

No. 13-298

In the
Supreme Court of the United States

ALICE CORPORATION PTY. LTD.,
Petitioner,

v.

CLS BANK INTERNATIONAL AND CLS SERVICES LTD.,
Respondents.

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

**BRIEF OF *AMICI CURIAE* TRADING
TECHNOLOGIES INTERNATIONAL, INC., CANTOR
FITZGERALD, L.P., CUMMINS INC., SCIENTIFIC
GAMES CORPORATION, ALIGN TECHNOLOGY, INC.,
ET AL., IN SUPPORT OF PETITIONER**

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INTEREST OF THE *AMICI CURIAE*¹

Amici curiae include a wide range of innovative companies from different industries, ranging from large publicly-traded companies to start-ups, that are directly impacted by the uncertainty created by the Federal Circuit’s decision in *CLS Bank International v. Alice Corporation*, 717 F.3d 1269 (Fed. Cir. 2013) (en banc), regarding the patent eligibility under 35 U.S.C. § 101 of claims directed to computer-implemented inventions, such as computer software and hardware. Although some *amici* companies are competitors, and some are even adversaries in patent litigation, all *amici* have a strong interest in ensuring that computer-implemented inventions are not subjected to restrictive patent eligibility rules, such as those suggested in some of the opinions below, which could incorrectly render many such inventions ineligible for patent protection under the judicial exception for “abstract ideas.” *Amici* also include an inventor and distinguished professors who study the economic importance of patents.

Collectively, the 41 *amici* companies have made substantial investments in innovative comput-

¹ Pursuant to Supreme Court Rule 37.6, *amici* note that 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*, their members, or their counsel have made a monetary contribution to fund the preparation or submission of this brief. Pursuant to Supreme Court Rule 37.3(a), *amici* note that Petitioner and Respondents have consented to the filing of this brief through blanket consent letters filed with the Clerk’s Office.

er-implemented inventions with applications in fields as diverse as telecommunications, medicine, financial services, consumer electronics, and gaming. For many such inventions, the innovation lies in how a computer is programmed (the software), and *amici* rely on patents to protect those innovations. These patents are not directed to “scientific truths” or mathematical expressions of scientific truths. If the law governing the “abstract ideas” exception is broadly conceived, the eligibility of vast numbers of patents covering computer-implemented inventions – inventions that are novel and non-obvious and not directed to “scientific truths” – would be called into question. This would have a devastating impact on *amici* and many other companies, costing jobs and damaging the economy.

The 46 *amici* include: Trading Technologies International, Inc.; Cantor Fitzgerald, L.P.; Cummins Inc.; Scientific Games Corporation; Align Technology, Inc.; Alcatel-Lucent; CoreLogic; Aristocrat Technologies Australia Pty. Ltd.; Bancorp Services, LLC; NAGRA USA, Inc.; BGC Partners, Inc.; Fallbrook Technologies Inc.; Architecture Technology Corporation; Sonitus Medical Inc.; Miramar Labs, Inc.; Great Lakes NeuroTechnologies Inc.; NeuroWave Systems Inc.; Flocel Inc.; Cleveland Medical Devices Inc.; Orbital Research Inc.; Spectral MD; Ameranth Inc.; RPost Communications; Enounce, Inc.; ManyWorlds, Inc.; FPX; Charles River Analytics Inc.; Casino Gaming, LLC; Horizon Digital Finance LLC; DDB Technologies LLC; Chief Experience Officer, Inc.; MONKEYmedia, Inc.; ParkerVision, Inc.; Subtle by Design Co.; iQ4 LLC; Crowd Cart; HouseTab, LLC; Neo Prime Solutions, Inc.; TIP Solutions, Inc.; Bi-Level Technologies; RedTxt.com.au Pty. Ltd.;

U.S. Startups and Inventors for Jobs; Martin Goetz; Professor Richard A. Epstein; Professor Daniel F. Spulber; and Professor Jay P. Kesan. For a further description of *amici*, see Appendix.

INTRODUCTION AND SUMMARY OF ARGUMENT

In keeping with the Constitution’s expansive grant to Congress of power to secure for “Inventors” exclusive patent rights to “promote the Progress of Science and useful Arts,” U.S. CONST. art. I, § 8, cl. 8, Congress has since 1790 broadly defined the subject matter of inventions eligible for patent protection. For nearly as long, this Court has applied exceptions, of its own making, to Congress’s designation of these “broad patent-eligibility principles.” *Bilski v. Kappos*, 130 S. Ct. 3218, 3225 (2010). This case focuses on one of those judicial exceptions – the “abstract ideas” exception.

The Court granted *certiorari* to decide “[w]hether claims to computer-implemented inventions – including claims to systems and machines, processes, and items of manufacture – are directed to patent-eligible subject matter within the meaning of 35 U.S.C. § 101 as interpreted by this Court?” Importantly, the patent claims in this case do not recite “a scientific truth, or the mathematical expression of it,”² *Mackay Radio & Tel. Co. v. Radio Co. of Am.*,

² The exception directed to laws of nature, physical phenomena and mathematical formulas (as set forth in this Court’s precedents) addresses such types of claims. For simplicity, the term “scientific truth” is used herein to encompass scientific truths and mathematical expressions of such. Scientific truths

(Continued on following page)

306 U.S. 86, 94 (1939), and no court below entertained any evidence relating to whether the claims are novel and non-obvious under Sections 102 and 103 of the Patent Act. Thus, the question here is whether computer-implemented inventions that are not directed to a scientific truth should be deemed ineligible *even if* such inventions are novel, non-obvious, and otherwise patentable.³

In light of Section 101's expansive language unambiguously making "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof" eligible for patent protection, the answer to this latter question must be "no." There is no doubt that a computer-implemented invention qualifies as a "machine" (*e.g.*,

are laws of nature, natural phenomena and pure mathematical laws or axioms. A scientific truth can be expressed in words or mathematically. For example, Einstein's theory of relativity is expressed mathematically as $E=mc^2$. Of course, as this Court's decisions make clear, not every invention involving mathematical calculations implicates this exception. Indeed, most do not, because they are applying mathematics, not reciting a pure mathematical law or axiom. For example, the automobile-related inventions discussed below apply mathematics (making distance and other calculations based on input from sensors).

³ Petitioner reads *Bilski* to have rejected a patent that, like the patents rejected in previous decisions applying the "abstract ideas" exception, recited a "fundamental or mathematical truth." Pet. Br. 25-26. But because it is equally plausible, in *amicus's* view, to read *Bilski* as applying the "abstract ideas" exception to claims that do *not* recite scientific truths, we devote our presentation to a demonstration of why computer-implemented inventions do not fall within the exception even as so conceived.

a computer programmed to carry out an invention), a “process” (*e.g.*, the series of steps performed by the programmed computer to carry out an invention), and an “article of manufacture” (*e.g.*, the programmable media on which software comprising the computer instructions is stored). Moreover, given that a general purpose computer is a “machine” within the meaning of the statute, it also follows that software providing new and useful functionality to a computer is an “improvement” of such a “machine.”

The approaches to the “abstract ideas” exception suggested by some of the opinions below and by Respondents and their supporters are not grounded in law and will adversely impact tens of thousands of legitimate patents protecting inventions that solve pressing real-world problems in almost every industry. At the most basic level, the various tests proposed below that result in finding any of Petitioner’s claims ineligible under Section 101 are based on a fundamentally flawed understanding of computer-implemented inventions today. These approaches are based on the false notions that a computer is merely a calculator and that programming merely instructs the computer to perform basic mathematical calculations. While this may have been true of many of the applications programmed on the earliest computers over 40 years ago (such as the program at issue in *Gottschalk v. Benson*, 409 U.S. 63 (1972)), it is simply not the case today.

The capabilities of computers have dramatically grown and evolved – computers are highly configurable machines capable of being turned into new and different machines through how they are programmed. Today, software forms the heart and soul

of many innovative advances in all aspects of society, including automobiles, aircraft, mobile phones, audio/visual equipment, medical devices, gaming devices, engine and power generation systems, data mining and analysis tools, administration and management tools, and appliances. Viewing computers as merely calculators is completely disconnected from the reality of where innovation is occurring today and where most innovation will occur in the future.

Broadly construing and applying the abstract ideas exception would jeopardize countless patents and patent-fostered innovations that are providing real, tangible benefits to all levels of society, and that are helping to fuel the domestic and global economies. Indeed, it is impossible to overstate the economic importance of software and other computer-implemented inventions. Virtually all industries now use computer-implemented inventions in some way. As Judge Moore noted in her partial dissent below, between 1998 and 2011, the PTO issued more than 300,000 patents *in just one of* the host of patent classifications that include computer-implemented inventions. *CLS Bank*, 717 F.3d at 1313 n.1. Indeed, the U.S. Government Accountability Office recently reported that approximately 50% of all granted patents are software-related. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-13-465, INTELLECTUAL PROPERTY: ASSESSING FACTORS THAT AFFECT PATENT INFRINGEMENT LITIGATION COULD HELP IMPROVE PATENT QUALITY 12-13 (2013). This body of patents comprises an important literature that is available to researchers and developers in every field, who are free to use the information disclosed in these patents (much of which would otherwise be cloaked in trade secrecy) to develop improvements and, upon expira-

tion of the patents, to practice the inventions.

