

May 15, 2023

The Honorable Katherine Vidal  
Under Secretary of Commerce for Intellectual Property  
and Director of the U.S. Patent and Trademark Office  
600 Dulany Street  
Alexandria, Virginia 22314

**RE: Comments of ACT | The App Association to the United States Patent and Trademark Office's Request for Comments Regarding Artificial Intelligence and Inventorship**

Dear Director Vidal:

ACT | The App Association (the App Association) provides comments to the United States Patent and Trademark Office (USPTO) request for comments (RFC) *regarding artificial intelligence (AI) and Inventorship*<sup>1</sup>

**I. Statement of Interest**

The App Association is a policy trade association for the small business technology developer community. Our members are entrepreneurs, innovators, and independent developers within the global app ecosystem that engage with verticals across every industry. We work with and for our members to promote a policy environment that rewards and inspires innovation while providing resources that help them raise capital, create jobs, and continue to build incredible technology. App developers like our members also play a critical role in developing entertainment products such as streaming video platforms, video games, and other content portals that rely on intellectual property protections. The value of the ecosystem the App Association represents—which we call the app ecosystem—is approximately \$1.8 trillion and is responsible for 6.1 million American jobs, while serving as a key driver of the \$8 trillion internet of things (IoT) revolution.<sup>2</sup>

The app ecosystem's success, reliant on continued innovation and investment in connected devices and interfaces, hinges on the sufficiency of key legal and regulatory frameworks, including those surrounding the question of patent inventorship. Patents allow small business innovators to protect their investments in innovation, attract venture capital, and establish and maintain a competitive position in the marketplace. As more devices throughout the consumer and enterprise spheres become connected to the internet—often referred to as IoT—App Association members' innovations will remain the interface for communicating with these devices.

**II. Responses to Questions Posed in the Request for Comments**

**A. *How is AI, including machine learning, currently being used in the invention creation process? Please provide specific examples. Are any of***

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<sup>1</sup> 88 Fed. Reg. 9492

<sup>2</sup> The App Association, State of the U.S. App Economy 2020, 7th Ed., <https://actonline.org/wp-content/uploads/2020-App-economy-Report.pdf>.

***these contributions significant enough to rise to the level of a joint inventor if they were contributed by a human? (Question #1)***

AI systems are increasing efficiency in the development of new technologies and products by reducing waste (i.e., cost and time), streamlining repeatable tasks, and optimizing solutions. AI tools have made it possible for innovators to reduce the number of technical tools used in invention creation and focus on training and instructing AI to yield outputs that anticipate consumer needs and lead to commercial success. For software developers, including App Association members, AI systems, particularly machine learning (ML) tools, have become invaluable to the invention creation process.

Software developers are learning how to work alongside AI to improve the invention creation process and further train a new generation of strong software developers. ML tools can learn repeatable tasks and detect common mistakes, issues, and risks in the software development process that would otherwise require manual intervention. Software developers use AI to run quality assurance checks that reduce the chance of human bias and error and the potential for disrupting production timelines because a critical mistake was not diagnosed early enough. While we may be able to anticipate AI systems being able to write code independently, this is not our reality today. AI tools are invaluable to the coding process but not without human instruction. In fact, even where human intervention is needed less, AI tools will never truly work alone without direction from software developers. AI supports human process and reduces time spent on simple but time-consuming tasks so that innovators can increase productivity. Past invention creation, AI used for software as a service (SaaS) or used in other maintenance of software has already proved to be instrumental in receiving feedback from consumers, diagnosing issues, and providing solutions in real time.

While AI has sophisticated the development of technologies and may even become vital to this process, the law is clear that an individual for purposes of inventorship is a “natural person.”<sup>3</sup> Therefore, the current laws, policies, and processes surrounding the use of AI systems are well positioned to answer the important question of inventorship. It is thus presently inconceivable for AI to be a joint inventor of a patent. We urge to USPTO to not preoccupy itself with edge use cases or hypotheticals that exemplify possible uses and capabilities of AI outside what we presently understand. While we can image how AI will be used in the future, we only have the knowledge to understand its ability now. If the courts or Congress decide to revisit this issue, we urge USPTO to seek industry input again to determine how to develop a detailed and robust guidance on AI and inventorship.

