Before the
United States Patent and Trademark Office
Alexandria, VA

In re	Docket No. PTO-P-2021-0032
Patent Eligibility Jurisprudence Study	

COMMENTS OF
COMPUTER & COMMUNICATIONS INDUSTRY ASSOCIATION

The Computer & Communications Industry (CCIA)[1] submits the following comments in response to the U.S. Patent and Trademark Office's July 9, 2021, Request for Comments, extended on September 3, 2021.[2]

CCIA is an international, not-for-profit trade association representing a broad cross section of communications and technology firms. For nearly fifty years, CCIA has promoted open markets, open systems, and open networks. CCIA members employ more than 1.6 million workers, invest more than $100 billion in research and development, and contribute trillions of dollars in productivity to the global economy.

CCIA members are at the forefront of research and development in technological fields such as artificial intelligence and machine learning[3], quantum computing[4], and other computer-related inventions. CCIA members are also active participants in the patent system, holding approximately 5% of all active U.S. patents and significant patent holdings in other jurisdictions such as the EU and China.

I. Summary

CCIA's members have not experienced adverse impacts on their research and development efforts from current patent eligibility jurisprudence; on the contrary, current jurisprudence has actually been positive for their efforts, reducing meritless patent litigation and the presence of blocking patents on basic concepts while still allowing members to obtain meaningful patent protection for their innovations.

The current state of patentable subject matter jurisprudence has been overwhelmingly positive for the patent system. It has resulted in patent applicants improving the quality of their patents, better defining their inventions.[5] It has allowed small and medium entities to defend themselves against overbroad patents such as claims to own the idea of sending shipping

[1] A list of CCIA members is available online at https://www.ccianet.org/about/members.
[2] Request for Comments on Patent Eligibility Jurisprudence Study, 86 Fed. Reg. 36527 (July 9, 2021), as extended 86 Fed. Reg. 49521 (Sept. 3, 2021) (hereinafter "Request").
[3] USPTO, *Inventing AI*, Fig. 6 (Oct. 2020), https://www.uspto.gov/sites/default/files/documents/OCE-DH-AI.pdf.
[4] *See* Elliott Mason, *Trends in quantum computing patents* (May 24, 2021), https://quantumconsortium.org/blog/trends-in-quantum-computing-patents/.
[5] Colleen Chien *et al*., *Parsing the Impact of Alice and the PEG*, 2020 PATENTLY-O PAT. L.J. at 29 (2020).

notifications.[6] It has shut down patent suits aimed to claim ownership over ideas as broad as "monitoring a preexisting data stream."[7] In one notable instance, a prolific NPE ultimately agreed to a settlement that bars them from suing any California entity on any of its IP after three of its patents were invalidated based on § 101.[8] These are just a few of many examples—the Electronic Frontier Foundation maintains a page collecting stories in which small businesses and individuals were saved from patent litigation by *Alice*.[9]

The current jurisprudence works. Litigation, especially in the arena of non-practicing entities asserting broad and vague software patents, has been generally reduced in cost[10] and frequency.[11] This isn't surprising—and it doesn't represent a threat to productive, innovative companies when they need to defend their technology. One review of § 101 cases found that operating companies are less likely to face a verdict of ineligibility than non-practicing entities.[12] The same review also found that biotechnology companies are significantly less likely to have their patent adjudicated ineligible.[13] Current subject matter eligibility law primarily prevents low-quality and overbroad patents, and it operates primarily in the information technology and business method spaces.

And there is no empirical evidence of any broader adverse impacts from current patent eligibility jurisprudence. Both U.S and foreign patent application rates show no impact on the perceived value of U.S. intellectual property. U.S.-based R&D continues to climb and there is reason to believe that reversing or limiting § 101 jurisprudence could have a negative impact on U.S. R&D. Venture capital funding data also suggests subject matter eligibility has not impacted the creation of early stage high-growth companies, while patent application data in critical technologies such as artificial intelligence shows that it has not shifted investment out of those areas. The main arena where a reduction in patent activity has been seen is in business method patents, which are of questionable value to begin with. Finally, the evidence that is typically cited as showing impacts from current § 101 jurisprudence is flawed and cannot be relied upon. It contains fatal errors in data analysis and in fact supports the thesis that § 101 is not a significant issue for the U.S. patent system.