Notably, and notwithstanding the alarmist complaints of some interested parties that are most dependent upon computer-implemented technologies,⁴ high-tech industries are neither stagnating nor suffering from a dearth of innovation. To the contrary, these industries are highly competitive, vibrant fonts of innovation and economic vitality. The availability of patent protection for computer-implemented inventions has been a spur, not a bane, to their growth and development. Computer-implemented inventions thus reflect the patent system's "carefully crafted bargain for encouraging the creation and disclosure of new, useful, and nonobvious advances in technology and design in return for the exclusive right to practice the invention for a period of years." *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150-51 (1989).

All of these benefits are put at risk by an expansive reading of the "abstract ideas" exception. Indeed, several members of the en banc Federal Circuit expressed concern that engrafting a broad "abstract ideas" exception onto the plain text of Section 101 would suffocate valuable innovation and investment

⁴ Such complaints are hardly new. In the 1850s, for example, sewing machine manufacturers were up in arms over the proliferation of sewing machine patents, and yet judicial intervention was unnecessary to ensure innovation because private-ordering solutions eventually emerged. Adam Mossoff, *The Rise and Fall of the First American Patent Thicket: The Sewing Machine War of the 1850s*, 53 ARIZ. L. REV. 165, 170 (2011). Similarly, such unfounded complaints were made in the 1980s about the number of semiconductor patents.

in the field of software and computer technology. *See CLS Bank*, 717 F.3d at 1309 (Rader, C.J., *et al.*, concurring in part and dissenting in part); *id.* at 1332 (Linn & O'Malley, JJ., dissenting); *id.* at 1313 (Moore, J., dissenting in part).

The warring opinions below vividly reflect the widespread confusion regarding how to apply the “abstract ideas” exception.⁵ It is therefore imperative that the Court now provide concrete, practical guidance regarding the exception’s scope and analytical contours. *Amici* respectfully urge the Court to make two points clear, both of which are compelled by the language and history of the Patent Act, this Court’s precedents, the Constitutional separation of powers, and the purposes underlying the Constitution’s grant of power to Congress to promote technological innovation through the patent system.

First, insofar as it applies to claims that do not recite scientific truths (*see* note 3, *supra*), the “abstract ideas” exception to Section 101’s broad designation of patent-eligible subject matter must be narrowly construed and applied. As stated in *Benson*, the proper focus of the exception is on “abstract *intellectual* concepts” – that is, purely mental impressions or processes. 409 U.S. at 67 (emphasis added). As this Court has repeatedly acknowledged, Congress chose, for sound policy reasons and in the considered exercise of its Article I powers, to give expan-

⁵ *See also* Mark A. Lemley, *et al.*, *Life After Bilski*, 63 STAN. L. REV. 1315, 1316 (2011) (“*Lemley*”) (Following *Bilski*, “the problem is that no one understands what makes an idea ‘abstract,’ and hence ineligible for patent protection.” (footnote omitted)).

sive, permissive scope to the subject matter of inventions and discoveries eligible for patent protection. It *should* be the rare claimed invention that does not satisfy the generous eligibility criteria established by Congress, and for the courts to broadly apply judge-made exceptions to those statutory criteria would threaten both to usurp congressional authority and to stifle technological innovation.

Second, the exception to Section 101 established in this Court's precedents dealing with "laws of nature, physical phenomena and mathematical formulas" (*i.e.*, claims directed to scientific truths), is not implicated in this case. The exception to Section 101 that is implicated here – the exception for "abstract ideas" – merely asks whether a claim fails to recite tangible elements, such as computing elements. Patent claims that disclose an invention requiring implementation through computer devices or programmable media do not and cannot constitute an "abstract idea" for purposes of the Section 101 eligibility inquiry. This is not to say that all such claims are patentable; some will fail to satisfy novelty, nonobviousness, and other conditions governing patentability. But a claim that is not directed in any way to a "scientific truth" and that recites tangible elements (such as computing elements) cannot be deemed ineligible under Section 101. Not only do such claims fall well within the realm of eligible subject matter defined by the language and history of the Patent Act, but their eligibility under Section 101 is also entirely consistent with this Court's precedents.

ARGUMENT**I. TESTS THAT CALL INTO QUESTION THE PATENT ELIGIBILITY OF COMPUTER-IMPLEMENTED INVENTIONS NOT DIRECTED TO SCIENTIFIC TRUTHS ARE FLAWED AND SHOULD BE REJECTED.**

As discussed below, this Court’s precedents on the question of subject matter eligibility demonstrate a consistent effort by this Court to distinguish between ineligible patent claims directed toward fundamental “principles” and eligible patent claims directed toward the beneficial and practical “application” of such principles. Although drawing the line between a principle and its practical application is usually straightforward, this Court’s precedents suggest that for some inventions that implicate scientific truths, drawing that line may raise complexities. Because such a scientific truth “reveals a relationship that has always existed,” *Parker v. Flook*, 437 U.S. 584, 593 n.15 (1978), it cannot be “invented” within the meaning of Section 101. This Court, therefore, has at times suggested that a claim that adds an additional tangible step or element to a scientific truth must itself demonstrate some “inventive” quality for the resulting claim to become patent eligible. *See, e.g., Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1294 (2012); *Flook*, 437 U.S. at 594.

No such problem exists for inventions that are *not* directed to such scientific truths. The abstract ideas at the heart of such inventions did not, like the law of gravity, always exist in nature; rather, they were brought into being by human ingenuity. These ideas were therefore undeniably “invent[ed]” within

the meaning of Section 101. So long as patents directed to such ideas claim statutory subject matter (processes, machines, etc.), they fall comfortably within the realm of patent-eligible inventions. The only question under the judicial exception for “abstract ideas” is whether the patent claim is so broad that it is unmoored to anything tangible. Simply put, if a claim not directed to a scientific truth requires implementation through tangible steps or elements such as computer hardware or software, this Court’s precedents support, and indeed compel, the conclusion that it satisfies Section 101 and does not fail under the “abstract ideas” exception.⁶

Under this test, the “abstract ideas” exception presents no obstacle to the patent eligibility of the computer-implemented inventions at issue in this case. As the parties stipulated, and unlike the claims in *Bilski*, the claims here require computer implementation. Again, passing this threshold test of eligibility says nothing about whether the claims satisfy other statutory provisions governing the patentability of inventions, an issue on which *amici* take no position.

In contrast to the straightforward test we propose, any test that would result in some or all of the claims here being invalidated as ineligible “abstract

⁶ This straightforward test is consistent with the precedents of this Court, including but not limited to the principle that “mental processes” may not be patented. *Benson*, 409 U.S. at 67. *See also In re Comiskey*, 554 F.3d 967, 979 (Fed. Cir. 2009) (“[M]ental processes – or processes of human thinking – standing alone are not patentable even if they have practical application.”).

ideas” would likewise call into question vast numbers of patents claiming innovative computer-implemented inventions. The approach taken in the plurality opinion below – which first seeks to identify and extract “whatever fundamental concept appears wrapped up in the claim” (*i.e.*, the supposedly “abstract idea” at the heart of the claim⁷), and then examines whether the “balance of the claim . . . contains additional substantive limitations” that supply an inventive quality to the claim, *CLS Bank*, 717 F.3d at 1282 – would threaten countless legitimate patents. As just one example, consider innovations in certain newer automobiles such as automatic parallel parking, lane departure warning systems, and collision avoidance technology. The plurality’s proposed test would threaten the patent eligibility of such inventions, for their inventive aspect lies in the processes that are programmed into the automobile’s on-board computer rather than in any of the tangible items that may be recited in a claim: for example, none of the claimed sensors, computing elements, and automobile parts are new. And as Judge Moore

⁷ Notably, none of the opinions below satisfactorily explains what it means for a concept to be impermissibly “abstract.” The plurality stated that the concept at issue here – reducing settlement risk through an escrow-like transaction – is abstract “because it is a ‘disembodied’ concept, a basic building block of human ingenuity, untethered from any real-world application.” *CLS Bank*, 717 F.3d at 1286 (citation omitted). This formulation offers no practical guidance that would provide any hope of predictability in determining whether a claim is directed to an abstract idea. Moreover, as Petitioner ably demonstrates, the plurality’s vague definition of an “abstract” concept itself arguably does not describe Petitioner’s claims at all. Pet. Br. 47-48.

explained, the plurality’s proposed test “imbues the § 101 inquiry with a time-dependency that is more appropriately the province of §§ 102 and 103. . . . But § 101 is not a moving target – claims should not become abstract simply through the passage of time.” *CLS Bank*, 717 F.3d at 1315 (Moore, J., dissenting in part).

The automobile-related inventions discussed above comprise just one example of the types of innovative and beneficial inventions implicated by any test that threatens patents whose inventive aspect lies in the steps being programmed as opposed to the already existing tangible devices or systems that are controlled or directed by such programming. Countless other valuable inventions, for which patenting has already been permitted, fall into this category, including life-saving medical devices, appliances, tools used in the financial services industry (*e.g.*, fraud detection technology), robotics, and games.

Many of the proposed “tests” that would render ineligible claims covering computer-implemented inventions (that are not directed to scientific truths) are also based on the false notion that there is something unique about computer-implemented inventions that raises questions about their patent eligibility. But there is no meaningful difference between computer-implemented inventions and other types of inventions. Contrary to the plurality’s suggestion that “[a]t its most basic, a computer is just a calculator capable of performing mental steps faster than a human could,” *id.* at 1286, a computer is a highly configurable machine that is capable of being turned into new and different machines based on how it is programmed. And the act of invention on a computer

is fundamentally the same as the act of invention throughout history: a person today conceiving an idea that solves a problem in a unique and beneficial way and then programming a computer to implement that idea is no different from Thomas Edison conceiving an idea and implementing it in a lab. Both involve the conception and reduction to practice of an idea. That the technology of computers has enabled inventors to reduce ideas to practice faster and more efficiently than they could when working with other materials is irrelevant to the patent eligibility question.

