is "directed to" a judicial exception—is highly problematic because, as the Supreme Court itself has recognized, all patent claims "at some level . . . embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas."[2] Given that all patent claims at some level rely upon the judicial exceptions, the determination of which claims are "directed to" a judicial exception—and which claims are not—is a very difficult, subjective, and frankly often arbitrary, determination.

The subjectivity and unpredictability of this test has only been compounded by the fact that the judicial exceptions themselves are ambiguous. For example, the USPTO has explained that there has been great confusion over which concepts do—and do not—constitute an "abstract idea." As the USPTO explained in guidance on Section 101 issued in 2019:

> The Federal Circuit has now issued numerous decisions identifying subject matter as abstract or non-abstract in the context of specific cases, and that number is continuously growing. **In addition, <u>similar subject matter</u> has been described <u>both as abstract and not abstract</u> in different cases.**

The Supreme Court's recent Section 101 jurisprudence has had corrosive effects on the patent system, leaving the scope of patent eligible subject matter unsettled and unpredictable. Judges, for example, have repeatedly expressed frustration at the difficulty of applying the Supreme Court's *Alice/Mayo* test, with one Federal Circuit judge calling patent eligibility law "incoherent," and explaining that "[t]he law . . . renders it nearly impossible to know with any certainty whether the invention is or is not patent eligible." *Interval Licensing v. AOL*, 896 F.3d

[1] *Bilski v. Kappos*, 561 U.S. 593 (2010); *Mayo Collaborative Servs. v. Prometheus Labs*, 132 S. Ct. 1289 (2012); *Association for Molecular Pathology v. Myriad Genetics*, 569 U.S. 576 (2013); *Alice Corp. v. CLS Bank*, 573 U.S. 208 (2014).

[2] *Alice*, 573 U.S. at 217 (citations and internal quotation marks omitted).

1335, 1348 (Fed. Cir. 2018) (Plager, J.) (dissenting). Another Federal Circuit judge observed that the law of Section 101 "needs clarification by a higher authority, perhaps by Congress, to work its way out of what so many in the innovation field consider are § 101 problems." *Berkheimer v. HP, Inc.*, 890 F.3d 1369, 1375 (Fed. Cir. 2018) (Lourie, J.). And former Federal Circuit Chief Judge Paul Michel has observed that, "in scores of appeals, [the Federal Circuit] has struggled to make sense of the opaque Supreme Court decisions," and has "introduced its own confusing notions and language."[3]

The USPTO has also struggled to apply the *Alice/Mayo* framework. As the USPTO recently explained, "[t]he growing body of precedent has become increasingly more difficult for examiners to apply in a predictable manner, and concerns have been raised that different examiners within and between technology centers may reach inconsistent results." *See* 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50, 52 (Jan. 7, 2019). As a consequence of the Supreme Court's Section 101 jurisprudence, moreover, the USPTO has had to repeatedly revise its subject matter eligibility guidance to its examiners.

This confusion in the courts and at the USPTO has taken a heavy toll on the patent system. Reliability and predictability are essential to an effective, strong patent system. When a patent system fosters confidence in the reliability of patents, inventors are encouraged to invest in new technologies and bring their innovations to market. By contrast, lack of predictability and uncertainty over patent rights makes it risky to develop and invest in new technology, thereby deterring innovation. Indeed, one member company of the Innovation Alliance reported that during the time period from July 2020 to June 2021 it filed roughly 25% fewer U.S. patent applications than it had for a similar period five years earlier due in part to recent adverse developments in patent eligibility law.

## II. Current Section 101 Jurisprudence Poses a Significant Threat to Innovation in Key Technology Areas

The confusion surrounding Section 101 described above has led to uncertainty and unpredictability as to the patent eligibility of key, emergent technology areas. One such technology area is Artificial Intelligence. AI will allow society to perform tasks more effectively, efficiently, and at lower cost by enabling human capabilities—understanding, reasoning, planning, communication and perception—to be undertaken by software. The country that leads the world in the innovation and adoption of this technological field will have a distinct technological, economic, and national security advantage over other countries.

