No. 22-822

IN THE
Supreme Court of the United States

AVERY DENNISON CORPORATION,

Petitioner,

v.

ADASA, INC.,

Respondent.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF IMPINJ, INC. AS *AMICUS CURIAE* IN SUPPORT OF PETITIONER

Kyle S. Smith
MCGUIREWOODS LLP
501 Fayetteville Street
Suite 500
Raleigh, NC 27601

Jonathan Y. Ellis
Counsel of Record
MCGUIREWOODS LLP
888 16th Street N.W.
Suite 500
Washington, DC 20006
(202) 828-2887
jellis@mcguirewoods.com

Counsel for Amicus Curiae

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Cases

Statutes

Other Authorities

INTEREST OF *AMICUS CURIAE*[*]

Impinj is a leading provider of Radio Frequency Identification (RFID) solutions. Impinj's RFID solutions include hardware and software products that wirelessly connect everyday items like apparel, packages, drivers licenses, airline baggage, and medical supplies to the internet. The Impinj platform lays a foundation for what is known as the Internet of Things, extending the internet's reach from the cloud all the way to physical items in the real world. Impinj's partners use its platform to wirelessly connect those physical items and to analyze and organize data about them to enhance their customers' business operations. Impinj's products connect and seamlessly identify our enhanced drivers licenses, our cars' windshield tolling tags, our luggage when we fly, and tens of billions of other items in everyday life.

From its inception in 2000, Impinj has been a leading innovator in the RFID space. Impinj has been issued more than 300 patents and allowed applications, most of which relate to computer-implemented inventions. At the same time, Impinj relies on 35 U.S.C. § 101 to protect itself and its partners from patents that claim ineligible subject matter. Impinj's platform is designed to give its partners flexibility to tailor Impinj's products to their needs. By extending patent eligibility to abstract applications of Impinj's

---

[*] Pursuant to Rule 37.6, *amicus curiae* affirm that no counsel for a party authored this brief in whole or in part and that no person other than *amicus curiae* or their counsel made a monetary contribution to its preparation or submission. Counsel of record for all parties were timely notified pursuant to Rule 37.2(a) of *amicus curiae*'s intent to file this brief.

platform—*e.g.*, assigning to a set of connected items a set of serial numbers each beginning with the same block of numbers—the Federal Circuit's decision casts a cloud of uncertainty over Impinj and its partners' implementation of the underlying technology.

Impinj thus has a strong interest in resolving the uncertainty in the Federal Circuit's application of Section 101. A robust patent system—with clear guidance on the patent-eligibility of inventions in the computer software and data management industry—is essential to support Impinj and other pioneers in the RFID space in their development of a robust Internet of Things.

INTRODUCTION AND SUMMARY OF ARGUMENT

"In the area of patents, it is especially important that the law remain stable and clear." *Bilski v. Kappos,* 561 U.S. 593, 613 (2010) (Stevens, J. concurring). The Federal Circuit has fallen short of that mandate, failing to establish a stable and predictable body of law governing the patent-eligibility of computer-implemented inventions. The uncertainty in the Federal Circuit's case law is particularly apparent in its treatment of claims directed to purported improvements to computer functionality, including claims reciting methods and systems of organizing and processing data.

The Federal Circuit's confusion is reflected not only in the express statements of its judges requesting this Court's intervention; it is directly borne out in its decisions. The Federal Circuit's case law is replete with

examples of different panels reaching different patent-eligibility outcomes on claims directed to the same or similar concepts. Deciding each case by analogy, the Federal Circuit has become acutely aware of the tension and uncertainty in this body of law. Yet it has been unable to reconcile it, compelling the Court's intervention.