Furthermore, the unsupported complaints by some that patents on computer-implemented inventions are too broad and imprecise are misplaced.⁸ This objection is not unique to computer-implemented inventions – a patent on any type of invention can have broad or ambiguous claims. The patentability provisions of the Patent Act provide powerful tools to weed out such “bad” patents or inventions, and a special threshold rule that, intentionally or not, renders ineligible *per se* computer-implemented inventions (that are not directed to scientific truths) would contradict the statute and do far more harm than good.

Finally, Respondents and their *amici* will like-

⁸ This Court has flatly held that arguments seeking a rule denying eligibility to so-called “business method” claims have no support in the statute. *Bilski*, 130 S. Ct. at 3228. Furthermore, any proposed definition of “business method,” required by such a rule, is necessarily vague and would inevitably make Section 101 an issue for vast numbers of patents and lead to uncertainty and conflicting results.

ly point to alleged statistical “evidence” regarding the amount of litigation involving computer-implemented inventions by so-called “non-practicing entities” (“NPEs”) to support a case for discriminating against software patents. Section 101, however, was purposefully designed by Congress to be a dynamic provision that would promote and protect innovation in *all* fields, especially innovations in new, emerging, and previously unforeseen fields, and it is a particularly inappropriate vehicle for a rule that would discriminate against particular fields or classes of inventions. Any debate about whether the costs to society of computer-implemented inventions are too high belongs in Congress rather than in the courts.⁹ Such questions “involve[] the balancing of competing values and interests, which in our democratic system is the business of elected representatives.” *Diamond v. Chakrabarty*, 447 U.S. 303, 317 (1980).

II. THE JUDICIAL EXCEPTION TO PATENT ELIGIBILITY FOR “ABSTRACT IDEAS” MUST BE CONSTRUED AND APPLIED NARROWLY.

Section 101, by its plain language, reflects a

⁹ Moreover, some studies reach different conclusions regarding whether NPEs assert lower-quality patents than other patent holders and whether patent rules should be structured to target these entities. *See, e.g.*, Jonathan H. Ashtor, *et al.*, *Patents at Issue: The Data Behind the Patent Troll Debate* 18-19 (Nw. Univ. Sch. of Law, Working Paper, Oct. 2013), *available at* www.law.northwestern.edu/faculty/programs/searlecenter/innovationeconomics/documents/Mazzeo_Zyontz_Ashtor_patents_at_issue.pdf.

consistent congressional policy to define patent-eligible subject matter in an expansive and permissive manner, not only to encourage innovations in traditional and established industries, but also to foster the creation and development of technologies and fields of endeavor that can scarcely be imagined today. Given that the legislative branch has chosen, in the faithful exercise of its constitutionally assigned authority, to broadly define eligible subject matter, it is critical that any effort by the judicial branch to place limits on such subject matter be carefully circumscribed, to ensure that Congress's legislative power is not encroached upon and its legislative purposes are not frustrated. The historically recognized judicial exceptions to patent eligibility, therefore, must be narrowly construed and should be applied only in the clearest of cases. This is especially true with respect to the much more malleable exception for "abstract ideas."

A. The Text and History of Section 101, and a Proper Respect for Congress's Constitutionally Assigned Authority To Define Patent-Eligible Subject Matter, Require that Judicial Exceptions to Patent Eligibility Be Narrowly Construed.

Section 101 of the Patent Act describes four broad categories of inventions or discoveries that are eligible for patent protection:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101.

This Court has repeatedly observed that Section 101 represents a “broad”¹⁰ and “expansive”¹¹ definition of patent-eligible subject matter. Thus, in *Bilski*, the Court reaffirmed that “[i]n choosing such expansive terms . . . modified by the comprehensive ‘any,’ Congress plainly contemplated that the patent laws would be given wide scope.” *Bilski*, 130 S. Ct. at 3225 (emphasis added) (citations omitted).

The relevant statutory history confirms that Congress has consistently legislated to the boundaries of its constitutional authority to “promote the Progress of Science and useful Arts.” The precursor to the current version of Section 101 was enacted as part of the Patent Act of 1793, which broadly defined patent-eligible subject matter to include “any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement [thereof].” See *Chakrabarty*, 447 U.S. at 308. That statute “embodied [Thomas] Jefferson’s philosophy that ingenuity should receive a liberal encouragement.” *Id.* (citation and quotation marks omitted).

Congress modified the statute in 1952, replacing the word “art” with “process.” See *Diamond v. Diehr*, 450 U.S. 175, 182 (1981). Congress made clear that its amendment was not intended to narrow the scope of eligible subject matter, for it broadly defined

¹⁰ See *Bilski*, 130 S. Ct. at 3225; *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred Int’l, Inc.*, 534 U.S. 124, 131 (2001); *Chakrabarty*, 447 U.S. at 308.

¹¹ *Chakrabarty*, 447 U.S. at 308.

“process” to include a “process, art or method, and . . . a new use of a known process, machine, manufacture, composition of matter, or material.” 35 U.S.C. § 100(b).

As this Court has emphasized, “[t]he subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting ‘the Progress of Science and the useful Arts,’ with all that means for the social and economic benefits envisioned by Jefferson.” *Chakrabarty*, 447 U.S. at 315. Section 101 is thus “a dynamic provision designed to encompass new and unforeseen inventions.” *J.E.M.*, 534 U.S. at 135; *see also Chakrabarty*, 447 U.S. at 316 (“Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable.”).

Notwithstanding Congress’s deliberately broad definition of patent-eligible subject matter, this Court has itself excluded certain types of subject matter from patent protection. While the Court’s precise description of these judicially created exceptions has varied over time, recent decisions have referred to them as the exceptions for “laws of nature, physical phenomena, and abstract ideas.” *Bilski*, 130 S. Ct. at 3225 (citation omitted). *See also Association for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2116 (2013).

As the Court acknowledged in *Bilski*, although these judicial exceptions can be traced to cases “going back 150 years,” they “are not required by the statutory text . . .” 130 S. Ct. at 3225. Nor has this Court ever suggested that these exceptions are required by Section 101’s purposes or its legislative

history. The judicial exceptions to Congress’s expansive definition of patent-eligible subject matter thus lie at the farthest edge of the judicial power, perilously close to the border separating permissible interpretations of statutes from impermissible encroachments on Congress’s Article I authority.¹² *Cf. Western Union Tel. Co. v. Lenroot*, 323 U.S. 490, 514 (1945) (“[T]he judicial function does not allow us to disregard that which Congress has plainly and constitutionally decreed and to formulate exceptions which we think, for practical reasons, Congress might have made had it thought more about the problem.”). If that constitutional line is to be respected, it is essential that the judicial exceptions to Section 101’s intentionally expansive language be construed narrowly and applied only in the clearest cases.

¹² This Court in *Chakrabarty* identified the border separating the judicial and legislative powers in the specific context of interpreting Section 101: “Congress has performed its constitutional role in defining patentable subject matter in § 101; we perform ours in construing the language Congress has employed. In so doing, our obligation is to take statutes as we find them, guided, if ambiguity appears, by the legislative history and statutory purpose.” 447 U.S. at 315. *See also Bilski*, 130 S. Ct. at 3226 (“This Court has more than once cautioned that courts should not read into the patent laws limitations and conditions which the legislature has not expressed.” (quotation marks omitted)). Given that the judicial exceptions to patent eligibility are not required by “the language Congress has employed” in Section 101, it appears that they can be justified, if at all, only as a matter of *stare decisis*.

B. It Is Particularly Important To Read the Judicial Exception for “Abstract Ideas” Narrowly.

As noted (*see* note 3, *supra*), while Petitioner reads *Bilski* as following in the footsteps of previous decisions applying the “abstract ideas” exception to patent claims reciting “fundamental or mathematical truths,” Pet. Br. 26, the decision can also be read as applying that exception beyond the narrow realm of such truths, and into the limitless realm of all ideas.

Scientific truths are categories of human knowledge that are relatively easy to define, and thus to identify. A law of nature either is or it is not. So too for a physical phenomenon and a mathematical formula expressing a scientific truth. And a patent that recites such a scientific truth may thus seek essentially to monopolize a “basic tool[] of scientific and technological work,” *Mayo*, 132 S. Ct. at 1293 (quoting *Benson*, 409 U.S. at 67). But the same cannot be said for “abstract ideas” that go beyond such scientific truths. An abstract idea in this general sense is *any* human thought that has not been reduced to some specific, concrete practice or application. And at the core of *every* invention is an abstract idea. As four members of the court below observed, “[a]ny claim can be stripped down, simplified, generalized, or paraphrased . . . until at its core, something that could be characterized as an abstract idea is revealed.” *CLS Bank*, 717 F.3d at 1298 (Rader, C.J., *et al.*, concurring in part and dissenting in part); *see also Myriad*, 133 S. Ct. at 2116; Alan L. Durham, *The Paradox of “Abstract Ideas,”* 2011 UTAH L. REV. 797, 797 (“*Durham*”) (“[I]n an important sense, every patent claims an abstract idea.

The subject matter of a patent is an invention. An invention is a concept – an idea for new technology.”).