---

[6] Scott Forbes, "District Court Awards Attorney's Fees after Holding That Plaintiff Had Repeatedly Sought to Avoid a Section 101 Ruling", *Knobbe Martens* (July 27, 2017), https://www.knobbe.com/news/2017/07/district-court-awards-attorney%E2%80%99s-fees-after-holding-plaintiff-had-repeatedly-sought.

[7] Doug Kramer, "Bye Bye Blackbird", *The Cloudflare Blog* (Feb. 12, 2018), https://blog.cloudflare.com/bye-bye-blackbird/.

[8] *See* Joshua Landau, "Sunshine: Eclipse Promises Not To Sue Californians", *Patent Progress* (May 29, 2019), https://www.patentprogress.org/2019/05/29/sunshine-eclipse-promises-not-to-sue-californians /.

[9] EFF, *Saved by Alice* (last visited Oct. 13, 2021), https://www.eff.org/alice.

[10] Brief of the Computer & Communications Industry Association in Support of Petitioner, *HP v. Berkheimer*, Case No. 18-415 (2018), https://www.ccianet.org/wp-content/uploads/2018/11/2018-11-13-Berkheimer-Amicus.pdf.

[11] Unified Patents, *2020 Patent Dispute Report: Year in Review* (Jan. 1, 2021), https://www.unifiedpatents.com/insights/2020-patent-dispute-report-year-in-review. While the Unified Patents report identifies a slight increase in 2020, that is likely due to the combined impacts of Judge Albright's court in Waco and the changes made to IPR over the past few years. The post-2014 decline in litigation is consistent with *Alice* reducing litigation frequency.

[12] Mark Lemley & Samantha Zyontz, *Does Alice Target Patent Trolls?*, 18 J. OF EMPIRICAL LEGAL STUDIES 47, 72 (2021).

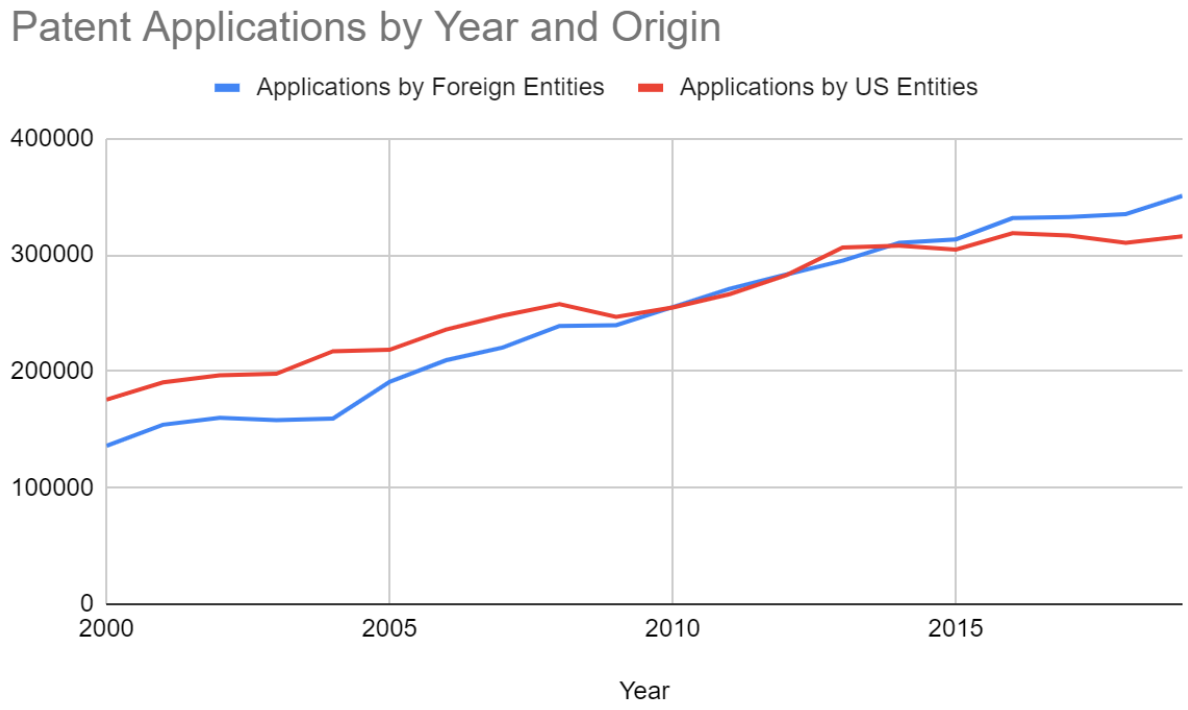
[13] *Id*.