The Court's intervention is further warranted in view of the significant real-world harm that is caused by the uncertainty in the Federal Circuit's case law. The information technology industry is in the process of expanding the reach of the internet to connect everyday items without human intervention through what is known as the Internet of Things. As the industry pursues this significant advancement in the field of computer technology, it must also navigate the uncertain patent landscape caused by the unpredictable nature of the Federal Circuit's case law. This uncertainty threatens to undermine the incentives to innovate and to impede the widespread adoption of the underlying technology, thereby artificially limiting the vast potential of the Internet of Things.

This case presents an ideal vehicle—either in lieu of or alongside the other pending Section 101 petitions—to provide further guidance on the proper application of Section 101 and to address the uncertainty in the law. Of particular note, this case presents the Court with an opportunity to consider a category of patents that are frequently challenged under Section 101 (claims directed to methods and systems of organizing and processing information) in a frequently recurring context (computer software and data management).

Resolving the eligibility of the patent in this case could resolve significant uncertainty in existing Federal Circuit case law and would provide much needed guidance moving forward.

ARGUMENT

I. The Application of Section 101 to Software Patents is Hopelessly Uncertain.

Since this Court's decisions in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66 (2012), and *Alice Corp. Pty. v. CLS Bank Int'l*, 573 U.S. 208 (2014), the law of patent eligibility has been in a state of chaos. The Federal Circuit has proven incapable of consistently applying the two-step *Alice/Mayo* test for determining patent eligibility under Section 101—particularly patents directed to "abstract ideas." *See Interval Licensing, LLC v. AOL, Inc.*, 896 F.3d 1335, 1349 (Fed. Cir. 2018) ("Of the[] three Court-created exceptions … the one … that causes the most trouble [is] 'abstract ideas.'") (Plager, J., concurring-in-part). And nowhere is this chaos more apparent than in the realm of software-related patents. As one Federal Circuit judge has put it, "[t]he law … renders it near impossible to know with any certainty whether [an] invention is or is not patent eligible" in the computing arts. *Id.* at 1348.

It is well-settled that "software can make non-abstract improvements to computer technology just as hardware improvements can." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016). But to be directed to a patent-eligible improvement to computer functionality, the Federal Circuit has

required under *Alice* and *Mayo* that the claims be directed to an improvement to the functionality of the computer or network platform itself. *See, e.g.*, *id.* at 1336-39; *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257-59 (Fed. Cir. 2014). The Federal Circuit's Section 101 analysis in this context thus asks "whether the claims focus on 'the specific asserted improvement in computer capabilities ... or, instead, on a process that qualifies as an "abstract idea" for which computers are invoked merely as a tool.'" *Finjan, Inc. v. Blue Coat Sys., Inc.*, 879 F.3d 1299, 1303 (Fed. Cir. 2018) (quoting *Enfish*, 822 F.3d at 1335-36).

The Federal Circuit's application of this distinction to software-related patents, however, leaves more questions than it does answers.

On the one hand, the Federal Circuit has long recognized that claims directed merely to organizing or processing information are ineligible for patent protection. For example, in *Digitech Image Technologies, LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014), the Federal Circuit held ineligible claims directed to a "device profile" for an image processing device (*e.g.*, a digital camera), the device profile comprising "a collection of intangible color and spatial information." *Id.* at 1350. Unlike previous image processing systems, in which properties of the device were modified to accommodate fixed color and spatial properties of an image, the claimed device profile purportedly allowed devices to modify the properties of the image itself to facilitate transfer of an image to another device, like a printer. The court reasoned that although the device profile could be used to

achieve tangible processing benefits, like reducing image distortion, merely generating the claimed device profile did not alone reduce image distortion or otherwise improve image processing. *Id.* at 1347-48. It thus held that the claims recited only "the ineligible abstract process of gathering and combining data that does not require input from a physical device." *Id.* at 1351.