Thus, although the plurality was correct to observe that “a person cannot truly ‘invent’ [a] . . . scientific truth,” it was wrong to suggest that a person cannot invent an abstract idea that is not a scientific truth. *See CLS Bank*, 717 F.3d at 1283. Scientific truths are the products of nature. “[A] scientific principle . . . reveals a relationship that has always existed.” *Flook*, 437 U.S. at 593 n.15. Ideas, however, are the products of human ingenuity. Indeed, in a very real sense, cognition – the ability to form ideas – is a fundamental defining characteristic of humans. As this Court observed in *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 60 (1998), “[t]he primary meaning of the word ‘invention’ in the Patent Act unquestionably refers to the inventor’s conception rather than to a physical embodiment of that idea.” Patenting ideas thus does not pose an inherent danger of monopolizing “the basic tools of scientific and technological work.” *Benson*, 409 U.S. at 67.

Because an “abstract idea,” in this sense, is at the root of every invention, there are enormous stakes riding on how one determines when a claimed invention is too “abstract.” Therefore, it is very important to avoid vague or difficult to apply tests for the “abstract ideas” exception – otherwise Section 101 challenges will become *de rigueur* in patent disputes and there will inevitably be inconsistent or irreconcilable decisions, as illustrated by the warring opinions below. As Judge Newman trenchantly observed: “With today’s judicial deadlock, the only assurance is that any successful innovation is likely to

be challenged in opportunistic litigation, whose result will depend on the random selection of the panel.” *CLS Bank*, 717 F.3d at 1321 (Newman, J., concurring in part and dissenting in part). Similarly, a broadly or loosely defined abstract ideas exception would pose a much more serious risk of the courts or the PTO unintentionally usurping Congress’s constitutional authority over the designation of patent-eligible subject matter.

Finally, as discussed below, “[t]he § 101 patent-eligibility inquiry is only a threshold test.” *Bilski*, 130 S. Ct. at 3225. It was not intended by Congress to screen out all claimed inventions that are undeserving of patent protection, but was instead designed to serve as at best a “coarse eligibility filter.” *Research Corp. Techs., Inc. v. Microsoft Corp.*, 627 F.3d 859, 869 (Fed. Cir. 2010). Even if a claimed invention qualifies as one of the four eligible subject matter categories identified in Section 101, it must also satisfy “the conditions and requirements of this title,” including the conditions governing patentability stated in provisions such as Sections 102, 103, and 112. *Bilski*, 130 S. Ct. at 3225. These other provisions supply powerful and discriminating tools for rejecting or invalidating “bad” patents. *See, e.g., Research Corp.*, 627 F.3d at 869. *See also Durham*, 2011 UTAH L. REV. at 845-47.

III. PATENT CLAIMS TO COMPUTER-IMPLEMENTED INVENTIONS THAT DO NOT RECITE SCIENTIFIC TRUTHS ARE PATENT ELIGIBLE UNDER SECTION 101.

In light of the text and history of Section 101, the “abstract ideas” exception cannot reasonably be read to reach computer-implemented inventions. A

patent claim that reduces an otherwise “abstract” idea to practical, beneficial application through the use of such tangible technology cannot be considered impermissibly “abstract,” at least without stripping that term of all meaning. Consistent with this reasoning, this Court’s precedents (both before and after the 1952 Act) have consistently distinguished between inventions claiming a scientific truth or an abstract idea itself and inventions claiming the practical *application* of such an idea. This distinction, which is the primary touchstone of any inquiry regarding whether a claim is too “abstract,” compels the conclusion that computer-implemented inventions do not fall under the “abstract ideas” exception. Finally, notwithstanding the assertions of those proposing a broad reading of the “abstract ideas” exception, a clear rule acknowledging the patent eligibility of computer-implemented inventions that do not recite scientific truths poses little danger that “bad” patents will overwhelm the system; the Patent Act provisions that directly speak to the *patentability* of claims will remain powerful tools to weed out those “inventions” that are not qualified for the protection of the patent laws.

A. This Court’s Pre-1952 Precedents Consistently Distinguish Between Ineligible “Principles” And Eligible “Applications” Of Those Principles.

From its earliest decisions, this Court has distinguished between a “principle,” which may not be patented, and a beneficial “application” of that principle, which may. The scope of ineligible “principles” was historically narrow, and the early decisions relied upon by the modern Court emphasize that a

claim is eligible so long as it applies or implements the principle in a beneficial way.

This Court explored the principle-application distinction in *O'Reilly v. Morse*, a decision upholding seven of Morse's eight patent claims related to the telegraph. 56 U.S. 62, 112 (1853). The Court rejected Morse's eighth claim, which sought to patent the natural phenomenon of electromagnetism "*however developed*, for making or printing intelligible characters, letters, or signs, at any distances . . ." *Id.* at 86 (emphasis added). The Court explained that this claim was "too broad" because it claimed inventions "which he has not described and indeed had not invented, and therefore could not describe when he obtained his patent." *Id.* at 113. But the Court expressed no similar overbreadth concern with Morse's seven other claims, all of which embodied some application of a principle. For example, the Court approved Morse's first claim for "making use of the motive power of magnetism" – an otherwise ineligible "principle" – when applied "as means of operating or giving motion to machinery, which may be used to imprint signals upon paper or other suitable material, or to produce sounds in any desired manner, for the purpose of telegraphic communication at any distances." *Id.* at 85. The Court also approved Morse's fifth and sixth claims, even though they essentially claimed an entire language of dots and dashes when used for telegraphic purposes. *Id.* at 86. *Morse* thus distinguished between the patent-ineligible scientific principle of electromagnetism and any practical application, even if quite broad, of that principle.

In *Le Roy v. Tatham*, the Court famously observed that "[a] principle, in the abstract, is a fun-

damental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.” 55 U.S. 156, 175 (1852). But the Court was quick to add that “the invention is not in discovering [scientific truths], but in *applying them* to useful objects.” *Id.* (emphasis added). The “principle” in *Le Roy* was again a scientific truth – how heat operates upon lead – and the word “abstract” was used essentially to mean “not applied through any medium.” *See also Rubber-Tip Pencil Co. v. Howard*, 87 U.S. 498, 507 (1874) (“An idea of *itself* is not patentable, but a new device by which it may be made practically useful is.” (emphasis added)).

The Court’s 1880 decision in *Tilghman v. Proctor*, 102 U.S. 707 (1880), also suggests a narrow ambit for judicial exceptions to statutory subject matter. The Court upheld a patent for a process for dissolving oily materials under high temperature and pressure, even though the patent was not limited to implementation through any particular device. *Id.* at 718. Once again stressing that the patent claimed the *application* of the newly-discovered scientific truth, the Court explained that the inventor claimed a “process” rather than a “principle” because the claim described “a process by which a principle is applied to effect a useful result.” *See id.* at 724.

Early Twentieth Century decisions relied upon by the Court’s more recent decisions further confirm the critical difference between ineligible principles reciting scientific truths and eligible applications of those principles. For example, in *Mackay Radio*, the Court stated that “[w]hile a scientific truth, or the mathematical expression of it, is not patentable in-

vention, a novel and useful structure created with the aid of knowledge of scientific truth may be.” 306 U.S. at 94. In *Funk Brothers Seed Company v. Kalo Inoculant Company*, the Court similarly explained that “[h]e who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from *the application of the law of nature to a new and useful end.*” 333 U.S. 127, 130 (1948) (emphasis added). Finally, in *United States v. Dubilier Condenser Corporation*, the Court observed that “the act of invention” consists “neither in finding out the laws of nature, nor in fruitful research as to the operation of natural laws,” but instead “in discovering how those laws may be utilized or applied for some beneficial purpose, by a process, a device, or a machine. *It is the result of an inventive act, the birth of an idea and its reduction to practice*” 289 U.S. 178, 188 (1933) (emphasis added).

In sum, this Court’s decisions pre-dating the 1952 Act provide no foundation for the robust “abstract ideas” exception pressed by Respondents and some members of the Federal Circuit. The patent-ineligible “principles” in these early cases were scientific truths such as the natural phenomena of electromagnetism and the effect of heat upon a certain substance. Moreover, these cases make clear that any invention that reduces such an otherwise ineligible principle to some practical, beneficial application is patent eligible.

B. This Court’s Post-1952 Section 101 Decisions Confirm that Computer-Implemented Technologies Are Patent-Eligible Subject Matter.

In a trio of decisions applying Section 101 of the 1952 Act to patent claims related to computers (and software in particular), the Court adopted the modern formulation that an “abstract intellectual concept” or “abstract idea” falls outside the bounds of patent-eligible subject matter. Those decisions in fact support the continued vitality of the familiar principle-application distinction and the conclusion that a patent claiming the beneficial application of an idea through computer technology falls squarely within the scope of patent-eligible subject matter. The patent claims in all three cases recited a scientific truth.

The first case was *Benson*, where the Court held that a mathematical formula for converting binary-coded decimal (“BCD”) numerals into binary numbers could not be patented, because it simply expressed what the Court found to be a scientific truth. 409 U.S. at 71-72. Relying on earlier decisions discussed above, the Court observed that “[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.” *Id.* at 67.¹³ But the Court reiterated the

¹³ One commentator has noted that “the authorities cited . . . throughout the *Benson* opinion deal with principles or phenomena of nature. They do not refer, at least in the same terminology, to ‘abstract intellectual concepts.’” *Durham*, 2011 UTAH L. REV. at 814.

rule that “the *application* of the law of nature to a new and useful end” may be patented. *Id.* (emphasis added) (citation omitted). Significantly, although the formula “ha[d] no substantial practical application except in connection with a digital computer,” *id.* at 71, the claimed formula was not limited in application “to any particular art or technology, to any particular apparatus or machinery, or to any particular end use,” *id.* at 64. Indeed, the Court explained that the claim could even “be performed without a computer.” *Id.* at 67. The Court invalidated the patent on the ground that the claim wholly pre-empted a mathematical truth. *Id.* at 71-72.

