No. 22-919

IN THE

Supreme Court of the United States

STEPHEN THALER,

Petitioner,

v.

KATHERINE K. VIDAL, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE, UNITED STATES PATENT AND TRADEMARK OFFICE, *et al.*,

Respondents.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF *AMICI CURIAE* BROOKLYN LAW INCUBATOR & POLICY (BLIP) CLINIC AND PROF. DR. PETER GEORG PICHT IN SUPPORT OF PETITIONER

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INTEREST OF THE *AMICI CURIAE*

Amici Curiae submit this brief in support of Petitioner, urging the Court to grant Certiorari and review the decision of the Court of Appeals for the Federal Circuit.[1] *Amici* are:

Brooklyn Law Incubator & Policy ("BLIP") Clinic. Founded in 2008, the BLIP Clinic is a law school clinic that functions as a modern, technology-oriented law firm. BLIP grew out of the recognition that the Internet and digital technology are forcing law and policy beyond traditional legal structures/strictures. BLIP provides *pro bono* legal support to socially virtuous, bootstrapped startups, often pursuing ventures that analog laws have not anticipated. To that end, BLIP often advocates for policy reform to advance the needs of startups and society in the Digital Age. The clinic has worked with more than 1,000 clients on incorporation, intellectual property protection, licensing agreements, web documentation, and has also provided policy and litigation support and other general legal counseling. Many clients are accepted based on the extent to which the client's issues implicate Internet or digital economy issues of first impression or issues that require creative legal representation. In addition to providing direct legal support for individual clients,

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[1] The parties have consented to the filing of this brief. No counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *Amici Curiae*, their members or their counsel made a monetary contribution to the preparation or submission of this brief.

BLIP often serves to advocate as a collective voice of startups, entrepreneurs, and innovators.

Prof. Dr. Peter Georg Picht, LL.M. Peter Georg Picht studied law at Munich University and Yale Law School, did his PhD (summa cum laude) at the Max Planck Institute for Innovation and Competition, and holds a masters degree from Yale Law School. He has been working, *i.a.*, with the EU Commission's DG for Competition, with the Max Planck Institute for Innovation and Competition (Senior and Affiliated Research Fellow) as well as with two international law firms. Prof. Picht holds a chair for Business, Competition and Intellectual Property Law at the University of Zurich and is head of the University's Center for Intellectual Property and Competition Law ("CIPCO"). He regularly engages in advisory work for the OECD, the EU Commission, and Swiss governmental agencies. Prof. Picht's further affiliations include board memberships in the Academic Society for Competition Law ("ASCOLA"), the Association Européenne du Droit Èconomique ("AIDE"), and the Munich IP Dispute Resolution Forum. He is a regular guest professor at King's College, London, the European University Institute, Florence, and Kyoto University. Prof. Picht's academic teaching and writing, as well as his counseling activity, focus on intellectual property law, competition law, and international private and procedural law, in particular commercial arbitration (mainly IP and Competition), trusts and estates, corporations.

Amici recognize that Artificial Intelligence ("AI") has revolutionized many aspects of everyday life. Recent technological breakthroughs have

resulted in the development and growth of generative AI systems capable of generating novel outputs based on their training data. This type of AI has proven especially useful in streamlining and perfecting the development and discovery of new technologies. Simply put, technology can now invent technology. However, as is often the case, the law has not kept up with the advance of technology, and startups, entrepreneurs, and innovators have been left alone to navigate the intricacies of using and developing AI with little to no guidance. Over the past few years, the Unites States Government finally announced unambiguous laws that clarified its stance on AI and purported to create a national AI strategy. Executive Order No. 13,859 ("EO 13,859"), the National Artificial Intelligence Initiative Act of 2020 ("NAIIA"), and the Creating Helpful Incentives to Produce Semiconductors and Science Act of 2022 ("CHIPS Act") sent a clear message: the Government is eager and willing to support and fund efforts to develop new sophisticated AI and to harness that technology to further improve the welfare of the country. *See* Exec. Order No. 13,859, 84 Fed. Reg. 3,967 (Feb. 11, 2019); National Artificial Intelligence Initiative Act, H.R. 6216, 116th Cong. (2020); CHIPS and Science Act of 2022, Pub. L. No. 117-167, 136 Stat. 1366 (2022).