The Federal Circuit has similarly held that "merely selecting information, by content or source, for collection, analysis, and display does nothing significant to differentiate a process from ordinary mental processes, whose implicit exclusion from § 101 undergirds the information-based category of abstract ideas." *Electric Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1355 (Fed. Cir. 2016). In *In re TLI Communications LLC Patent Litigation*, 823 F.3d 607 (Fed. Cir. 2016), for example, the Federal Circuit held ineligible claims directed to "the concept of classifying an image and storing the image based on its classification." *Id.* at 611. The court reasoned that the claims did not recite a patent-eligible improvement to computer functionality but rather merely "provid[ed] for recording, administration and archiving of digital images simply, fast and in such [a] way that the information therefore may be easily tracked." *Id.* at 612.

More recently, in *PersonalWeb Technologies LLC v. Google LLC*, 8 F.4th 1310 (Fed. Cir. 2021), *cert. denied*, 142 S. Ct. 1445 (2022), the Federal Circuit held ineligible claims directed to "the use of an algorithm-generated content-based identifier to perform [certain] data-management functions," reasoning that the

claims were akin to the longstanding practice of assigning library books "unique identifiers based on call numbers, which change dependent on a book's volume." *Id.* at 1315-16. That the claims used this abstract concept to control, retrieve, and mark data in a computer environment did not "transfigure [the] idea out of the realm of abstraction." *Id.* at 1316.

At the same time, however, there exists a separate line of Federal Circuit cases reaching opposite conclusions concerning the subject-matter eligibility of equally abstract patents. In *Enfish, LLC v. Microsoft Corp.*, *supra*, for example, the Federal Circuit held patent *eligible* claims directed to a data table capable of defining its columns using an internal reference to the table's rows. 822 F.3d at 1337-39. In reversing the district court's holding that these claims were directed to the abstract idea of "organizing information using tabular formats," the Federal Circuit concluded that the claims were a patent-eligible improvement to computer functionality because the claimed table purportedly improved the way the computer itself operated and handled data, allowing more efficient launching and adaptation of databases. *Id.* at 1336-37. This holding cannot be squared with the Federal Circuit's holding in *Digitech Image* that tangible processing benefits are insufficient to confer patent eligibility when they are not inherent in the claimed data structure, *i.e.*, where the generation of a table itself does not render the computer more efficient. *See* 758 F.3d at 1347-48.

Likewise, in *Data Engine Technologies LLC v. Google LLC*, 906 F.3d 999 (Fed. Cir. 2018), the Federal

Circuit held that claims reciting "a specific method for navigating through three-dimensional electronic spreadsheets" were non-abstract because the claimed invention "improv[ed] computers' functionality as a tool able to instantly access all parts of complex three-dimensional electronic spreadsheets." *Id.* at 1007-08. And in *Core Wireless Licensing S.A.R.L. v. LG Electronics, Inc.*, 880 F.3d 1356 (Fed. Cir. 2018), the Federal Circuit held that claims directed to an improved user interface that enabled users to more quickly access stored data and programs in small-screen electronics were non-abstract. *Id.* at 1359-63. The court determined that the claimed invention in *Core Wireless* "improve[d] the efficiency of using the electronic device by bringing together 'a limited list of common functions and commonly accessed stored data,' which can be accessed directly from the main menu." *Id.* at 1363. These holdings are irreconcilable with the Federal Circuit's holding in *In re TLI* that merely "provid[ing] for recording, administration and archiving of [information] simply, fast and in such [a] way that the information therefore may be easily tracked" was insufficient to render the claims non-abstract. 823 F.3d at 612.