In *Flook*, the Court explained that the rule of *Benson* that “the discovery of a novel and useful mathematical formula may not be patented” cannot be circumvented by simply identifying “a limited category of useful, though conventional, post-solution applications of such a formula” 437 U.S. at 585. The patentee in *Flook* attempted to patent a mathematical formula but limit his claim only to the application of the formula in one context (the catalytic chemical conversion of hydrocarbons). *Id.* at 586. The Court suggested that the patent could potentially cover known and unknown uses of the formula in the context of processes for catalytic conversion. *See id.* (“the claims cover a broad range of potential uses of the method”). The underlying equation in the claim merely expressed a “scientific principle.” *See id.* at 593 n.15 (“The underlying notion is that a scientific principle, such as that expressed in respondent’s algorithm, reveals a relationship that has always existed.”). The Court rejected the patent on the ground that it effectively claimed the unpatentable mathematical formula itself. *Id.* at 590.

The reasoning of *Flook* makes clear that, even stretched to their limit, both *Flook* and *Benson* extend no further than a patent reciting implementation on a computer of a mathematical expression of a scientific truth, and that those decisions do not speak to the eligibility of patent claims reciting the computer implementation of “ideas” that spring from human invention – *i.e.*, those not directed to scientific truths. *Flook* did not question the time-honored distinction between unpatentable principles and patentable applications, though it explained that “[t]he line between a patentable ‘process’ and an unpatentable ‘principle’ is not always clear.” *Id.* at 589. The decision in *Flook* turned on the observation that the mathematical formula must be “treated as though it were a familiar part of the prior art,” *id.* at 592, because scientific truths “are not the kind of ‘discoveries’ that the statute was enacted to protect,” *id.* at 593. The Court emphasized that “[t]he underlying notion is that a scientific principle, such as that expressed in respondent’s algorithm, *reveals a relationship that has always existed*. . . . Such ‘mere’ recognition of a theretofore existing phenomenon or relationship carries with it no rights to exclude others from its enjoyment.” *Id.* at 593 n.15 (emphasis added) (citation omitted).

But the same cannot be said for human “ideas,” for such ideas do not describe “a relationship that has always existed.” Two centuries of patent law confirm that the practical, beneficial *application* of an idea through tangible elements such as computers and software may be patented. For the same reason, patents directed to the practical application of ideas do not carry the same risk posed by patents reciting scientific truths that “the public [will be] deprived of

any rights that it theretofore freely enjoyed.” *Id.* (citation omitted).

In *Diehr*, the Court clarified that the holdings of *Benson* and *Flook* are limited to patents that effectively claim a scientific truth itself, and that where the patentee claims a particular beneficial process (in *Diehr*, a process for curing rubber), the invention satisfies Section 101 even if it requires, as one step in the process, the application of such a mathematical formula. 450 U.S. at 187. The Court explained that the patent in *Flook* was invalid because it claimed nothing more than the formula itself, *see id.* at 186-87 & 192 n.14, whereas the patent in *Diehr* was simply “a physical and chemical process for molding precision synthetic rubber products,” *id.* at 184, and the eligibility of that process was “not altered by the fact that in several steps of the process a mathematical equation and a programmed digital computer are used,” *id.* at 185. While *Diehr*’s claim recited the Arrhenius equation, a claim that “implements or applies [a mathematical] formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect” satisfies the requirements of section 101. *Id.* at 192. And the Court concluded that “a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer. . . . It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.” *Id.* at 187 (emphasis in original).

Bilski was the next case to meaningfully dis-

cuss the “abstract ideas” exception. The claims in *Bilski* were directed to steps for hedging the risk of price fluctuations, both in commodity markets in general and the energy markets in particular. 130 S. Ct. at 3223-24.¹⁴ The patent examiner found that the claimed hedging idea was “not implemented on a specific apparatus” and was “without any limitation to a practical application.” *Id.* at 3224. Thus, the claims were broad enough to cover *all* applications of the idea, both known and unknown. The PTO even suggested that the claims could be performed solely through mental steps. *See id.* This Court held that the patent sought to claim an ineligible abstract idea itself, for it would “pre-empt use of this approach in all fields, and would effectively grant a monopoly over an abstract idea.” *Id.* at 3231.

As noted earlier, although Petitioner reads *Bilski* as rejecting a patent claim that recited a “fundamental or mathematical truth,” Pet. Br. 26, the claims in *Bilski* can also be read as reciting an “abstract idea” – the “basic concept of hedging,” *Bilski*, 130 S. Ct. at 3231 – that is not a scientific truth. But such a reading of the *Bilski* claims does not call into question the eligibility of Petitioner’s claims here, or any other computer-implemented invention not directed to a scientific truth. Because the patent in *Bilski* claimed “a monopoly over an abstract idea,” *Bilski*, 130 S. Ct. at 3231, “*without any limitation to a practical application*,” *id.* at 3224 (emphasis added), the decision in *Bilski* thus falls squarely within the

¹⁴ “Claim 1 describe[d] a series of steps instructing how to hedge risk. Claim 4 put[] the concept articulated in claim 1 into a simple mathematical formula.” *Id.* at 3223.

time-honored distinction between unpatentable “principles” and patentable “applications” of those principles. No claim in *Bilski* recited a computer or other tangible element. If the patent claims had been limited to concrete, practical application through computer technology, they surely would have qualified as patent eligible under Section 101. *Bilski* is thus fully consistent with the rule that claims covering computer-implemented inventions are not “abstract.”

Here, Petitioner’s patents do not recite an unpatentable scientific truth, but instead recite a patentable human “idea” in the literal sense – a particular process for reducing settlement risk – and require that the idea be implemented using tangible computing elements. Accordingly, they are directed to eligible subject matter under Section 101.

C. The Patent Eligibility Inquiry Under Section 101 Should Not Be Conflated with the Patentability Inquiry Governed by Other Provisions of the Patent Act.

Respondents and their *amici* argued below that a broad “abstract ideas” exception is necessary to reject or invalidate “bad” patents that are undeserving of the protection of the patent system. This argument inflates the intentionally limited office of Section 101, and ignores the multiple powerful tools provided by other provisions of the Patent Act that are directly geared to the determination of whether a patent should issue for a particular claimed invention. The argument thus improperly conflates the *patent eligibility* inquiry under Section 101 with the *patentability* concerns that are the province of other

sections of the Act.

By its very terms, Section 101 identifies the subject matters that are eligible for a patent, “subject to the conditions and requirements of this title.” 35 U.S.C. § 101. A patent claim that passes the threshold test of patent eligibility thus must also satisfy the “conditions and requirements” for patentability, such as novelty (Section 102), nonobviousness (Section 103), and specificity (Section 112). *See also Diehr*, 450 U.S. at 189 (“Section 101 . . . is a general statement of the type of subject matter that is eligible for patent protection. . . . Specific conditions for patentability follow and § 102 covers in detail the conditions relating to novelty.”).

An expansive reading of the “abstract ideas” exception is therefore not needed to protect against “bad” patents. Indeed, Section 101 was likely not even needed to reject the claims in *Bilski*. Given that “[h]edging is a fundamental economic practice long prevalent in our system of commerce and taught in any introductory finance class,” *Bilski*, 130 S. Ct. at 3231 (citation and quotation marks omitted), the patent almost certainly would have been rejected on novelty grounds. *See also id.* at 3235-36 (Stevens, J., concurring) (the majority’s abstract idea analysis addresses concerns better dealt with under Sections 102 and 112); *Lemley*, 63 STAN. L. REV. at 1342 (“There were many, many ways to reject Bilski’s claim 1.”). Likewise, inventions that do nothing more than use a computer to implement time-worn concepts in obvious and traditional ways will not receive patent protection notwithstanding the fact that they concern eligible subject matter.

Contrary to the arguments made by some,

Mayo does not support the importation of novelty, nonobviousness, and other patentability criteria into the “abstract ideas” analysis under Section 101. That case involved a patent that “set forth laws of nature – namely, relationships between concentrations of certain metabolites in the blood and the likelihood that a dosage of a thiopurine drug will prove ineffective or cause harm.” *Mayo*, 132 S. Ct. at 1296. Read in context, *Mayo*’s recognition that for some patent claims implicating laws of nature, the Section 101 patent eligibility inquiry “might sometimes overlap” with the novelty analysis under Section 102, *id.* at 1304, was quite limited in scope. The Court made this observation in the course of rejecting the Government’s argument that it was sufficient, under Section 101, to couple a law of nature with “*virtually any* [other] step beyond a statement of a law of nature” *Id.* at 1303 (emphasis added). The statement in *Mayo* thus is limited to situations where a court is assessing a claim directed to a scientific truth and whether an additional element beyond that truth is sufficient to save the claim. And because a scientific truth cannot, by definition, be invented, such scientific truths can properly be viewed “as if they were part of the prior art.” *See id.* at 1304. It is obviously *not* appropriate to treat a new “idea,” conceived through human ingenuity, as prior art. In short, nothing in *Mayo* rejects this Court’s observation in *Diehr* – a case favorably relied upon by the Court in *Mayo* – that the “question . . . whether a particular invention is novel is wholly apart from whether the invention falls into a category of statutory subject matter.” *Diehr*, 450 U.S. at 190 (citation and quotation marks omitted).