Despite the Government's unequivocal mission, the Federal Circuit handed down a decision that created confusion in a field that had just gained clarity. As an advocate and counsel to startups, entrepreneurs, and innovators, the BLIP Clinic has a unique interest in obtaining clarity for its clients that have used or may use AI to generate new inventions. Similarly, as an academic, head of the CIPCO, advisor to the Swiss patent office on matters of AI and IP, and

member of the AI and IP working group at the Max Planck Institute for Innovation and Competition, Professor Picht has a strong interest in obtaining clarity on key questions of exceptional global relevance and strategic importance regarding AI and the patent system. With these perspectives in mind, *Amici* urge the Court to grant review of the question presented.

SUMMARY OF ARGUMENT

I. The Federal Circuit's ruling in *Thaler v. Vidal*, 43 F.4th 1207 (Fed. Cir. 2022) may have a chilling effect on innovation and scientific discovery in the United States because it conflicts with Executive and Legislative efforts in furtherance of such goals. *See* Exec. Order No. 13,859, 84 Fed. Reg. 3,967 (Feb. 11, 2019); National Artificial Intelligence Initiative Act, H.R. 6216, 116th Cong. (2020); CHIPS and Science Act of 2022, Pub. L. No. 117-167, 136 Stat. 1366 (2022).

The decision below negatively impacts the research and development of advanced generative AI and places companies and startups in a difficult and uncertain situation. Without the ability to receive patent protection and funds as laid out in EO 13,859 and NAIIA, companies will be forced to reduce expenditures on AI-related ventures. As companies look elsewhere to find a home for their AI-invented products, American dominance in the technology and AI space is threatened.

In principle, autonomous AI is capable of creating products that are otherwise patentable. *See* Tim W. Dornis, *Artificial Intelligence and Innovation: The End of Patent Law as We Know It*, 23 YALE J. OF

L. & TECH. 97, 118 (2020); Shlomit Yanisky-Ravid, *When Artificial Intelligence Systems Produce Inventions: The 3A Era and an Alternative Model for Patent Law*, 39 CARDOZO L. REV. 2215, 2231 (2018). The denial of patent protection to AI-generated inventions muddies the water for companies that are actively implementing AI in the inventive and development processes for chips.

II. Judicial clarification is needed regarding the designation of AI as inventor in patent applications as well as the requisite descriptiveness of the inventive contribution of AI. In Europe, courts have proposed workarounds for long-standing laws that are in conflict with today's innovations – more specifically, solutions to the human inventor issue that AI brought about. *See* Daria Kim, *The Paradox of the DABUS Judgment of the German Federal Patent Court*, 71 GRUR INT'L 1162, 1164–65 (2022).

A person having ordinary skill in the art ("PHOSITA") is a yardstick against which innovation is assessed. The implementation of AI in the inventive process, or even in autonomous invention, could potentially impact the PHOSITA standard.

The Court should review the Federal Circuit's decision and clarify how companies should proceed with the patenting of AI inventions and the affected PHOSITA standard.

ARGUMENT

This Court should grant Certiorari to review the decision of the Court of Appeals for the Federal Circuit. The Court treated the question of who, or what, can be an inventor in a vacuum and failed to address the implications of such a decision on recent

Executive Orders and Legislative Acts aimed at supporting and enhancing AI technology for the benefit of the United States. Specifically, the decision conflicts with EO 13,859 and NAIIA, and unduly limits the scope of the CHIPS Act. The decision below discourages the development of highly sophisticated AI systems and creates confusion surrounding the availability of funding and IP protection for companies that use generative AI. The Federal Circuit, holding that only a natural person may be an inventor, implicitly held that AI-generated inventions may not receive patent protection. If this implied ruling is not clarified or further regulated, the United States might fail to maintain its hegemony in AI and never meet the goals it set out to achieve. Additionally, the petition concerns an issue of exceptional importance, threatening to reshape the global IP and AI arenas.

I. THE COURT SHOULD REVIEW THE FEDERAL CIRCUIT'S RULING IN LIGHT OF RECENT EXECUTIVE AND LEGISLATIVE EFFORTS AIMED AT SUPPORTING AND ENHANCING AI TECHNOLOGY.

The Court of Appeals answered the question of who, or what may be an inventor under the Patent Act. *Thaler*, 43 F.4th at 1209. In doing so, it focused its analysis exclusively on the language of the Act and concluded that only a natural person may be an inventor. *Id.* What the Court failed to do, however, is carry its holding to its logical conclusion: that AI-generated inventions are unpatentable. That conclusion has implications that reach further than the four corners of the Patent Act. Yet, no further clarification was provided by the Court.