***B. How does the use of an AI system in the invention creation process differ from the use of other technical tools? (Question #2)***

AI systems and other technical tools do not differ in a significant way when applied to the creation of an invention. AI systems only differ from other technical tools in that they are self-learning and self-directed. However, these features do not amount to the “conception” needed to satisfy inventorship for purposes of the United States Patent Act.<sup>4</sup> The advancement of AI

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<sup>3</sup> See *Thaler v. Vidal*, No. 21-2347 (Fed. Cir. 2022), cert. denied, No. 22-919 (U.S. Apr. 24, 2023); see In re Application of Application No. 16/524,350, United States Patent Office, <https://www.uspto.gov/sites/default/files/documents/16524350.pdf>.

<sup>4</sup> The Manual of Patent Examining Procedure, Ninth Edition, Revision 07.2022, Chapter 2100, Section 2138.04, <https://mpep.uspto.gov/RDMS/MPEP/e8r9#/e8r9/d0e207607.html> (February 2023).

systems over time does not change this fact. Since “conception” is defined in relation to the inventor,<sup>5</sup> and an inventor has been interpreted by courts to be a “natural person,” AI cannot be considered an entity that can “conceive” of an invention for purposes of patent inventorship. AI solely remains an efficient tool in the invention process until and unless the Supreme Court of the United States or the United States Congress addresses this question further. Like a wrench being used in the production of an automobile, an AI system may be necessary to build the end product but cannot complete its development without human intervention. Therefore, AI systems and other technical tools do not differ with regards to determining the inventorship of a patent.

**C. *If an AI system contributes to an invention at the same level as a human who would be considered a joint inventor, is the invention patentable under current patent laws? (Question #3)***

- 1. *Could [35 U.S.C. 101](#) and [115](#) be interpreted such that the Patent Act only requires the listing of the natural person(s) who invent(s), such that inventions with additional inventive contributions from an AI system can be patented as long as the AI system is not listed as an inventor?***
- 2. *Does the current jurisprudence on inventorship and joint inventorship, including the requirement of conception, support the position that only the listing of the natural person(s) who invent(s) is required, such that inventions with additional inventive contributions from an AI system can be patented as long as the AI system is not listed as an inventor?***
- 3. *Does the number of human inventors impact the answer to the questions above?***

As identified in our previous statements, AI cannot contribute to an invention at the same level as a human. The current capabilities of AI do not amount to “conception,” or “the complete performance of the mental part of the inventive act”<sup>6</sup> needed to satisfy inventorship for purposes of the U.S. Patent Act. The advancement of AI tools may make AI more essential to the invention creation process, but the law is clear that a human can only be the inventor of a patent because innovation requires human intervention.<sup>7</sup> Therefore, AI cannot be a joint inventor on a patent and §115 of the U.S. Patent Act should not be interpreted to include AI as a contributor to an invention. The current jurisprudence supports the notion that inventive acts must be done in the mind of the inventor,<sup>8</sup> which the United States Supreme Court has confirmed is a natural being.<sup>9</sup> However, to address part two of this question, we must clarify that the question does not contemplate other reasons why a patent application may be rejected. Thus, it would not be correct to say that an invention is patentable solely because AI is not listed as an inventor. Although, listing AI as an inventor under the current jurisprudence would be cause for a rejection of the patent application, if not amended in accordance with §256 U.S. Patent Act. The number of human inventors would not change this understanding.

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<sup>5</sup> *Supra* note 4 (citing *Townsend v. Smith*, 36 F.2d 292, 295, 4 USPQ 269, 271 (CCPA 1930) (“Conception has been defined as ‘the complete performance of the mental part of the inventive act’ and it is ‘the formation in the mind of the inventor of the definite and permanent idea...’”).

<sup>6</sup> *Supra* note 4.

<sup>7</sup> See *Thaler v. Vidal*, No. 21-2347 (Fed. Cir. 2022).

<sup>8</sup> *Bosies v. Benedict*, 27 F.3d 539, 543, 30 USPQ2d 1862, 1865 (Fed. Cir. 1994)

<sup>9</sup> *Supra* note 4.