By drafting Section 101 in broad and permis-

sive terms, Congress decided that “ingenuity should receive a liberal encouragement,” *see Chakrabarty*, 447 U.S. at 308, and that uncertainty about whether a patent addresses eligible subject matter should be resolved in favor of the patentee. Any concern about the granting of “low quality” patents is no reason to empower judges to use the blunt instrument of Section 101’s identification of eligible subject matter to make what are in effect policy judgments about the appropriate scope of patent protection or predictions regarding which technologies are or are not in need of patent protection to spur research and innovation. Such questions “involve[] the balancing of competing values and interests, which in our democratic system is the business of elected representatives.” *Id.* at 317.

CONCLUSION

The exception to Section 101 that is implicated here – the exception for “abstract ideas” – merely asks whether a claim fails to recite tangible elements, such as computing elements. The exception to Section 101 set forth in this Court’s precedents dealing with “laws of nature, physical phenomena and mathematical formulas” (*i.e.*, claims directed to scientific truths), is not implicated in this case. Because Petitioner’s claims are not directed to scientific truths and recite tangible computing elements, the claims easily satisfy Section 101. Accordingly, this Court should reverse the judgment of the Federal Circuit.

Respectfully submitted,

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APPENDIX

LIST OF *AMICI CURIAE*

Amicus Trading Technologies International, Inc. (“TT”), founded in 1994, makes derivatives trading software and execution solutions for professional traders. TT’s software is purchased by premier investment banks, brokers, Futures Commission Merchants, hedge funds, proprietary trading firms, and other trading institutions, and is used each day by thousands of traders to access dozens of electronic exchanges around the world. TT is headquartered in Chicago and employs approximately 450 people worldwide. TT has additional offices in New York, Stamford, Houston, Sao Paulo, London, Geneva, Frankfurt, Singapore, Hong Kong, Tokyo, and Sydney. TT invests heavily in research and development and has obtained patents covering various features of its products. TT relies on its patents to protect its investment in research and development. Most of TT’s patents are directed to computer-implemented inventions, and many of its patents are directed to novel software-implemented tools used by traders to execute and manage orders.

Amicus Cantor Fitzgerald, L.P. (“Cantor”) is a preeminent capital markets investment bank and broker dealer, as well as a premier global financial services firm. Cantor invests heavily in new products and new companies, including financial services, gaming, and consumer services. It relies on its patent portfolio to protect its investments, especially with respect to computer-implemented technology. Importantly, (a) Cantor builds what it invents and uses the software it builds; (b) its products require immense investment in design, coding, testing, regu-

latory approval, and marketing; and (c) it manages investment and product-build decisions based in significant part on patent protection. Its technologies require substantial investment to bring to market—but once Cantor has blazed the trail, the path for followers is clear and much less expensive, and their cost of regulatory approval, creating demand, and educating customers is far lower, often near zero. Cantor fundamentally relies on the patent system – it can only make high fixed-cost software investments if there is a reasonable expectation of profit, and that requires significant protection against free-riders. Patents are one of the key components of that protection. If patent protection is weakened for software inventions, then the ability of Cantor and similar companies to invest in complex software may be reduced, and many products and services may not come to market.

Amicus Cummins Inc. (“CMI”), a publicly-traded company, is a leading global power provider that designs, manufactures, distributes, and services diesel and natural gas engines, engine-related component products, including emission solutions, filtration, fuel systems and air handling systems, and power generation products, including electric power generation systems and related products. Cummins was founded in 1919 as one of the first manufacturers of diesel engines and is headquartered in Columbus, Indiana. Cummins sell its products to original equipment manufacturers, distributors, and other customers through a worldwide network of more than 600 company-owned and independent distributor locations and approximately 6,500 dealer locations in more than 190 countries and territories. At

Cummins, innovation is a fundamental core value, and Cummins has consistently invested in research and development and cutting-edge technology to sustain its leading edge. As an industry leader, Cummins relies on its extensive patent portfolio, including computer-related patents, to protect its significant investment in research and development.

Amicus Scientific Games Corporation (“Scientific Games”) (NASDAQ:SGMS), headquartered in New York City, is a leading innovator in the global lottery and regulated gaming industries. Through the knowledge and experience of over 3,500 employees, Scientific Games serves customers from advanced-technology manufacturing and operational facilities in North America, South America, Europe and Asia, with additional facilities located throughout the United States and around the world based on customer requirements. Scientific Games invests heavily in research and development to create new and innovative computer- and software-related technology and relies on patents to protect those innovations. WMS Gaming Inc. is a wholly owned subsidiary of Scientific Games Corporation. WMS Gaming has been a leader in interactive entertainment since Harry Williams founded WMS Gaming’s predecessor company in 1943. A Stanford University-trained engineer who devised the “tilt” mechanism for pinball machines, Williams changed forever the nature of pinball in America. The Company brought this spirit of innovation to the home video market in the 1980s and to the casino gaming industry in the early 1990s. Today, through its online interactive business, WMS is also developing products, services, and end-to-end solutions that address global online wagering, casu-

al, social, and mobile gaming opportunities. Many of WMS Gaming's innovations are software implemented and WMS Gaming relies upon patents to protect these innovations. Scientific Games owns over 900 patents and has one of the largest patent portfolios in the gaming industry.

Amicus Align Technology, Inc. ("Align") is a publicly-traded global medical device company headquartered in San Jose, California, with approximately 3,175 employees worldwide. Align pioneered the invisible orthodontics market with the introduction of the patented Invisalign® system in 1999. The Invisalign® system is a combination of proprietary virtual treatment modeling software and removable clear aligners based on rapid manufacturing processes and mass customization, much of which is covered by patents in the United States and many other countries. Align has also developed, and sells, other innovative, technology-rich products, such as the highly innovative Itero™ Scanner and OrthoCAD CAD-CAM services. Align's ability to continue to innovate and grow in the digital dental area is significantly dependent on its ability to protect its innovations by intellectual property rights. Many of Align's past and projected future innovations and inventions have and will embody computer-implemented processes, machines, and systems.

Amicus Alcatel-Lucent has operations in over 100 countries and had approximately 72,000 employees at the end of 2012. Alcatel-Lucent is the world's first truly global communications solutions provider, with the most complete, end-to-end portfolio of solutions and services in the industry. Alcatel-Lucent

provides products and innovations in IP and cloud networking, ultra-broadband fixed and wireless access for service providers and their customers, as well as enterprises and institutions throughout the world. Alcatel-Lucent's Bell Labs, one of the world's foremost technology research institutes, is responsible for countless breakthroughs that have shaped the networking and communications industry. In 2013, Alcatel-Lucent obtained more than 3,000 patents worldwide, resulting in a portfolio of more than 32,000 active patents and approximately 14,900 patent applications totaling approximately 47,000 issued and pending patents worldwide across a vast array of technologies. Alcatel-Lucent considers patent protection to be critically important to its businesses due to the emphasis on research and development and intense competition in its markets.

Amicus CoreLogic (NYSE: CLGX) is a publicly traded company headquartered in Irvine, California, with over 5,000 employees worldwide. CoreLogic is a leading property information, analytics and services provider in the United States and Australia. The company's combined data from public, contributory and proprietary sources includes over 3.3 billion records spanning more than 40 years, providing detailed coverage of property, mortgages and other encumbrances, consumer credit, tenancy, location, hazard risk, and related performance information. The markets CoreLogic serves include real estate and mortgage finance, insurance, capital markets, transportation, and government. CoreLogic delivers value to clients through unique data, analytics, workflow technology, advisory, and managed services. Clients rely on CoreLogic to help identify and manage

growth opportunities, improve performance, and mitigate risk. CoreLogic relies on patents, amongst other intellectual property, to protect its innovations and investments in research and development (“R&D”) and has various U.S. patents and patent applications covering computer-implemented innovations in its products.

Amicus Aristocrat Technologies Australia Pty. Ltd. (“Aristocrat”) is an Australian-based and publicly listed company that employs approximately 800 people in the United States and over 2,000 people across the globe. Aristocrat is a leading manufacturer and supplier of gaming equipment to the casino industry and has major operations in the United States, Canada, South America, Europe, Asia, and Australia. The gaming industry is an extremely competitive industry and one that requires relentless product innovation in order to remain competitive. Because of this, Aristocrat invests significant resources into its R&D activities. With a global patent portfolio exceeding 1000 issued patents and pending applications, Aristocrat’s future is dependent on a robust and enforceable patent portfolio that maximizes the commercial return on its R&D investment.

Amicus Bancorp Services, LLC (“Bancorp”), founded in 1993, assists large financial institutions and Fortune 500 companies by developing innovative structured financial products to meet the unique needs of its clients. The USPTO has granted Bancorp patents on novel computer systems, media, and processes that administer those complex financial products with automated functionality requiring specially programmed computers. Bancorp has placed and

currently services and administers structured financial products, with particular emphasis on specialized computer administration platforms. Bancorp's patented computer administration systems are specifically designed to support daily valuation and other automated functionality for hedge funds, non-qualified deferred compensation plans, and separate account life insurance policies with stable value protection.

Amicus NAGRA USA, Inc., a subsidiary of the Kudelski Group (SIX:KUD.S), provides security and multiscreen user experience solutions for the monetization of digital media. The company offers content providers and DTV operators innovative and patented secure, open, integrated platforms and applications over broadcast, broadband and mobile platforms, enabling compelling and personalized viewing experiences. The Kudelski Group also offers cyber security solutions and services focused on helping companies worldwide protect their data and systems and is additionally well known as a technology leader in the area of physical access control and management of people or vehicle access at sites and events. As a result of over 60 years of innovation and substantial investment in the hardware and software-based technologies it provides, the Kudelski Group holds over 4,300 issued and pending patents worldwide. The Group employs approximately 400 people in the United States (and 3000 worldwide) and is headquartered in Cheseaux-sur-Lausanne, Switzerland. Please visit www.nagra.com for more information.