AI has become an integral part of everyday life. Over the last few decades, society has learned to rely on AI to perform and improve a variety of tasks, from the most mundane – such as movie recommendations – to the most complex – such as space exploration and drug development. See Scott J. Shackelford & Rachel Dockery, *Governing AI*, 30 CORNELL J. L. & PUB. POL'Y 279, 290–95 (2020). Its usefulness and importance for a country's economic and societal well-being translated into a wave of laws and regulations to support and enhance AI technology. In the United States, these efforts recognize the paramount importance of maintaining the nation's hegemony in AI and purport to foster a fertile environment for inventors and AI to flourish. In order to protect the goals and resolutions established by the Legislative and Executive branches, this Court should grant Certiorari and review the Federal Circuit's decision in the context of the current national AI framework.

A. The Implications of the Federal Circuit's Holding Pose a Serious Threat to the United States' Leadership in AI and its Overall Financial and Societal Well-being.

Experts estimate that AI will significantly impact the global economy by the end of the decade. *See* PWC, SIZING THE PRIZE: PWC'S GLOBAL ARTIFICIAL INTELLIGENCE STUDY: EXPLOITING THE AI REVOLUTION, 3 (2017) ("AI could contribute up to $15.7 trillion to the global economy in 2030."). Among the sectors that are to benefit the most from the use of AI are healthcare, transportation, and cybersecurity. *See* Scott J. Shackelford & Rachel Dockery, *Governing AI*, 30 CORNELL J. L. & PUB. POL'Y 279, 293–95 (2020).

Most nations have long recognized the benefit of establishing a cohesive national AI strategy to regulate the development of competitive AI technology for their own advantage. *See id.* at 292. (listing the countries that, as of 2020, had issued national plans, guidelines, or codes related to AI). In 2019, President Trump issued EO 13,859 to do just that. The "Maintaining American Leadership in Artificial Intelligence" Order recognized that "[c]ontinued American leadership in AI is of paramount importance to maintaining the economic and national security of the United States." Exec. Order No. 13,859, 84 Fed. Reg. 3,967 (Feb. 11, 2019). In unequivocal language, the Order called for a unified effort by executive departments and agencies and mandated that the "United States must drive technological breakthroughs in AI . . . to promote scientific discovery, economic competitiveness, and national security." *Id.* Among others, the Order set two clear policies and practices for executive agencies to follow: investing in AI research and development ("R&D") and removing barriers to AI innovation. *Id.* In its *Thaler v. Vidal* decision, however, the Federal Circuit managed to disregard both goals.

The Executive branch is not the only branch that has expressed a clear and unequivocal demand for the advancement of AI technology. In 2020, Congress passed a bipartisan legislation that mirrored the goals and motivations of EO 13,859. NAIIA provides for "a coordinated program across the entire Federal government to accelerate AI research and application for the Nation's economic prosperity and national security." *Public Sector Engagements*, USPTO, https://www.uspto.gov/initiatives/artificial-intelligence/public-sector-engagements (last visited

Mar. 29, 2023); *see* National Artificial Intelligence Initiative Act, H.R. 6216, 116th Cong. (2020). The Act established a National Artificial Intelligence Initiative and National AI Initiative Office to oversee the development and implementation of the national strategy for AI. National Artificial Intelligence Initiative Act, H.R. 6216, 116th Cong. (2020). The Act provides funding for AI research and development, establishes a national AI advisory committee, and seeks to study the economic impact of AI to provide insights into the potential benefits and challenges associated with the adoption of AI technology. *Id.*

By implicitly holding that AI-generated inventions are unpatentable, the Court ignored the clear instructions delineated by EO 13,859 and NAIIA, and set a dangerous obstacle in the nation's path to achieving its goals:

1. The decision below will have a harmful impact on the research and development of highly sophisticated generative AI. It is well-settled that patents drive innovation. *See* FEDERAL TRADE COMMISSION, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (2003); *see also* Celia Lerman, *Patent Strategies for Technology Startups; An Empirical Study*, 1, 1 (May 25, 2015), *available at* https://ssrn.com/abstract=2610433. Experts agree that patents "induce people to invent because of the prospect of profiting from those inventions." Marshall Phelps, *Do Patents Really Promote Innovation? A Response to The Economist*, FORBES (Sept. 16, 2015), https://www.forbes.com/sites/marshallphelps/2015/09/16/do-patents-really-promote-innovation-a-response-to-the-economist/?sh=f3939661921f. Obtaining

patents is especially important in a highly competitive field such as AI development.