The confusion is only compounded by the Federal Circuit's similarly inconsistent case law concerning how the claimed improvement must be captured by the claims. For example, in *Two-Way Media Ltd. v. Comcast Cable Communications, LLC*, 874 F.3d 1329 (Fed. Cir. 2017), the Federal Circuit held ineligible claims reciting a method of transmitting information over a communications network comprising: converting information into streams of digital packets;

routing the streams to users; controlling the routing; and monitoring the reception of packets by the users. *Id.* at 1334. Although the claims purported to solve data transmission problems, including load management and bottlenecking, the court held the claims ineligible under Section 101 because, in its view, they merely recited a series of abstract steps ("converting," "routing," "controlling," "monitoring," and "accumulating records") using "result-based functional language" without the means for achieving any purported technological improvement. *Id.* at 1336-37. Yet when faced with similar purported improvements in *Uniloc USA, Inc. v. LG Elecs. USA, Inc.*, 957 F.3d 1303 (Fed. Cir. 2020), the court held patent eligible claims directed to adding information to messages transmitted from a mobile phone to a base station. *Id.* at 1307. The court dismissed arguments that the claims were not directed to the alleged improvements to network functionality, holding that "[c]laims need not articulate the advantages of the claimed combinations to be eligible." *Id.* at 1309.

The incoherence of the Federal Circuit's Section 101 jurisprudence is not lost on that court's members. In examining patent claims directed to "the mere collection and manipulation of information" in *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288 (Fed. Cir. 2016), one panel openly acknowledged that "somewhat (at least facially) similar claims" directed to "the mere collection and manipulation of information" had been held ineligible under one line of cases yet held eligible under a separate line of cases. *Id.* at 1300 (citing, *e.g.*, *Digitech*, 758 F.3d at 1350; *In re TLI Commc'ns*, 823 F.3d at 613; *Enfish*, 822 F.3d at

1355). Rather than attempt to resolve that tension, however, the court avoided the issue altogether and decided the case under the second step of *Alice*. 841 F.3d at 1300 ("[T]he claim is eligible under step two because it contains a sufficient 'inventive concept.'").

In *American Axle & Manufacturing, Inc. v. Neapco Holdings, LLC*, 967 F.3d 1285 (Fed. Cir. 2020), a split panel of the Federal Circuit held that a patent for a method of manufacturing automotive driveshafts was ineligible as claiming a "natural law." In denying rehearing of that decision, by a vote of 6-6, the full Federal Circuit collectively threw up its hands. Five judges stated that their own court's "rulings on patent eligibility have become so diverse and unpredictable" as to have "moved the system of patents from its once-reliable incentive to innovation and commerce, to a litigation gamble." *Am. Axle & Mfg., Inc. v. Neapco Holdings LLC*, 966 F.3d 1347, 1358-61 (Fed. Cir. 2020) (Newman, J., dissenting from denial of rehearing en banc).

As the Solicitor General recently recognized, the Federal Circuit's application of Section 101 has thus once again devolved into a panel-dependent body of law yielding arbitrary and unpredictable results. *Compare CLS Bank Int'l v. Alice Corp. Pty.*, 717 F.3d 1269, 1321 (Fed. Cir. 2013) (Newman, J., concurring in part) ("[A]ny successful innovation is likely to be challenged in opportunistic litigation, whose result will depend on the random selection of the panel."), *with Am. Axle & Mfg., Inc. v. Neapco Holdings LLC*, 977 F.3d 1379, 1382 (Fed. Cir. 2020) (Moore, J., concurring) (concluding that the Federal Circuit is

"creating a panel-dependent body of law and destroying the ability of American businesses to invest with predictability"); *see* U.S. Br. at 20-21, *Interactive Wearables, LLC v. Polar Electro Oy*, No. 21-1281 (filed Apr. 5, 2023). This Court's intervention is once again required.

II. The Uncertainty in the Federal Circuit's Case Law Threatens to Hinder Advancement in Computer Technology.

The confusion surrounding the application of Section 101 to abstract ideas has and will continue to cause real-world harm to innovation. As Judge Newman observed, the unpredictability of the Federal Circuit's case law is likely having "a serious effect on the innovation incentive in all fields of technology." *Am. Axle & Mfg.*, 966 F.3d at 1357. But nowhere is the cost of that uncertainty more significant than in the field of computer software and data management. Innovation in that field plays a critical and increasingly important role in the Nation's economy. And yet that innovation by its nature is particularly apt to be built on (or perceived to be built on) abstract ideas. Stable and predictable application of Section 101 is thus essential to ensure adequate incentives to innovate in this critical industry.