In short, there is no reason to change course from the current patentable subject matter jurisprudence. The patent system is impacted by patentable subject matter jurisprudence, but that impact is positive.

II. Subject Matter Jurisprudence Has Not Harmed International Competitiveness

Several questions posed in the Request ask for feedback on how the current state of patent eligibility affects the global strength of intellectual property or the U.S. economy.

In analyzing these impacts, it is crucial to remember that U.S. patents are available to applicants from any country in the world—indeed, more than half of U.S. patents issue to foreign applicants. As illustrated in the graph below, taken from USPTO Performance and Accountability Report data, foreign applicants have not been deterred by changes like *Alice* and *Bilski*. Had those cases produced a negative impact on the worldwide perception of the U.S. patent system, we would expect to see foreign applicants reduce the rate at which they file U.S. patent applications. However, there is no evidence of an impact on foreign applicants filing for U.S. patents, suggesting that the international perception of the strength of U.S. intellectual property has not been negatively impacted by those decisions.



Similarly, the internal U.S. perception of intellectual property does not appear to have been harmed. The flat application rate from U.S. applicants over the past few years precedes the *Alice* decision, suggesting that it is not due to *Alice*, and the post-*Bilski* increase from 2010-2013 suggests that subject matter eligibility jurisprudence is not the cause of the flat trend in U.S.-based applicants. Taken as a whole, the evidence from patent filings suggests that the *Alice* and *Bilski* decisions have not had a negative impact on the strength of U.S. intellectual property.

There is a single law review article that claims that patent eligibility jurisprudence in the U.S. has resulted in a significant number of U.S. applications being rejected while equivalents are granted overseas.[14] This article relies on flatly erroneous data. The study claims to identify 1,694 patent applications that were rejected and abandoned "on the ground that they [we]re ineligible for patent protection under § 101" but were granted by the EPO or CNIPA.[15] A recent case study reviewed a random sample of 10 percent (170) of these applications.[16] That case study found that 24% of reviewed applications had either never faced an eligibility rejection or had overcome it before abandonment.[17] A further 61% were rejected on multiple grounds at the time of abandonment, suggesting that the USPTO located art that other patent agencies did not find or that the foreign claims were significantly different, and certainly rendering the statement that they were abandoned due to eligibility rejections completely inaccurate.[18] And many of the applications were abandoned in favor of continuation applications, a number of which have subsequently issued.[19] Finally, within the random sample, more than 75% of reviewed applications were filed by foreign inventors and/or assignees, further suggesting that eligibility jurisprudence is not negatively affecting U.S. innovators.

Given the consistent increase in applications by both U.S. and foreign inventors, and the lack of any inflection around 2014 for either, there is no reason to think that subject matter eligibility jurisprudence has had a significant impact on the global perception of the strength of a U.S. patent or even of the overall U.S. perception.

III. Subject Matter Eligibility Jurisprudence Helps U.S.-Based R&D

Question 6 asks whether patent eligibility jurisprudence has caused a shift in the site of research and development activities. To the limited extent that it has, it has caused companies to shift research to the United States, not away.

Because a patent is an exclusionary asset, not a right to practice the invention, and because patents can be filed in any jurisdiction regardless of the location in which research was conducted, there is little positive association between patenting and research and development. However, an overly aggressive patent litigation climate can deter research and development. For example, a company that conducts AI research and development in the United States potentially risks having its entire R&D process disrupted and its worldwide profits available for damages for a suit based on a U.S. patent. If AI research and development is conducted overseas, then only U.S. sales would be at risk from a U.S. patent.