Amicus BGC Partners, Inc. (“BGC”) is a spin-off of Cantor Fitzgerald, L.P., and is a publicly-owned holding company of global brokerage businesses primarily servicing wholesale financial and real estate markets. Its products include fixed income securities, interest rate swaps, foreign exchange, equities, equity derivatives, credit derivatives, commercial real estate, commodities, futures, and structured products. BGC also provides a wide range of services, including trade execution, broker-dealer services, clearing, processing, information, and other back-office services to a broad range of financial and non-financial institutions. BGC relies on its patent portfolio, especially with respect to computer-implemented technology. BGC can only make high fixed-cost software investments if there is a reasonable expectation of profit. Patent protection is one of the key components in making those investments. If patent protection is weakened for software inventions, then the ability of BGC to invest in complex software may be reduced.

Amicus Fallbrook Technologies Inc. (“Fallbrook”) is a technology development company that designs and manufactures advanced transmission systems. Its core technology, NuVinci®, is a traction-based continuously variable planetary drive (CVP) that is scalable to a variety of applications, ranging from bicycles to automobiles and industrial machinery. Over the past 12 years, Fallbrook has built an extensive portfolio of over 600 patents and patent applications worldwide from its research and development efforts. Robust patent protection provides Fallbrook and its licensees a sustainable competitive advantage that provides the necessary security to support the significant investment by the

Company's investors and licensees required to develop transmissions for the public that more efficiently and effectively utilize energy in vehicles and industrial equipment.

Amicus Architecture Technology Corporation ("ATCorp") is a high technology small business engaged in research, development, engineering, and services. ATCorp employs approximately 100 people at three different locations in the United States. ATCorp's software-intensive solutions provide government and commercial clients with the flexibility to "customize" new, existing, and legacy systems with features that meet or exceed their next generation requirements. ATCorp has developed innovative software-based products and has distributed them to thousands of users worldwide. ATCorp's Systems Engineering and Software Development groups specialize in specification, development, integration, and evaluation of high-performance, network-centric, safety-critical computing systems for the military and air traffic sectors. Due to the unique design and features of ATCorp software products, more than 15 patents have been granted since 2003. Government and commercial clients rely on ATCorp to provide key software components to next generation network systems providing advanced capabilities and protection against the growing threat of "cyber-attacks."

Amicus Sonitus Medical Inc. ("Sonitus") is a privately held medical device company with 82 employees located in San Mateo, California. Sonitus is focused primarily on the development of innovative technologies for the treatment of hearing disorders. Sonitus' lead product, the SoundBite™ Hearing Sys-

tem (“SoundBite”), is the world’s first non-surgical and removable hearing solution that imperceptibly transmits sound via the teeth. Currently FDA-cleared for the treatment of Single Sided Deafness and Conductive Hearing Loss, SoundBite has intended future indications for other hearing disorders such as mixed hearing loss and tinnitus. Additionally, SoundBite and SoundBite-related technologies are being developed for multiple communications applications, including applications suitable for certain government work as well as consumer uses. Sonitus has invested millions of dollars to create and maintain its broad patent portfolio. With 35 issued patents in the United States, Sonitus relies extensively on these issued patents to protect its core United States market and to attract venture and other forms of capital to finance the growth of its business. Sonitus strongly believes that robust and comprehensive United States patent laws and regulations are crucial to the success and future growth of its business.

Amicus Miramar Labs, Inc. (“Miramar”) is owner of the miraDry System, a breakthrough non-invasive technology that utilizes microwave energy to safely eliminate underarm sweat. The miraDry System is the result of over five years of research and development, including a major long-term clinical study conducted by leading dermatologists across the United States. Miramar has over 80 employees and relies on patents to protect its computer controlled products.

Amicus Great Lakes NeuroTechnologies Inc. (“Great Lakes”) (GLNeuroTech.com) understands

that movement disorders, such as Parkinson's disease, represent a complex problem for patients, physicians, and researchers. Great Lakes produces a line of bioinstrumentation products that includes physiological monitors and patient-centered diagnostic and therapy systems integrated with wireless, remote, and web-based applications. By working together with customers, Great Lakes ensures the delivery of high quality products that fit customers' clinical and research requirements. Great Lakes' activities include research and development, engineering, manufacturing, distribution, and export of research systems and medical devices. It sells its products on all seven continents. Its major markets include physiological monitoring for research and education, movement disorders such as Parkinson's disease, telemedicine, and in-home health monitoring. Customers include physicians, medical technicians, healthcare practitioners, researchers, universities, and hospitals. Great Lakes has 26 employees, six issued patents with another about to be issued, 18 U.S. pending applications, and six PCT applications. The company was incorporated in 2010.

Amicus NeuroWave Systems Inc. ("NeuroWave") was incorporated in 2007 and is a medical device company, dedicated to developing innovative, state-of-the-art signal processing technologies for the next generation of brain monitors for improved and safer patient care. The NeuroSENSE® Monitor, the latest generation of brain monitors for patient-customized anesthesia and sedation, is now cleared for sale in markets recognizing the CE mark. NeuroWave's advanced brain monitors incorporate intelligent algorithms for the automated assessment of

brain function for anesthesia/analgesia/sedation monitoring and seizure detection. New products for (1) real-time control and delivery of anesthetics and analgesics using electroencephalograms (“EEG”) and (2) miniature EEG machines to help identify mild traumatic brain injury at the point of injury are being developed under United States Army and National Institutes of Health contracts. NeuroWave currently has eight employees, three patents with another about to be issued, twelve U.S. patents pending, and six PCT applications. Patents provide the bulk of the value of the company.

Amicus Flocel Inc. is a biotechnology company formed in 2004, dedicated to innovation towards helping the research community better conduct and advance in-vitro drug studies. In contrast to other available models of blood-brain barriers, Flocel’s Dynamic In-Vitro Blood-Brain Barrier (“DIV-BBB”) respects the anatomical aspects of the in situ endothelial cell-astrocyte interactions and replicates the physiological levels of shear stress to which in situ endothelial cells are exposed. The DIV-BBB allows formation of physiological transendothelial resistance, and formation of gap junctions that can be easily visualized by an electron microscope or determined experimentally with the use of tracers. Flocel has one issued patent and three pending patent applications. Even though the technologies are based on cellular testing, they are implemented with computer-based controls and use data processing to implement the results.

Amicus Cleveland Medical Devices Inc. (“CleveMed”) was formed in 1990 and is leading the

future in medical services and devices for portable sleep testing. From monitors for home sleep testing to full PSG, CleveMed aims to improve the delivery of care. Its web-based services and devices meet American Academy of Sleep Medicine guidelines, are easy for patients to use, streamline operations for healthcare providers, and offer cost-efficient solutions for payers. The company's SleepView product and service lowers the cost for an obstructive sleep apnea test by 75-90%, and the number of tests has been growing at 14% per month for two years. CleveMed has eighteen employees. The company has twelve patents and 23 pending patent applications covering computer hardware and software-based medical devices, data processing, and business methods. A large part of the company's valuation is based on these patents.

Amicus Orbital Research Inc. ("Orbital") was formed in 1990 and has 17 employees. Orbital develops and commercializes new and innovative custom-engineered solutions using its expertise in Aerodynamic Control Systems, Medical Devices, and Micro Electronic Devices for various commercial and military applications. Examples of Orbital's developments include new longer range, higher accuracy, lower cost weapons; chronic ECG electrodes and monitors; oxygen sensors used on high performance aircraft; and low cost, high temperature (250C) electronics. Orbital has 42 issued patents and 36 pending patent applications. Algorithms, software, data processing, and computer hardware play a significant role in company valuation.

Amicus Spectral MD™ is a clinical research stage medical device company based in Dallas, Texas. The company is developing patent-pending solutions to use light to visualize various skin conditions and improve health care delivery, procedures, and patient outcomes. The company received 510(k) clearance for its device last year and is continuing to improve its system with more research. The key to Spectral MD solutions originates from the systems-based technology that combines real-time digital analysis of optical signatures, thereby sensitizing an imager to photon-tissue interactions deep below the skin's surface. Spectral MD has received funding from the National Science Foundation and the federal government via a contract from a division of the Department of Health and Human Services. The company has six employees and is in the process of hiring more in order to fulfill the federal contract requirements and advance the technology.

Amicus Ameranth Inc., headquartered in San Diego, California, was formed in 1996 to develop and deploy wireless/web-based products primarily for the hospitality/casino markets. It has received numerous technology awards and widespread acclaim for its products. Its systems and products have been deployed in many leading restaurants, hotels, sports stadiums, and casinos. Ameranth has been awarded eight patents for its 21st Century Communications™-based products/systems. It currently has 27 companies that have licensed its patents.

Amicus RPost Communications has set the global standard for email proof with services built upon its patented Registered Email® technologies,

which enable both sender and recipient to track, prove, sign, and encrypt high value messages and documents across desktop, mobile, and online email platforms. RPost software offered as a service employs these RPost technologies, and is used by the United States Government and global Fortune 500 companies. RPost, founded in 2000, has been granted more than 50 patents on its Registered Email technologies worldwide. RPost spends millions of dollars each year on research and development of new products and services. RPost relies on its patent portfolio to protect its investments. Accordingly, RPost has a strong interest in ensuring that the rules of the United States Patent & Trademark Office are interpreted correctly and that the patent laws provide for a strong patent system.