**D. Do inventions in which an AI system contributed at the same level as a joint inventor raise any significant ownership issues?**

*For example:*

- 1. Do ownership rights vest solely in the natural person(s) who invented or do those who create, train, maintain, or own the AI system have ownership rights as well? What about those whose information was used to train the AI system?**
- 2. Are there situations in which AI-generated contributions are not owned by any entity and therefore part of the public domain?**

Since AI cannot be the inventor of a patent for purposes of the U.S. Patent Act, we believe that this question is moot. As for human inventors, the default rule is that ownership initially vests in the inventor or joint inventors of a patent.<sup>10</sup>

Where there is no human inventor other than the individual who created, trained, maintained, or owned the AI system used for innovation, it would be proper to list that individual as the inventor, or a joint inventor, because they are conceiving of the definite and permanent idea that leads to the resulting invention. This understanding avoids a situation where an AI-enabled invention would be unpatentable, unowned, and part of the public domain, thus drastically disincentivizing AI-enabled innovation. This situation has already occurred in the copyright space, where a court determined that a photo taken by a monkey was not authored by the animal or the photographer who owned the camera.<sup>11</sup> Although an analysis for authorship under copyright law is fundamentally different from an analysis of inventorship under patent law, this case exemplifies that legal systems surrounding innovation and the arts do not contemplate non-human intervention.

To avoid a similar issue in the patent space, we urge USPTO to specifically provide clarity to the definition of “conception” as it applies to AI-enabled inventions. The current definition of “conception” does not contemplate technical tools, like AI, that have self-learning and self-teaching capabilities. Therefore, “conception” does not just form in the mind of the inventor, but in collaboration with technical tools, including AI systems. Such guidance would avoid a “no inventor” situation by rightfully assigning inventorship to the human that conceives of the invention through the use of advanced technical tools.

**E. Is there a need for the USPTO to expand its current guidance on inventorship to address situations in which AI significantly contributes to an invention? How should the significance of a contribution be assessed?**

USPTO should expand its current guidance on inventorship as appropriate. For example, USPTO should provide for an open definition of AI since this technology is still changing and adapting. USPTO should also expand its current guidance on analyzing “conception” for purposes of establishing inventorship. Innovators, including App Association members, utilize AI to enhance the efficiency of the invention creation process and limit the use of cost and time resources. While human intervention will always be necessary for invention, AI tools are increasingly becoming fundamental to the process. Therefore, the current examination of “conception” must integrate this understanding.

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<sup>10</sup> The Manual of Patent Examining Procedure, Ninth Edition, Revision 07.2022, Chapter 0300, Section 301, <https://mpep.uspto.gov/RDMS/MPEP/e8r9#/e8r9/d0e17683.html> (February 2023).

<sup>11</sup> See *Naruto v. Slater*, No. 16-15469 (9th Cir. 2018).

**F. *Should the USPTO require applicants to provide an explanation of contributions AI systems made to inventions claimed in patent applications? If so, how should that be implemented, and what level of contributions should be disclosed? Should contributions to inventions made by AI systems be treated differently from contributions made by other (i.e., non-AI) computer systems?***

Additional disclosures are helpful so long as they are pertinent to examination and not unduly burdensome on the patent applicant without public benefit. App Association members are small and medium-sized inventors that often operate with minimal resources and go through the patent application process without professional or legal assistance. We do not believe that additional disclosure is a solution to strengthening the examination around inventorship of AI-enabled inventions, as some level of an automated tool is used routinely in most all technology development today (e.g., even basic spreadsheets enable automated calculations, and we question the public benefit of requiring an explanation of such a use as AI contributing to an invention). Rather, we believe that the USPTO should make clear that U.S. jurisprudence only contemplates humans as the inventors of patents. Unless the courts or Congress decide to address this issue by allowing AI systems to be named patent inventors, additional disclosures seem unnecessary and a barrier to small innovators.

**G. *What additional steps, if any, should the USPTO take to further incentivize AI-enabled innovation (i.e., innovation in which machine learning or other computational techniques play a significant role in the invention creation process)? (Question #7)***

USPTO should clarify the Office's treatment of AI-enabled inventions beyond the issue of inventorship to incent such innovations. One area where USPTO could clarify the use of AI systems in the invention creation process is with regards to Section 101 patent subject matter eligibility. Clarifying Section 101 enables innovation and plays a critical role in weeding out low-quality patents that are routinely asserted against accused infringers, including startups and small businesses. The lack of definition on key terms in Section 101 has led to the current judicial framework retaining ambiguity around both the ability to get a valid patent on AI-enabled inventions and the threat of lawsuits from issued but potentially invalid patents on various aspects of AI.