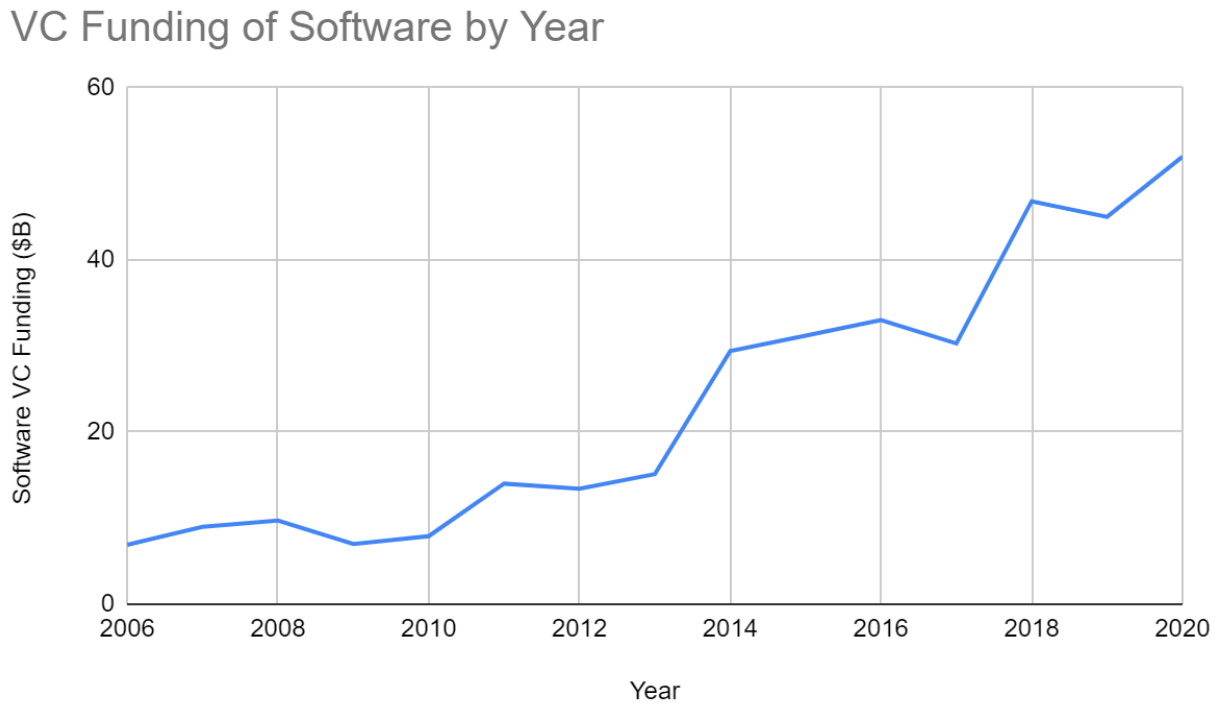
As a result, decisions like *Alice* and *Bilski* have had a positive impact on U.S.-based research and development by ensuring that innovators can protect themselves from low-quality

[14] Kevin Madigan & Adam Mossoff, *Turning Gold to Lead: How Patent Eligibility is Undermining U.S. Leadership in Innovation*, 24 GEORGE MASON L. REV. 939 (2017).
[15] *Id.* at 942.
[16] Abby Rives, *A Brief Case Study in Policy-Relevant Empirical Assessments: The Shortcomings of Counting Patents by Country to Inform Patent Eligibility in the U.S.*, Engine Advocacy (Oct. 12, 2021), https://tinyurl.com/rivescasestudy.
[17] *Id.*
[18] *Id.*
[19] *Id.* at 2.