By categorically denying patent protection to AI-generated inventions, the Federal Circuit removed possibly the most substantial incentive scientists have to develop highly sophisticated generative AIs. The development of that same technology, however, is sought after and encouraged by EO 13,859 and NAIIA. Remarkably, NAIIA not only makes it clear that generative AI is already on Congress' radar, but it also highlights the Government's interest in the "progress toward *artificial general intelligence.*" National Artificial Intelligence Initiative Act, § 5104 (emphasis added). Artificial general intelligence ("AGI") may be described as a highly advanced type of AI that possesses "intelligence equaled to humans" and "self-aware consciousness" that allows it "to solve problems, learn, and plan for the future." *What Is Artificial Intelligence (AI)?*, IBM, https://www.ibm.com/topics/artificial-intelligence (last visited Mar. 25, 2023). Employing generative AI could be the key to achieving AGI, yet the Federal Circuit's decision created a barrier to the development of such technology.

2. The decision below threatens the expectations of companies – especially startups – involved in the development of highly sophisticated AI. EO 13,859 and NAIIA mandate the disbursement of substantial funding to companies engaged in the research and development of AI. Historically, patents for new technologies have relied heavily on government research, and there is no reason to believe this trend does not apply to AI. *See* L. Fleming et al., *Government-Funded Research Increasingly*

Fuels Innovation, 364 SCIENCE 1139, 1140 (June 21, 2019). Startups, such as *Amici's* clients, are among the most common players that rely on government-funded research to develop patentable inventions. Under the Federal Circuit's decision, however, *Amici's* clients can no longer be sure that those funds will be available to them under EO 13,859 and NAIIA. The decision below inevitably created a framework in which companies that use generative AI to generate inventions – including, potentially, new AI technology – might not receive funding due to the unpatentability of those inventions.

3. American hegemony in AI is threatened by the court's ruling, in contrast with the AI-friendly disposition of the law. The overall purpose of NAIIA and EO 13,859 is to "ensure continued United States leadership in artificial intelligence research and development." National Artificial Intelligence Initiative Act, § 5101(a)(1). In the global arena, other countries have either granted AI-generated inventions patent protection or have begun to engage in the conversation.[2] For instance, the South African Intellectual Property Office granted DABUS a patent for its autonomously-generated inventions. *See* Cos. & Intell. Prop. Comm'n, *Patent Journal Including Trade Marks, Designs and Copyright in Cinematographic Films*, 54 PAT. J. 1, 255 (July 2021). Similarly, an Australian Federal Court held that "it is a fallacy to argue . . . that an inventor can only be

[2] *Amici* recognize that foreign proceedings and patent decisions have no bearing on this or lower courts in the United States. When discussing the government's goal of preserving the United States' hegemony in AI, however, it is vital to consider how other countries are addressing these issues.

human."[3] Saudi Arabia granted citizenship and, in conjunction, a legal identity to an AI robot. Briana Hopes, *Rights for Robots? U.S. Courts and Patent Offices Must Consider Recognizing Artificial Intelligence Systems as Patent Inventors*, 23 TUL. J. TECH. & INTELL. PROP. 119, 128 (2021). The Canadian Intellectual Property Office ("CIPO") authorized DABUS' inventor to submit a "statement on behalf of the Artificial Intelligence (AI) machine and identify, in said statement, himself as the legal representative of the machine." Sanjaya Mendis et al., *AI and Patent Law: Can AI Be an "Inventor"?*, MCCARTHY TETRAULT (May 31, 2022) https://www.mccarthy.ca/en/insights/blogs/techlex/ai-and-patent-law-can-ai-be-inventor. CIPO's statement suggests that DABUS may be eligible to receive patent protection, provided the AI is not listed as the sole inventor. *Id.* Given the AI-favorable holdings or policy implications of the aforementioned countries, the United States is at a legal disadvantage in the development of AI. The Federal Circuit's decision could hinder the United States from advancing in the global AI arena, directly in conflict with the purpose of NAIIA and EO 13,859.

B. The Federal Circuit's Decision Is Likely to Chill Inventorship and Limit the Scope of Creating Helpful Incentives to Produce Semiconductors and Science Act of 2022.