Providing that certainty and incentive to innovate is particularly important now, when the industry is in the midst of creating the next generation of connectivity: the Internet of Things. Although there are numerous definitions, the Internet of Things generally describes a network of physical objects that are

embedded with radio connectivity such as RFID, sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. In other words, the Internet of Things represents the idea of connecting almost any object to the internet and to other connected devices. Those connected objects could range from government objects, like identification cards or vehicle tolling tags, to ordinary household objects, like refrigerators, toasters, or t-shirts, to sophisticated industrial tools, like automotive assembly line machinery or pharmaceutical laboratory equipment.

Just as the internet has connected people like no technology in history, the Internet of Things promises to connect everyday objects to enable innovations and efficiencies that have never been possible. All manner of objects can be connected to an Internet of Things platform, like the one offered by Impinj. Those platforms can then identify and authenticate those objects, integrate data from those objects, and apply analytics to share information with users and other devices or applications. With tens of billions of items and devices already connected—and trillions more promised—the Internet of Things and its data-sharing capabilities promises to reduce manual processes and improve safety and efficiency across all manner of business enterprises.

The continued growth of this significant development in computer technology, however, needs certainty regarding the protection of innovation in this space. To maximize its potential, the Internet of Things requires widespread connectivity and

adoption. The current uncertainty of patent eligibility at the interface of software and hardware threatens to slow not just the development of the underlying technology by undermining the incentive to innovate; it also threatens to hinder the adoption, and therefore the potential of the Internet of Things—by exposing participants in the network to the potential threat of patent infringement liability. If businesses cannot be certain that they can tailor the underlying technology to their specific needs, even in something as simple as the way numbers are assigned to objects, adoption will be deterred, and innovation hindered.

The decision below is a stark illustration of the potential threat to innovation. As even the Federal Circuit described the patent claim at issue, it involves little more than dividing a simple serial number into two components—the most significant bits (MSBs) and the less significant bits—where "for any set of MSBs there is exactly one corresponding allocated block, and for each allocated block there is exactly one set of MSBs." Pet. App. 12a. "In essence," the court explained, "the claimed MSBs function as an additional data field within the serial number space that uniquely identifies the allocated block from which it came." *Id.* at 12a-13a. It was this "one-to-one correspondence" between part of a unique identifier and "an allocated block" of numbers that the panel found to distinguish the claim from the abstract idea of merely dividing numbers into two component parts.

If left undisturbed, that decision could present a substantial impediment to the adoption of the Internet of Things. The Internet of Things requires two key

components: (1) items with a unique identifier and (2) the ability to transfer data without human input. The entire premise of connectivity in an identification system like the one at the heart of the Internet of Things is rooted in the free allocation of unique numbering. In many, if not most, instances, the unique numbering system used relies on the abstract idea of dividing an identification number into a prefix and a suffix. Indeed, the international standards organization GS1 has created a universal numbering system encoded on many RFID tags used for the Internet of Things that requires a header called a Global Trade Item Number (*i.e.*, a prefix) that uniquely identifies a class of items and a serial number (*i.e.*, a suffix) that uniquely identifies the individual item. *See* GS1, https://www.gs1.org/standards/id-keys/gtin (last visited Apr. 11, 2023).

If a one-to-one correspondence between assigned numbers and some external constraint is sufficient to make separating a number into a prefix and suffix non-abstract, it is difficult to ascertain any clear limits on patenting the abstract ideas at the core of the Internet of Things and their applications. The only numbering scheme that would remain clearly beyond the scope of patent protection, and therefore free to be utilized in a unique numbering system, would be the assignment of randomized numbers. Such broad monopolization of abstract ideas in numbering would preclude the unfettered implementation in the Internet of Things of any useful numbering scheme where the assigned number itself conveys information about an item.