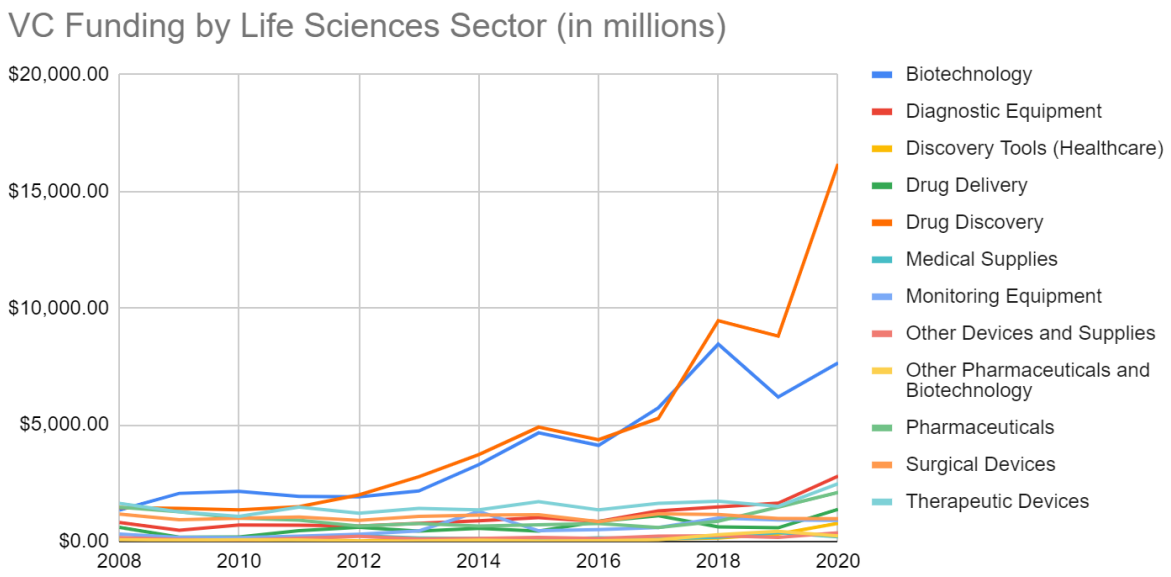
patent assertions, while not preventing innovators from obtaining their own patents on meaningful innovations.

IV. Venture Capital Data Suggests No Negative Impact From Subject Matter Eligibility

Venture capital represents one way to understand the potential impact of legal changes on early stage high-growth companies. Venture capital data strongly corroborates the conclusion that subject matter eligibility has not negatively impacted funding of venture-stage companies.



For example, data on venture capital deals provided by NVCA/PitchBook shows that investment in the software sector has increased post-*Alice*. Relatively flat investment pre-*Bilski* is replaced by a consistent trend of increase post-*Alice*. This suggests that for venture capitalists interested in software investments, the patent eligibility decisions do not represent a significant headwind preventing investments.



PitchBook also provides a more detailed breakdown within the life sciences sector. Examining life sciences VC data by sector, there is no apparent impact from the *Mayo* and *Myriad* decisions. Sectors more likely to have been impacted by those decisions—for example, biotechnology, diagnostic equipment, and drug discovery—have all shown consistent growth after the *Mayo* and *Myriad* cases.

There is one study, conducted by Prof. David Taylor, that suggests that venture capitalists find patentable subject matter jurisprudence to be of concern.[20] However, there are numerous flaws in that study. The study relies on voluntary responses, which is likely to bias responses towards those more concerned with patents, especially given that the response rate was approximately 3%.[21] Respondent demographics in the survey support this criticism, with significant over-representation from IT and life sciences as well as early-stage funders compared to the general VC population.[22] Even more concerning is the wording of the questions. The questions are directed to respondents who are not experts in patent law, but use the word "patentable" or the phrase "patent eligibility."[23] At the same time, the majority of survey respondents indicated they were not familiar with any of the key patentable subject matter cases.[24] And even for respondents who were familiar, the questions using "patent eligibility" preceded the familiarity question[25], meaning that these respondents most likely interpreted "patent eligibility" as "the ability to obtain a patent," not as a reference to patentable subject matter jurisprudence. These problems call into question the results Taylor obtained. But even taking these problems into account, the Taylor study still finds that the majority of respondents have not made changes to their investment decisions due to patentable subject matter jurisprudence.[26] In fact, the majority of respondents in the area of construction, software,

[20] David Taylor, *Patent Eligibility and Investment*, 41 CARDOZO L. REV. 2019 (2020).
[21] *Id.* at 2044, 2047.
[22] *Id.* at 2051-52.
[23] *Id.* at 2095.
[24] *Id.* at 2077.
[25] *Id.* at 2095, 2098.
[26] *Id.* at 2112.

transportation, communications, and energy technologies indicated they would not change their VC investment behavior if software patents were completely eliminated or would even invest more.

Given the available evidence, there is no reason to believe that the current state of patent eligibility jurisprudence has had an overall negative impact on venture capital investment.