Given the United States' position as a global leader in technology, it is imperative to consider the consequences that the Federal Circuit's decision may

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[3] *Thaler v. Comm.r of Pat.*, [2021] FCA 879 1, 2 (Austl.). Though a higher court later reversed this decision, the lower court's ruling demonstrates judiciaries across the world are examining this issue.

have on other aspects of technology. In 2022, Congress enacted the CHIPS Act with the explicit purpose of "boost[ing] American semiconductor research, development, and production, [thus] ensuring U.S. leadership in the technology that forms the foundation of everything from automobiles to household appliances to defense systems." *FACT SHEET: CHIPS and Science Act Will Lower Costs, Create Jobs, Strengthen Supply Chains, and Counter China*, THE WHITE HOUSE (Aug. 9, 2022), https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/09/fact-sheet-chips-and-science-act-will-lower-costs-create-jobs-strengthen-supply-chains-and-counter-china [hereinafter *The White House Fact Sheet*]. This bipartisan legislation was drafted to safeguard the United States' "scientific and technological edge" at a time when other countries seem to have taken the lead. *Id.*

Predictably, to achieve its goals, the Act could not overlook the significance of AI. The Act encourages AI research and investment, not only in the technology itself, but also in those that operate and implement it – "the next generation of artificial intelligence professionals to meet the needs of Federal, State, local, and Tribal governments." 42 U.S.C. § 18993(d)(2). The Act recognizes the importance of STEM education and skilled workforce development as drivers of innovation and economic growth in the semiconductor industry, cybersecurity, and its related fields. 42 U.S.C. § 18993. Additionally, the Act supports and reinforces the goals of NAIIA by urging the Director of the National Institute of Standards and Technology to "continue to support the development of artificial intelligence and data science, and carry out the activities of the National

Artificial Intelligence Initiative Act of 2022." 42 U.S.C. § 18937.

By implicitly holding that AI-generated inventions are unpatentable, the Court frustrated the objectives of the CHIPS Act and unduly burdened its scope:

1. Over the past few years, there has been a shift in chip design: from chips designed *for* AI to chips designed *by* AI. The application of AI for the autonomous design of chips and semiconductors has eased some of the issues grappling the semiconductor industry: the substantial money and time required to produce chips, talent shortages, and the exponential complexity of the subject matter, which is now beyond the scope of human capabilities alone. Jeff Loucks, et al., *AI in Chip Design: Semiconductor Companies Are Using AI to Design Better Chips Faster, Cheaper, and More Efficiently*, Deloitte (Nov. 30, 2022), https://www2.deloitte.com/xe/en/insights/industry/technology/technology-media-and-telecom-predictions/2023/ai-in-chip-design.html. Tech giants like Google have admitted to "using machine learning to help design its next generation of machine learning chips." James Vincent, *Google Is Using AI to Design Its Next Generation of AI Chips More Quickly Than Humans Can*, THE VERGE (June 10, 2021), https://www.theverge.com/2021/6/10/22527476/google-machine-learning-chip-design-tpu-floorplanning. More importantly, they have openly stated that "[t]he algorithm's designs are 'comparable or superior' to those created by humans" and can be generated at a strikingly faster rate. *Id.* ("[W]ork that takes months for humans can be accomplished by AI in under six hours."). These testimonies make it clear that AI

plays a crucial role in filling the gap left by the shortage of human intelligence. Marco Chiappetta, *Chips Designed by AI Are The Future Of Semiconductor Evolution Beyond Moore's Law*, FORBES (May 25, 2021), https://www.forbes.com/sites/marcochiappetta/2021/05/25/chips-designed-by-ai-are-the-future-of-semiconductor-evolution-beyond-moores-law/.

By categorically denying patent protection to AI-generated inventions, the Federal Circuit essentially made AI-developed chips unmarketable and created confusion for companies that are already developing such technology in furtherance of the goals set out by the CHIPS Act. Unsurprisingly, lawyers at Google have declared that they are "unsure if they can patent chip floorplans created by machines." Katyanna Quach, *Tech Industry Stuck Over Patent Problems with AI Algorithms*, THE REGISTER (Aug. 10, 2022), https://www.theregister.com/2022/08/10/ai_patent_ip. Companies are, thus, left in a legal and scientific limbo where the Government is telling them to develop chips, the complexity and cost of the process are forcing them to use AI to do so, and the Federal Circuit is stripping them of patent protection for their AI-developed chips.