Intellectual property in the field of artificial intelligence has been heavily impacted by the recent Section 101 developments. Because the application of *Alice* is so fraught with uncertainty and unpredictability, a cloud of uncertainty hangs over these patents, threatening incentives to innovate in this key technology area. Those incentives could be further weakened if Section 101

[3] Judge Paul Michel, *Is 2019 the Year Clarity Returns to Section 101? Judge Paul Michel Is Hopeful*, IP Watchdog Institute, Jan. 24, 2019, https://www.ipwatchdog.com/2019/01/24/2019-year-clarity-returns-section-101-judge-paulmichel-hopeful/id=105566/.

jurisprudence were to be settled in a manner that significantly restricts eligible subject matter in these fields.

### A. A Majority of AI Patents are *Alice* Affected

A large number of patent applications directed to AI—technology that is critical to national security and technological advancement—are swept up in the broad scope of Section 101 post-*Alice.* Many applications in this space will be assessed for a Section 101 issue, and a significant number will be subject to rejections based on Section 101. Additional time spent in patent prosecution will lead to higher costs and additional delays in obtaining patent protection.

Even for those patents that emerge from prosecution and issue, uncertainty continues as the Federal Circuit and district courts have unevenly applied Section 101 post-*Alice.* In fact, as described above, the USPTO has noted that different Federal Circuit cases have found the same subject matter to be both abstract and not abstract. *See* 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50, 52 (Jan. 7, 2019). Noting that it too has had difficulty in predictably applying the *Alice*/*Mayo* framework, the USPTO sought to provide clarification and direction with its 2019 guidance on subject matter eligibility. *Id*.

While the guidance from the USPTO has been helpful in providing more concrete direction to patent applicants, its overall impact has been largely negated because it is not binding on the courts. Indeed, as the Federal Circuit has repeatedly emphasized that the PTO's guidance "does not carry the force of law, and is not binding on our patent eligibility analysis." *cxLoyalty, Inc. v. Maritz Holdings Inc.*, 968 F.3d 1367, 1375 n.1 (Fed. Cir. Feb. 8, 2021) (citing *In re Rudy*, 956 F.3d 1379, 1382 (Fed. Cir. 2020)). Thus, even where a patent applicant follows the direction provided by the USPTO in applying for and obtaining a patent, significant uncertainty remains where the courts may take a materially different view of the Section 101 analysis under *Alice*.

### B. Uncertainty in Section 101 Jurisprudence is Detrimental to Innovation

If left unaddressed, the impact of current Section 101 jurisprudence will deter innovation as investors and companies become less willing to take the large risk to invest in important technologies, given the unpredictability as to whether they are able to obtain patent protection for their inventions. Strong, predictable patent rights incentivize inventors to assume the risky investment of time and resources necessary to innovate. As explained in greater detail below, as uncertainty about whether subject matter is patent eligible increases, the incentives to innovate will wane.

#### 1. Uncertainty in prosecution and litigation, increasing costs and decreasing predictability of outcomes

The existence of a robust and flourishing U.S. patent system is contingent upon transparency, uniformity, and faith in our regulatory and jurisprudential institutions. The U.S. patent right is unique amongst other methods of intellectual property protection for the careful balance it strikes: knowledge and innovation shared with the public, in exchange for limited protections granted to incentivize future discoveries. In this way, both pioneering and iterative

efforts can be rewarded—and thus encouraged—in tandem. For this balance to be maintained, the rules under which a patent may be granted—or canceled—must be clear, fair, and consistent. If they are not, innovators are effectively unable to predict whether or not they are likely to receive and maintain patent protection for their efforts, which discourages innovation, particularly in disruptive industries.

As discussed above, the recent uncertainty introduced into the doctrine of patentable subject matter exemplifies these harms. Where innovators cannot confirm that their work is deemed "eligible" for protection as a preliminary matter, inventive efforts are dampened, difficult to fund, or directed elsewhere.

Uncertainty in the patent system harms both small inventors and large U.S. technology firms, as well as the prospect for cooperation and investment between the two. Small inventors are hesitant to pursue costly R&D and prosecution. This is especially so where the inability to predict the strength of patent protection makes securing investment difficult, and in industries where incumbency favors large actors with greater ability to support litigation.