V. Application Class Data Suggests No Evidence For Shifts Out Of Critical Areas

Examining data from application classes that may theoretically be most impacted by patentable subject matter further supports the conclusion that patentable subject matter has not negatively impacted innovation in critical areas such as AI and quantum computing. Instead, its primary impact has been on business method patents.

Prior USPTO research supports this basic conclusion. In a recent study[27], the USPTO found that AI patenting experienced a slowdown in the late 2000s, but that after the *Bilski* and *Alice* decisions in 2010 and 2014, AI patenting again increased rapidly. This increase suggests that, at a minimum, these decisions do not appear to have hindered AI innovation and may in fact have accelerated it. Given the importance of AI and machine learning in a variety of areas and the likelihood that restoring the pre-*Alice* patentable subject matter jurisprudence would cause firms to be less willing to invest in AI technologies due to the negative impacts of widespread litigation, the post-*Alice* status quo is worth preserving.

Similarly, quantum computing research has not seen negative impacts from § 101 jurisprudence. A quantum computing landscape report from 2017 showed rapid growth in quantum computing patent applications after 2014[28]; similar reporting from another patent analytics service showed that that growth has only accelerated since 2017.[29] Quantum computing too appears to have only benefited from the Supreme Court's changes to patentable subject matter jurisprudence.

Finally, examining the USPTO's application-level data set to look at impacted art units, there is strong evidence that the primary impact of *Alice* has been to increase rejections of business method patents.[30] Essentially the entirety of the post-*Alice* increase in rejections occurred in business method art units in Tech Center (TC) 3600. Further examining the data, minor increases in other tech centers such as TC3700 also appear to be primarily related to method patents that relate to specific businesses and are classed into those art units. Examples include rejections in art units such as methods for games (AU3714), educational methods (AU3715), and methods for video game matchmaking (AU3716). Given that business method

---

[27] *Inventing AI* at Fig. 2.
[28] Patinformatics, *Practical Quantum Computing: A Patent Landscape Report* (2017), https://tinyurl.com/quantumlandscapereport.
[29] IFI CLAIMS, *Fast Growing Technologies of 2020* (2020), https://www.ificlaims.com/rankings-tech-growth-2020.htm.
[30] *See* Joshua Landau, "Increase in § 101 Rejections Due Almost Entirely To Rejected Business Method Patents", *Patent Progress* (Dec. 6, 2018); https://www.patentprogress.org/2018/12/06/increase-in-%C2%A7-101-rejections-due-almost-entirely-to-rejected-business-methods/; *see also* Colleen Chien & Jiun Ying Wu, *Decoding Patentable Subject Matter*, PATENTLY-O PAT. L.J. 1 (2018).

patents are of questionable origin[31] and value[32], a rule which negatively impacts business methods but positively impacts patent law overall is worth retaining.

In sum, there is no evidence that patentable subject matter jurisprudence has negatively impacted critical emerging technologies like AI and quantum computing. Indeed, the evidence suggests that subject matter eligibility jurisprudence may have helped those areas grow more rapidly than they would have otherwise.

VI. Conclusion

The current state of patentable subject matter jurisprudence is working well and should be retained. To the extent that modifications are pursued, care should be given to ensuring that the positive impacts on litigation from the availability of early-stage resolution and the limiting of the availability of business method patents are maintained.

Respectfully submitted,

Joshua Landau
Reg. No. 71,491
Patent Counsel
Computer & Communications Industry Association
25 Massachusetts Ave NW
Suite 300C
Washington, DC 20001
jlandau@ccianet.org

[31] *See, e.g.*, *Bilski v. Kappos*, 561 U.S. 593, 3231 (2010) ("For centuries, it was considered well established that a series of steps for conducting business was not, in itself, patentable") (Stevens, J., dissenting, joined by Sotomayor, J., Breyer, J., and Ginsburg, J.).

[32] Rochelle Dreyfuss, *Are Business Method Patents Bad For Business?*, 16 SANTA CLARA HIGH TECH. L.J. 263 (2000) (business method patents "adversely affect innovation, and worse, the economy"); Sridhar Srinivasan, *Do Weaker Patents Induce Greater Research Investments?* (Dec. 22, 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3185148.