The Manual of Patent Examining Procedure (MPEP) must address the unique nature of AI when applying the *Alice/Mayo* framework for improvements to the functioning of a computer, technology, or technical field. A variety of elements should be incorporated into the MPEP when evaluating and determining an AI invention's patent eligibility. Elements that deserve consideration during the patentability process include (1) the database structure that will train the AI; (2) the algorithm; (3) the method of training the algorithm; and (4) the outputs produced from the AI application. USPTO should use the existing requirements for software patentability as a starting point to identify necessary elements of patentable AI inventions and applications.

AI patent examiners may face greater obstacles when looking at claim and disclosure requirements. Generally, applicants with complex AI inventions should seek alternative ways of describing their invention to meet relevant patent eligibility requirements. After producing an AI invention there may be multiple applications of the AI within the sector. Inventors may find

alternative uses to solve a different problem or to build from the AI to create a different invention. As such, technological advancements using AI applications should be evaluated for their patentable characteristics and purpose as opposed to recognizing a former AI invention claim. When the *Alice/Mayo* framework is applied to AI inventions, an examiner should evaluate the practical application of AI in a claim by determining if the AI amounts to a “particular machine”<sup>12</sup> that integrates a judicial exception or adds significantly more. We note our support for the USPTO’s appropriate clarification that an AI machine does not qualify as an inventor under the Patent Act, which has now been reinforced by the U.S. Court of Appeals for the Federal Circuit in *Thaler v. Vidal*.<sup>13</sup> We encourage USPTO to align its patent eligibility guidance accordingly.

The App Association is confident that existing laws in coordination with specific MPEP guidance can address these patent applications with AI components due to past experiences with computers and the internet having many additional applications. We urge USPTO to ensure that such an assessment is made with conclusions based on concrete foundations as opposed to edge use cases. We also urge USPTO to thoroughly train examiners with AI systems that may be used in the patent prosecution process, such as language learning model (LLM) tools.

**H. *What additional steps, if any, should the USPTO take to mitigate harms and risks from AI-enabled innovation? In what ways could the USPTO promote the best practices outlined in the Blueprint for an AI Bill and the AI Risk Management Framework within the innovation ecosystem? (Question #8)***

The App Association encourages USPTO’s alignment and collaboration with the Administration and other federal agencies with respect to AI and intellectual property. The Blueprint for an AI Bill and the AI Risk Management Framework, and other AI policies already issued or in development (some sector-specific), should be appropriately deferred to in advancing broader AI policy goals that are broader than the USPTO’s remit.

**I. *What statutory changes, if any, should be considered as to U.S. inventorship law, and what consequences do you foresee for those statutory changes? (Question #9)***

*For example:*

- 1. *Should AI systems be made eligible to be listed as an inventor? Does allowing AI systems to be listed as an inventor promote and incentivize innovation?***
- 2. *Should listing an inventor remain a requirement for a U.S. patent?***

No, AI systems should not be made eligible to be listed as an inventor in statute. The purpose of the U.S. patent system is to incent natural persons in the publication and commercialization of inventions to advance the public good, as contemplated by Article 1, Clause 8 of the United States Constitution. A statutory changes to include AI as eligible inventors would seismically alter the U.S. patent system by prompting a massive number of filings of unpredictable quality, and, more broadly, would serve as a de facto declaration of personhood for AI. Such questions are only appropriately answered by Congress.

<sup>12</sup> The Manual of Patent Examining Procedure, Ninth Edition, Revision 10.2019, Chapter 2100, Section 2106.05(b), <https://www.uspto.gov/web/offices/pac/mpep/mpep-2100.html> (June 2020).

<sup>13</sup> *Supra* note 7.



**J. *Are there any laws or practices in other countries that effectively address inventorship for inventions with significant contributions from AI systems?***

Numerous jurisdictions aside from the United States have appropriately restricted inventorship to natural persons, consistent with the approach of the United States. While tracking developments in other jurisdictions will remain important, we urge for U.S. leadership in patent policy, including with respect to AI inventorship questions.