These risks are all the harder to justify for smaller inventors, with recent studies showing that post-*Alice*, individual inventors and inventor-started companies are the most likely to lose their patents on the basis of patent subject matter eligibility. *See* Mark A. Lemley & Samantha Zyontz, *Does Alice Target Patent Trolls?*, 18 J. Empirical Legal Stud. 47 (2021). Conversely, uncertainty stems innovation from large technology firms as well. Significant R&D investment into inventive areas most affected by *Alice* jurisprudence can be difficult to justify. As a result, resources are often directed elsewhere. This holds true for both internal and external efforts, freezing intrafirm projects and deterring larger companies from outsourcing and entering partnerships with smaller, less established market participants. Where risk and reward cannot be appropriately judged, the result is hesitancy to invest in globally significant pioneering spaces and the discouragement of pro-competitive, pro-public interest partnerships.

### 2. Uncertainty complicates IP strategy

Where innovators are hesitant to seek patent protection, they may instead pursue other forms of IP protection, such as trade secrets. While trade secret protection can be an available alternative, such a solution (1) is not universally available across industries, and (2) lacks the same public benefits provided by patent protection. Rather than disclose their inventions to the public in exchange for a patent, inventors may choose instead to rely on the protection of secrecy.

However, a trade secret is not just secrecy, but intentional and practiced secrecy, with its strength relying on the means available to protect that secrecy. For example, in an industry where reverse engineering is an easy and effective way to reduce and then reproduce technology, trade secret protection is effectively unavailable.

In addition, trade secret protection lacks the careful balance provided by patents described above: knowledge and innovation shared with the public, in exchange for limited protections granted to incentivize future discoveries. Where secrecy is encouraged, iterative and

incremental progress of established technology is made difficult to impossible, impeding pro-public cost competition.

The inherent lethargy of secrecy also particularly impacts competitive, fast-paced industries. Unlike publication of patents, trade secret protection injects slowness of discovery into industry-wide innovation. Because of the chilling effects on incremental progress, industries that are otherwise nimble and quick to innovate—effectively all digital technologies—are encouraged to adopt a policy of isolation, discouraging the sharing of information and slowing progress. Thus, while in some instances trade secrets may offer a viable alternative to patents, uncertainty in patent prosecution and litigation results in a net negative on both an industry-wide and individual actor basis.

### 3. Complications and uncertainty exacerbated by global considerations and different approaches to subject matter eligibility in different countries

While U.S. innovators have struggled to adjust to the recent changes in patent subject matter eligibility, other countries such as China have invested heavily in strengthening patent rights. Over the past few years, the China National Intellectual Property Administration ("CNIPA") has introduced several amendments aimed at courting emerging technology and broadening patent rights. *See* Laoteng Wang et al., *A Comparative Look at Patent Subject Matter Eligibility Standards: China Versus the United States*, IPWatchdog (June 12, 2020), https://www.ipwatchdog.com/2020/06/12/comparative-look-patent-subject-matter-eligibility-standards-china-versus-united-states/id=122339/ (discussing November 1, 2019 and February 1, 2020 CNIPA amendments).

With the ongoing uncertainty in § 101 jurisprudence, there is considerable concern that investment will flow away from the U.S., impacting global competition and national security. Former Director of the USPTO David Kappos testified before the U.S. Senate Subcommittee on Intellectual Property voicing these same concerns. *The State of Patent Eligibility in America: Part I, Hearing Before the Subcomm. on Intellectual Property of the S. Comm. of the Judiciary*, 116th Cong. (2019) (Statement of David J. Kappos). Detailing a study he performed analyzing patent applications filed in the U.S., China, and Europe, he testified that "current U.S. law governing patent eligibility puts us behind China and Europe in life sciences and information technology—two critical technical areas for national competitiveness." *Id*. at 2.

A review of this same study shows that of a database of 17,743 patent applications rejected by the USPTO and then abandoned, 1,694 foreign counterpart applications in either the EU or China were granted. *See* Kevin Madigan & Adam Mossoff, *Turning Gold to Lead: How Patent Eligibility Doctrine is Undermining U.S. Leadership in Innovation*, 24 Geo. Mason L. Rev. 939, 941–42 (2017). Among the abandoned applications were inventions directed to life-saving treatments for cancer and other life-threatening diseases, innovations in artificial intelligence, and new methods of quantum encryption. *See id*. at 956–59; Mossoff Database, https://cip2.gmu.edu/wp-content/uploads/sites/31/2017/10/Madigan-Mossoff-Turning-Gold-to-Lead-Final-Dataset.pdf (last visited Sept. 1, 2021).