The effects of that uncertainty would be felt throughout the Internet of Things ecosystem. Developers of the underlying technology, like Impinj, could see their investment threatened, impeding development of the building blocks of the technology. Commercial partners could be deterred from adopting the platform, hindering efforts to increase efficiency and automation in business relationships and in organizing products for customers. And the public would be deprived of the benefit of those efficiency gains in their everyday activities.

III. This Case Presents an Ideal Vehicle for Providing Guidance on the Application of Section 101 to Abstract Ideas.

This case presents an ideal vehicle for providing further guidance on determining patent eligibility for abstract ideas under Section 101.

Resolving the eligibility of the patent claim at issue in this suit would extend well beyond the facts of this case. This Court's and the Federal Circuit's Section 101 case law is driven by analogy. *See Enfish*, 822 F.3d at 1334 ("[B]oth this court and the Supreme Court have found it sufficient to compare [the] claims at issue to those claims already found to be directed to an abstract idea in previous cases."). The Federal Circuit routinely categorizes inventions to determine by analogy whether the claimed invention qualifies as an abstract idea or a patent-eligible improvement to computer functionality. The Court's decision in this case would supply a new and helpful guidepost to which the

Federal Circuit would refer in deciding the eligibility of patents going forward.

The Court's review in this case, moreover, would provide a particularly important guidepost. The software-related patent in this case is directed to organizing and processing information. That category of patents, in particular, has plagued the Federal Circuit's Section 101 jurisprudence. *See, e.g.*, *Amdocs*, 841 F.3d at 1300 ("We have previously explained that somewhat (at least facially) similar claims involving the mere collection and manipulation of information do not satisfy § 101. . . . In contrast, we have found eligibility when somewhat facially-similar claims are directed to an improvement in computer functionality under step one."). The court's inconsistent analysis of that category has created uncertainty across a broad and important class of patents, including digital image processing, data processing, and telecommunications, that frequently present patent-eligibility questions under Section 101. *See* Section I, *supra*.

The Solicitor General contends that addressing the simple claimed inventions (concerning luggage locks and a wearable music player) at issue in other pending Section 101 petitions would allow the Court to "more readily draw on historical practice and precedent to clarify the governing principles, which can then be translated to other contexts." U.S. Br. at 21, *Interactive Wearables*, *supra*. The same is true of the claimed invention at the center of this dispute, concerning a concept that every person with a telephone number can easily grasp. *See* Pet. 12. But this petition presents the additional benefits of presenting the Section

101 question in the context of the important class of software-related patents divorced of any procedural distractions. *See* U.S. Br. at 23, *Interactive Wearables*, *supra* (urging the Court to rewrite the questions presented to avoid a "satellite procedural question" and other issues implicated by the other pending petitions). The Court also would have the benefit in this case of reviewing a published and precedential opinion from the Federal Circuit discussing several of the cases at the heart of the uncertainty in that court's Section 101 case law. *Compare* Pet. App. 10a-15a *with Interactive* Pet. App. 2a *and Tropp* Pet. App. 3a-5a.

The Court should seize the opportunity presented by this case—either in lieu of or addition to the pending cases—to provide the guidance that is sorely needed and to maintain the balance struck by Congress in Section 101 to advance the progress of the useful, technological arts.

CONCLUSION

For the foregoing reasons, the petition for a writ of certiorari should be granted.

Respectfully submitted,

Jonathan Y. Ellis
Counsel of Record
MCGUIREWOODS LLP
888 16th Street N.W.
Suite 500
Washington, DC 20006
(202) 828-2887
jellis@mcguirewoods.com

Kyle S. Smith
MCGUIREWOODS LLP
501 Fayetteville Street
Suite 500
Raleigh, NC 27601

Counsel for Amicus Curiae

APRIL 13, 2023