The Federal Circuit's decision unduly limits the scope of the CHIPS Act by closing the patent avenue to companies that use AI to autonomously design chips without providing any clarity on alternate avenues. The lack of guidance impacts how technology companies approach innovation, with lawyers seeking direction on securing protection for AI-generated technology.

2. AI is expected to have a far-reaching impact, with effects extending into national security. *See* Eric Schmidt, *AI, Great Power Competition & National Security*, 151(2) DAEDALUS 288, 288–90 (2022). The use of AI is intensifying the risks of cyberattacks and disinformation campaigns, and ultimately altering the methods by which nations exert targeted pressure on their adversaries. *Id.* Countries considered strategic competitors are making considerable investments in AI for their national security objectives. *Id.* The U.S. Department of Defense is focusing its own AI-related research and development on, among others, the application of AI "to accelerate scientific discovery and invention." Dr. Matthew P. Daniels, *Artificial Intelligence Research and Development*, U.S. DEP'T OF DEF. (Dec. 2, 2019), https://www.defense.gov/News/Inside-DOD/blog/article/2067593/artificial-intelligence-research-and-development/. Yet, "[t]o create a pipeline of breakthroughs for tomorrow's economy and security," it is apparent that the United States needs to "deepen [its] commitment to AI research and engineering, as part of a reinvigoration of research and invention." *Id.*

The CHIPS Act acknowledges the importance of AI-developed tools and technologies to enhance the nation's safety. Several sections of the Act specifically refer to harnessing current technologies to develop new materials and products that could advance national security. *See, e.g.*, 42 U.S.C. § 18653 (referring to the use of AI to accelerate the development of tools that would "support efforts that prevent, prepare for, predict, and respond to biological threats to national security"); 42 U.S.C. § 18933 (referring to "the effectiveness of artificial

intelligence-enabled cybersecurity"); 42 U.S.C. § 19331 (referring to "leveraging . . . artificial intelligence to enhance codesign and discovery in microelectronics" the use of which could benefit cybersecurity). Advances in technology on the battlefield may stem from inventions created autonomously by generative AI. Prohibiting such breakthroughs from receiving patent protection may hinder their development to the detriment of national security.

3. Supply Chain Management ("SCM") is fundamentally important to the manufacturing and retailing industries. The CHIPS Act purports to "*strengthen American manufacturing, supply chains*, and national security, and invest in research and development, science and technology, and the workforce of the future to keep the United States the leader in the industries of tomorrow, including nanotechnology, clean energy, quantum computing, and artificial intelligence." *The White House Fact Sheet* (emphasis added). However, despite the gradual implementation of AI into SCM, AI technology has not been utilized to its full potential to solve Supply Chain ("SC") problems because the solutions are either too expensive or too complicated. Hokey Min, *Artificial Intelligence in Supply Chain Management: Theory and Applications*, 13 INT'L J. LOGISTICS RES. & APPLICATIONS 13, 34 (2010).

Most AI applications in the SCM arena are constrained to tactical and operational supply chain problems like analyzing profitability and monitoring supplies, while the application of AI-developed technology for addressing *strategic* issues is currently limited. To optimize the manufacturing of

semiconductors in accordance with the CHIPS Act, researchers can increase the applicability of AI in SCM by using AI to develop enhanced design systems. For example, Nvidia released new research explaining how AI can be used to improve chip design using reinforcement learning and other AI techniques to find novel and better ways to place transistors. ANTHONY AGNESINA, ET AL., AUTODMP: AUTOMATED DREAMPLACE-BASED MACRO PLACEMENT 1 (2023). However, lacking IP protections with respect to patenting AI-produced work hampers true SCM advancement. The absence of favorable legal conditions for the accelerated emergence and implementation of AI-developed technology and services with respect to semiconductor manufacturing processes (including using AI to design new microchip models) goes against the CHIPS Act's mission to "boost American semiconductor research, development, and production, ensuring U.S. leadership in the technology that forms the foundation of everything from automobiles to household appliances to defense systems." *The White House Fact Sheet*.