This disparity in outcomes is unsurprising given the differences in eligibility standards in the EU and China as compared to Section 101 under the *Mayo/Alice* framework. For example, Article 52(1) of the European Patent Convention broadly provides that "patents shall be granted for any inventions, in all fields of technology, provided they are new, involve an inventive step and are susceptible of industrial application." The EPC also defines a few narrow subject matter exceptions, but has made clear that these exceptions "should not be given too broad a scope of application." Case Law of the Boards of Appeal of the European Patent Office, Section 2.1, available at https://www.epo.org/law-practice/legal-texts/html/caselaw/2019/e/index.htm. Where particular subject matter clears the comparatively low eligibility threshold, the determination of patentability then turns on separate requirements including novelty and inventive step, which require assessment of the prior art. *Id.* at Section 1.2 (noting that the requirement of "technical character" is "separate and independent of the remaining requirements of Art. 52(1) EPC, in particular novelty and inventive step" and can thus be "assessed without having recourse to the prior art").[4]

This approach, of a clear, low eligibility threshold that, once cleared, is followed by determinations of novelty and inventiveness in light of the existing prior art, is more closely aligned with the application of Section 101 prior to *Mayo* and *Alice*. Indeed, under that previously settled application, once the initial threshold hurdle of eligibility was cleared, the merits of the claims were analyzed against the prior art to determine novelty and inventiveness. In contrast, under current Section 101 jurisprudence, the expanded emphasis on eligibility may operate to preclude such considerations, ultimately leading to patent applications in key technology areas being abandoned in the U.S. while resulting in issued patents in the EU and China, as the data referenced above further demonstrates.

In sum, the pragmatic approach to obtaining patents on emerging technologies abroad, the recent uncertainty in U.S. subject matter eligibility, and intentional steps taken by countries such as China to court the same technology collectively disadvantages current U.S. enterprises and encourages a shift to future investment overseas. Moreover, the uneven application of Section 101 in federal courts further exacerbates uncertainty, even as to the rights in issued U.S. patents. This further incentivizes a shift to protection in other, more certain jurisdictions.

To maintain U.S. leadership in essential and emerging technologies—including artificial intelligence—the U.S. must address the uncertainty of post-*Alice* § 101 jurisprudence and at the very least match its foreign counterparts such as the EPO and CNIPA with respect to "eligible" technology.

Former Chief Judge of the Federal Circuit Paul Michel even recently argued that eligibility standards in foreign jurisdictions such as China, Europe, and England should help inform U.S. eligibility law, giving more latitude to inventions directed to diagnostic testing and

[4] China has similarly established its patent eligibility statute as a low initial threshold question of technicality, including through the recent amendments noted above. *See, e.g.*, Laoteng Wang et al., *A Comparative Look at Patent Subject Matter Eligibility Standards: China Versus the United States*, IPWatchdog (June 12, 2020), https://www.ipwatchdog.com/2020/06/12/comparative-look-patent-subject-matter-eligibility-standards-china-versus-united-states/id=122339/

computer-implemented business methods. *See* Paul Michel, J. & John Battaglia, *Flaws in the Supreme Court's §101 Precedent and Available Ways to Correct Them*, IPWATCHDOG (Apr. 27, 2020), https://www.ipwatchdog.com/2020/04/27/flaws-supreme-courts-%c2%a7101-precedent/id=121038/. Judge Michel too testified before Congress outlining similar concerns. *The State of Patent Eligibility in America: Part I, Hearing Before the Subcomm. on Intellectual Property of the S. Comm. of the Judiciary*, 116th Cong. (2019) (Statement of Judge Paul R. Michel).

On behalf of U.S. innovators, Innovation Alliance echoes Judge Michel's fears: "[u]nless this problem is resolved, our nation's innovation economy will weaken and our world leadership in science and technology will decline." *Id*. at 2.