**K. *The USPTO plans to continue engaging with stakeholders on the intersection of AI and intellectual property. What areas of focus (e.g., obviousness, disclosure, data protection) should the USPTO prioritize in future engagements? (Question #11)***

The App Association appreciates USPTO's efforts to engage with stakeholders on issues that affect AI and IP, and encourages its further developing on all relevant areas, including obviousness, disclosure, and data protection. USPTO should also consider the threat of perpetual patenting machines on the U.S. patent system's application and examination procedures. Laws, policies, and processes surrounding the use of AI systems are better positioned for purposes of analyzing invention creation than patent prosecution. AI algorithms, including large language models (LLMs) have the capabilities of learning how to efficiently undergo the patent application and examination process. While this process will reduce the friction between invention and receiving a patent for patent applicants, the use of LLMs in the patent application and examination process will surely lead to increased filings of patent applications at USPTO. Perpetual patenting machine-enabled bad actors may use LLMs to provide the Office with patent applications that are seemingly issuable but may include overbroad claims or otherwise provide for low-quality patents. Such low-quality patents can then be asserted against alleged infringers for profit, crippling U.S. innovation. As such, USPTO should be prepared to deal with an increased load of applications due to AI-driven perpetual patenting machines.

One solution is to equip patent examiners with tools and resources to identify and approach patent applications by AI systems. Patent examiners should be provided specific training that utilizes AI tools, including LLMs, to review patent submissions and identify AI-generated patent applications. Examiners should also be provided with procedural rules for analyzing the use of AI in the patent application and examination process.

The concern for perpetual patenting machines provides a broader justification for securing and strengthening post-grant proceedings at the Patent Trial and Appeals Board (PTAB). When enacting the America Invents Act (AIA) in 2011, Congress sought "to establish a more efficient and streamlined patent system that will improve patent quality and limit unnecessary and counterproductive litigation costs."<sup>14</sup> Congress also recognized "a growing sense that questionable patents [were] too easily obtained and are too difficult to challenge."<sup>15</sup> As AI systems, such as LLMs, become a heavily utilized tool for perpetual patenting, the potential for the issuance of low-quality and overbroad patents will likely increase. Small businesses, the main drivers of the U.S. economy, were at the core of Congress' decision to enact the AIA,

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<sup>14</sup> H. R. Rep. No. 112-98, pt. 1, p. 40 (2011).

<sup>15</sup> *Id.* at p. 39 (2011).

especially the *inter partes* review (IPR) process. IPR provides a more affordable and efficient recourse for businesses of all sizes to exercise their rights – whether defending the validity of their granted patent or challenging a granted patent. Since its creation, IPR, administered by PTAB, has largely worked as intended and has reduced unnecessary litigation, saving \$2.3 billion in just the first five years.<sup>16</sup> The IPR process allows App Association members to have a fair and dispassionate tribunal to first assess whether the patent used against them was properly reviewed and issued. Our members have limited resources for litigation, and the IPR process successfully provides a much-needed alternative for these small businesses that do not have the ability to withstand years of expensive federal court patent litigation that can easily cost millions of dollars. Low-quality patent holders, including many non-practicing entities (NPEs), often rely on the fact that many of these small businesses do not have the capital to fight a case and use that to their advantage to force them into licensing arrangements accompanied with terms greatly benefiting the litigant. IPRs protect our members from some of the financial and temporal burdens associated with proceedings in front of Article III tribunals. Such proceedings are likely to be frivolously enforced against good faith innovators, including those operating with minimal resources. Therefore, a strong PTAB system is more crucial than ever to challenge the validity of low-quality patents and maintain the strength of the U.S. patent system. We urge USPTO to consider the potential harms to PTAB enabled by AI-driven perpetual patenting machines when considering modifications to the rules of practice for PTAB proceedings, on which we look forward to providing detailed comments.<sup>17</sup>

### III. Conclusion

The App Association appreciates the opportunity to provide comments to USPTO regarding artificial intelligence and inventorship. We urge USPTO to continue considering issues that may arise in the U.S. patent system as a result of AI-enabled inventions.

Sincerely,



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<sup>16</sup> See, e.g., Josh Landau, *Inter Partes Review: Five Years, Over \$2 Billion Saved*, PATENT PROGRESS (Sept. 14, 2017).

<sup>17</sup> See 88 FR 24503.