4. There is a pressing need to effectively leverage the funds made available through the CHIPS Act. The Act provides "$52.7 billion for American semiconductor research, development, manufacturing, and workforce development." *The White House Fact Sheet*. Overall, it also allocates "$200 billion for research into AI, quantum computing, and robotics, among other areas." *Explainer: What the CHIPS and Science Act Means for Artificial Intelligence*, STAN. UNIV.'S INST. ON HUM.-CENTERED A.I. (HAI) (Aug. 2022), https://hai.stanford.edu/sites/default/files/2022-

08/HAI%20Explainer%20-%20What%20The%20CHIPS%20and%20Science%20Act%20Means%20for%20AI.pdf. These funds are meant to incentivize American companies to fulfill the goals delineated by the Act.

However, the implications of the Federal Circuit's decision created uncertainty regarding the availability of funds for companies using AI to develop novel chips or comply with other requirements of the Act. If courts refuse to address AI's ability to independently solve unique technical problems by designing better microchips and inventing original prototypes for manufacturing, then America will permanently fall behind in the microelectronics supply chain race with Asia. Creating increased protections for American innovators is a preliminary step to ensure that the United States will be the global center for AI-centered innovation in the future.

II. FROM THE COMPARATIVE VIEW OF EU SCHOLARSHIP AND CASE LAW; THE PETITION CONCERNS AN ISSUE OF EXCEPTIONAL GLOBAL RELEVANCE AND STRATEGIC IMPORTANCE.

There can be no doubt that AI-related innovation is thriving in many areas, such as personalized medicine, generation of creative content (music, texts, pictures), and digital retail. *See* WIPO, TECHNOLOGY TRENDS 2019: ARTIFICIAL TECHNOLOGY 23, 108 (2019). Why, then, should there be a need to revisit patent law with a view to AI inventions, given that innovation stimuli seem abundant?

A closer look reveals side effects of the current innovation dynamics, which negatively affect the

goals of a domestic patent system. Many companies indicate, at least off records, that they frequently use trade secrets instead of patent protection for their AI-related inventions, i.e., they keep these inventions secret instead of disclosing them through public registers. Enrico Bonadio, et al., *Artificial Intelligence as Inventor: Exploring the Consequences for Patent Law*, 1 INTELL. PROP. Q. 48, 61 (2021); Peter Georg Picht, et al., *Artificial Intelligence and Intellectual Property Law: From Diagnosis to Action*, MAX PLANCK INST. FOR INNOVATION & COMPETITION RSCH. SERIES 1, 8 (2022). At the same time, companies would prefer the availability of patent protection and deem it necessary for an optimal use of their inventions. Where patents are sought, applications may dissimulate or downplay the contributions of AI systems involved in the inventive process, thereby also failing to disclose the workings of such systems to the interested public. Where confidentiality would provide insufficient protection, for instance, because of product re-engineering possibilities, business and innovation activities may be transferred to jurisdictions with a particularly permissive approach regarding the protection of AI innovation through patents or other intellectual property rights.

Reasons for such tendencies can be complex. Clearly, though, uncertainties in the legal framework for AI-related patenting loom large. From a cross-jurisdictional perspective, this Brief highlights two of them, namely the possibility of designating an AI as the inventor in a patent application and, thus, receiving patent protection for AI-generated inventions ("AI Designatability"), and a requirement to describe, in such cases, the workings and inventive contribution of the AI ("AI Descriptiveness").

A. AI Designatability

There is far-reaching consensus in the academic debate that technical solutions developed by an AI can, in principle, fulfill the requirements for an invention – leaving apart legal rules allegedly requiring a human inventor. Tim W. Dornis, at 118; Shlomit Yanisky-Ravid, at 2231. Other submissions to the Court will have described the legal framework for assessing AI Designatability and important arguments for or against it under US law. We would like to point out that key decisions in the European Union held the respective EU Member State law, as well as the European Patent Convention, not to permit, in their current form, AI Designatability. At the same time, very important European courts have – arguably acknowledging how unsatisfactory this situation is – suggested, as it were, workarounds for reconciling long-standing legal rules with today's innovation realities. The German Federal Patent Court, in particular, has permitted a sort of proxy inventor solution, whereby a patent application can, at the same time, name a natural person as the formal inventor in the respective section of the application document and clearly state, in the descriptive section of the application, that, in reality, an AI made the inventive contribution. *See* Daria Kim, at 1164–65. The EPO seems to leave room for a similar approach. *See* Decision of the Legal Board of Appeal 3.1.01 of 21 December 2021, J 0008/20 1, 20–23; Decision of the Legal Board of Appeal 3.1.01 of 21 December 2021, J 0009/20 1, 21–24. Neither this, however, nor whether the German Federal Court of Justice, Germany's highest patent court, will uphold the Federal Patent Court's position is certain.