## III. Section 101's Negative Impact on Innovation in Key Technology Areas Implicates National Security

As described above, the state of Section 101 jurisprudence has led to uncertainty and additional complications in obtaining U.S. patents in key technology areas. If Section 101 is left in its current, unpredictable state, or if it is settled in a manner that further impinges on the subject matter eligibility of key technology areas, the consequences will impact not only innovation in these key areas, but will also have implications for national security.

Indeed, in the context of essential technologies, uncertainty surrounding patent eligibility has significant implications for national security. While uncertainty in patent eligibility has weakened the U.S. patent system, other countries, such as China, that harbor aspirations to lead the world's technology development, have invested heavily in intellectual property, strengthening patent rights as a part of their broader innovation strategy.

As noted above with respect to remarks made by former USPTO Director David Kappos, it is currently easier to secure patent protection for critical life sciences and information technology inventions in China and Europe than in the U.S.

The ability to obtain patents overseas, but not in the United States, favors our foreign competitors and disadvantages U.S. companies. U.S. patents are reviewed, granted, and enforced under U.S. law, where patent owners can rely on an independent judiciary and a strong rule of law tradition to ensure that U.S. companies are treated fairly in patent disputes. If essential technologies cannot be patented in the United States, U.S. innovators cannot rely on U.S. courts to vindicate their rights, losing "home court" advantage relative to their foreign competitors. If the United States is to remain competitive in the global technology race, Congress and the Administration must make every effort to ensure that U.S. patent rights remain strong, predictable, and enforceable, in the United States.

The importance of maintaining U.S. leadership in global technology innovation cannot be overstated. Foreign dominance of any critical technology presents significant national security concerns, as competitors, many with ties to hostile governments, control wireless networks, computer hardware, medical devices, and other technologies used by individuals, businesses, and governments in the United States. The potential impact on critical technology areas, including artificial intelligence, cannot be overstated.

For example, the World Intellectual Property Organization (WIPO) recently reported that China is now rivaling the U.S. in the patenting of Artificial Intelligence technologies, potentially providing China with a competitive advantage in the further development and control of AI technology.[5] Additionally, as the Committee on Foreign Investment in the United States (CFIUS) recognized in March of last year, a "shift to Chinese dominance in 5G would have substantial negative national security consequences for the United States."

Protecting U.S. economic and national security has always gone hand-in-hand with ensuring U.S. technological leadership. From the invention of the telephone, the United States has been at the forefront of developing new generations of telecommunications technology. As companies from around the world participate in the development and implementation of mobile devices and networks, it is critical that the U.S. maintain its leadership in wireless R&D and standards, particularly as critical technologies evolve to enable smart cities, Industrial IoT, connected cars, and other forms of machine-to machine communications.

If the United States were to lose leadership in the underlying foundational technology and standards, foreign governments and businesses, including adversaries, could gain unprecedented control over all aspects of a wireless communications system that will connect every part of our economy, infrastructure, and daily lives.

Falling behind in global competition in the AI space presents a significant concern for both traditional and digital national security threats alike. Promoting U.S. innovation in AI is crucial to manage risks associated with increasingly intelligent autonomous weaponry and to prevent vulnerabilities in the U.S. national intelligence sector. Compounding these concerns, China has increasingly made AI an IP priority, with China's patent office accounting for nearly two-thirds of all AI applications received in the years leading up to 2020. *See* George Leopold, *China Dominates AI Patent Filings*, ENTERPRISEAI (Aug. 31, 2020), https://www.enterpriseai.news/2020/08/31/china-dominates-ai-patent-filings/.

National security, therefore, depends on continually maintaining the conditions necessary for U.S. inventors—both individuals and companies—to innovate. The United States must enact laws and policies that incentivize and reward risky and transformative investments in innovation and ensure a fair and competitive global marketplace.

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We appreciate the opportunity to comment on these issues and would welcome the opportunity to discuss them further.

Respectfully submitted,

Brian Pomper

[5] *See* World Intellectual Property Org., *Technology Trends 2019: Artificial Intelligence (2019)*, at 15–16, https://www.wipo.int/edocs/pubdocs/en/wipo pub 1055.pdf.

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