Should jurisdictions not provide patent protection for AI-generated inventions, either via workarounds, as described before, or, preferably, by permitting to designate AI systems as innovators, they would impair the beneficial effects of the patent system. In an area where innovation is particularly dynamic and arguably generates game-changing technologies, patents could not (fully) incentivize further innovation and secure disclosure of its results. We support, therefore, the broad range of scholars who call for a sufficient availability of patents on AI-generated inventions. *See, e.g.,* Celik Emir, *How IP Struggles to Define AI-generated Products and the Ownership Dilemma*, 71 ANKARA ÜNI. HUKUK FAK. DERGISI 581, 611 (2020); Matulionyte Rita, *AI as an Inventor: Has the Federal Court of Australia Erred in DABUS?*, 1, 14–24 (Nov. 16, 2021) (unpublished manuscript) (on file with Macquarie Law School); Russ Pearlman, *Recognizing Artificial Intelligence (AI) as Authors and Inventors Under U.S. Intellectual Property Law*, 24 RICH. J. L. & TECH. 1, 37 (2018); Ramalho Ana, *Will Robots Rule the (Artistic) World? A Proposed Model for the Legal Status of Creations by Artificial Intelligence Systems*, 21 J. OF INTERNET L. 12, 23 (2017); Shlomit Yanisky-Ravid, at 2215.

B. AI Descriptiveness

As to AI Descriptiveness, traditional patent law – in European jurisdictions at least – requires applications to sufficiently ("enabling") describe the invention, not necessarily the inventive process. For instance, an inventor does not have to reveal whether the solution she presents is the result of a lucky guess

or of cumbersome testing.[4] Furthermore, patent applicants can have an interest in not disclosing their innovation approach, including details on tools they employed for reaching an inventive solutions, for instance, because competing companies could exploit such information. With regard to AI-generated inventions, it would, nonetheless, be helpful to learn from the patent application about the operations through which the AI arrived at its inventive result. Beyond the general interest of society in general, and follow-on innovators in particular, to be instructed about technology with a particularly high innovation potential, this is due to the issues of patent ownership allocation and of an AI-supported PHOSITA concept.

Ownership to a patent on an invention that was generated by an AI must, nonetheless, be allocated to a natural or legal person as the AI, as such, has no legal personality and cannot hold a patent. Knowledge about how the AI operated to generate the invention can instruct this allocation. If, for instance, the invention mainly resulted from the quality of the AI's training (data), the person who carried out this training could be entitled to patent (co-)ownership.

To be patentable, a technical solution needs to embody an inventive step, i.e., it needs to be sufficiently innovative. This is assessed from the perspective of a hypothetical person having ordinary skills in the art (PHOSITA), i.e., summarily speaking – of an average expert in the technical field of the invention. PHOSITAs are equipped not only with average, sector-specific skills and knowledge but also

[4] *Cf.* 35 U.S.C. § 103 which states that "patentability shall not be negated by the manner in which the invention was made".

with average technical support, *e.g.*, testing equipment. To the extent AI becomes a regular tool for innovative activities, AI systems with average capacity should also be part of the PHOSITA's equipment. In such a scenario, it can become relevant whether the AI employed to generate the invention for which a patent is sought has average capacity, such as the PHOSITA's hypothetical AI, or whether it is more potent in finding innovative solutions to technical problems. The latter would weigh in favor of the existence of an inventive step that justifies the granting of a patent. Information about the features of the inventing AI in a patent application could permit to assess its average or above-average innovation capacity.

Against this background, we urge the Supreme Court to clarify key questions regarding AI and the patent system, such as for instance, AI Designatability and AI Descriptiveness.

Sound guidance on these matters would encourage US innovators to use the domestic patent system instead of evading into other jurisdictions and/or concealment. Courts and the USPTO would be in a better position to effectively assess AI-related patent applications.

From a cross-jurisdictional perspective, Germany, the EU, and other important patent jurisdictions would look to the US approach in defining their own legal framework for AI-related inventions. Guidance from the Supreme Court could, thus, contribute to international legal coherence on the matter. This seems particularly important in an area where business activities tend to be global while

patent laws remain confined to their respective jurisdiction.

CONCLUSION

We respectfully urge the Court to grant Certiorari in light of the Federal Circuit's conflicting decision with existing federal law and because this case presents a legal issue of national and global significance.

Respectfully submitted,

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