Amicus Enounce, Inc. offers products that allow users to speed up and slow down the rate of audio and video digital media while preserving intelligibility, pitch, and speaker identity. Enounce was founded in 1998 and leverages extensive research done at the Massachusetts Institute of Technology by its founding team and a portfolio of over 25 issued patents for the company's technology. Enounce licenses its patented technology in a modular software library that allows third parties to add variable speed playback to existing multimedia applications and devices.

Amicus ManyWorlds, Inc. is a small, high-tech business, headquartered in Houston, Texas, that is a leader in delivering adaptive knowledge and expertise discovery and personalization solutions for the enterprise. ManyWorlds' software products enable

systems to anticipate, rather than just react to, users' needs, resulting in higher performing organizations in which just the right knowledge and expertise are continuously and pervasively delivered to the right people at the right time. ManyWorlds' market-leading products are the result of over ten years of pioneering R&D investments, which have also resulted in over twenty issued U.S. patents and many more pending.

Amicus FPX is a software company with a 30-year history that provides configuration, price, quote solutions ("CPQ") to the Global 500, including some of the largest companies in the world in manufacturing, telecommunications, healthcare, and financial services. FPX's products are mission critical as its solution touches every sale. FPX is credited with having invented CPQ solutions in 1983. FPX has continued to invest in research and development over the years, and has expanded into data management and data interaction solutions. Today FPX has over 120 employees in the United States alone.

Amicus Charles River Analytics Inc. ("Charles River"), which was founded in 1983, applies computational intelligence technologies to develop mission-relevant tools and solutions to transform customers' data into knowledge that drives accurate assessment and robust decision-making. Charles River is headquartered in Boston and employs around 130 people. Charles River continues to grow its technology, customer base, and strategic alliances through research and development programs for the Department of Defense and the Intelligence Community, addressing a broad spectrum of mission areas and functional

domains, including: sensor and image processing, situation assessment and decision aiding, human systems integration, and cyber analytics. These efforts have resulted in a series of successful products that support continued growth in its core research and development contracting business, as well as the commercial sector. Charles River became an employee-owned company in 2012, to set the stage for the next generation of innovation, service, and growth. Charles River owns ten patents that protect its innovations.

Amicus Casino Gaming, LLC, is a Chicago, Illinois-based company that develops and licenses novel games to casinos, equipment manufacturers, and on-line wagering sites. The company relies on patents to protect its innovations.

Amicus Horizon Digital Finance LLC (“HDF”), through multiple websites (including www.myauto.com, www.onehourfinance.com, www.preferred-dealer.net, and www.mymotorcycleloan.com), is a Texas-based company that provides a direct-to-consumer, internet-based marketplace that helps consumers take control of the research, finance, and buy processes for automobiles, motorcycles, boats, recreational vehicles, home equity, and mortgages. HDF has been in business since 2003. HDF provides consumers with a secure, confidential process to obtain loan offers and provides a wide range of products and services to simplify the search for information and funding alternatives. HDF facilitates the matching of lenders based upon customer needs through a proprietary analysis and evaluation. These computer-implemented technologies and processes

are protected by several United States patents (and pending applications) that are critical to the success and viability of HDF.

Amicus DDB Technologies LLC (“DDB”) is an Austin, Texas-based company that was formed in the late 1990’s. DDB (and its predecessor Instant Sports, Inc.) is a pioneer in the design and development of, among other things, technology that enables the broadcasting of live sporting events to a viewer’s computer to enable the viewer to watch a computer simulation of that sporting event. This computer-implemented technology was adopted by virtually every sports broadcasting company and sports league. DDB relies on numerous United States patents to protect its technology and to attract investments, and would not be in existence without these patents.

Amicus Chief Experience Officer, Inc. (“CXO”) is a consulting firm that advises start-ups and Fortune 500 corporate executives in intellectual property strategy and the design and development of hardware and software products. CXO was founded in 2005 and has been responsible for establishing user experience strategies for technologies ranging from medical informatics, financial services, legal research, and document management systems to touch screen remote controls, smartphones, and other media-rich devices.

Amicus MONKEYmedia, Inc. (“MONKEYmedia”) is a privately-held user interface design studio based in Austin, Texas. Founded in 1994, MONKEYmedia researches, develops, and sells software that facilitates human-computer interaction. Exam-

ple technologies range from virtual force-feedback interfaces and telescopic video advertising to multi-channel interactive environments that embody novel cinematic paradigms. MONKEYmedia relies on patents that it has obtained to protect its innovations. MONKEYmedia has also licensed patents to other companies.

Amicus ParkerVision, Inc. is a 50-person company with 35 engineers who innovate radio frequency (“RF”) technologies designed to enable advanced wireless communications for current and next generation communication networks. ParkerVision’s innovations are protected by almost 250 patents in both the United States and worldwide. Its technology has enabled products in the mobile phone industry, as well as WiFi, Bluetooth, and GPS products to achieve many important features used in today’s mass-produced wireless products. Smaller size and lower cost RF transceivers, more efficient use of battery power, improved connectivity performance, and greater design simplicity are enabled by ParkerVision’s innovations in Smartphones, WiFi and Bluetooth products, and GPS devices. Its protected innovations are the result of over 15 years of research and development funded by over \$200 million invested in their development. Without the intellectual property protection of its innovations, ParkerVision could not justify the financial and time risks in making the R&D investment required to develop its wireless technologies.

Amicus Subtle by Design Co. has pioneering intellectual property in its premier product “The Garment Shield,” which utilizes a patent pending

methodology and product to protect fine washables through every day washing and drying. Subtle by Design's intellectual property helps it pave the way for pioneering solutions to protect purchasers' investments in their garments.

Amicus iQ4 LLC is committed to transforming the next generation workforce. iQ4, the United Nations Global Business Incubator, and the National Student Clearinghouse have teamed to solve the challenge of student employability, "closing the workplace skills gap," and will transform how employers hire their next generation workforce. Their mission specifically focuses on the design and delivery of content and expertise in the form of skills taxonomy, assessment, certifications, project curriculum, and verification to prepare skilled candidates for employment within the fields of aerospace, cyber security, information technology, business, law, finance, and construction of emerging countries. iQ4 has pending patents surrounding its unique digital application integration for member skills-based profiling (individual branding), employer driven search engines, and project collaboration.

Amicus Crowd Cart's unique e-commerce business organizes buyers through a disruptive technology focused on creating incentive structure to turn shoppers into buyers. Crowd Cart's patent strategy coupled with its novel technology allows Crowd Cart to uniquely position itself by creating a new market category of organically-generated user group buyers.

Amicus HouseTab, LLC, is a mobile payments application with a social engine. While there are

many players coming into the Mobile Payments area, HouseTab knows that its patent pending technology is key and allows it to focus attention and innovation to both sides of the equation, the customer and the merchant, and bringing great value-add to both.

Amicus Neo Prime Solutions, Inc. (“Neo Prime”) is a startup company providing custom cyber threat and risk assessment products and services to enterprise organizations. Neo Prime’s products and services help organizations understand their potential loss from today’s most prevalent cyber-threats, take action to enhance their security posture, and detect and contain cyber threats. Neo Prime’s intellectual property enables it to combat growing risks to its clients’ increasingly valuable intellectual property and systems.

Amicus TIP Solutions, Inc. (“TIP”) is a Chicago, Illinois-based start-up software company that builds voice-focused software and firmware applications for smartphones. TIP has multiple United States and international issued and filed patents that claim computer-implemented inventions used in the company’s products. TIP relies on its patents to protect its innovations and as an important factor to attract investments in the company.

Amicus Bi-Level Technologies is a startup company in Encinitas, California developing computer-based methods and algorithms. It specializes in signal representation technology for signal and image processing for the electronic print industry and for mobile display devices.

Amicus RedTxt.com.au Pty. Ltd. (“RedTxt”) makes and sells SMS/TXT solutions for large and small communities. RedTxt’s SMS/TXT solutions include, for example, publishing sporting event scores and advertising via SMS, an automated platform for sending Twitter messages to SMS, and a web-based platform that allows users to see in real-time the status of an SMS message. RedTxt has granted and pending United States Patents in the field of mobile applications that involve software and computers. Uncertainty in the law relating to patentability affects RedTxt’s business strategies and therefore, shareholder value.

Amicus U.S. Startups and Inventors for Jobs (“USIJ”) is an alliance of inventors, innovators, startup companies, and research institutions that have come together in the interest of safeguarding this nation’s new product creation ecosystem. USIJ is deeply concerned about the current judicial and legislative environment, which makes it extremely difficult for innovative startup companies, inventors, and universities to protect their inventions by making patent litigation significantly more expensive, unpredictable, burdensome, and protracted. USIJ comes from a long line of inventors, startups, and universities who create the technologies and products that fuel future GDP and job growth.

Amicus Martin Goetz is currently a private investor and management consultant to software product firms. He was a founder (in 1959) and former President of Applied Data Research (ADR), a \$200 million company that was traded on the New York Stock Exchange. His company was the first company

to sell a software product commercially, and it pioneered the start of the software products industry. In 1968, Computerworld Magazine featured Mr. Goetz as the recipient of the first United States software patent. He is a leading advocate of software product protection through copyright and patent law, and his leading role in combating unfair competitive practices in software by hardware manufacturers is widely recognized. For the last 40 years, through articles and speeches, Mr. Goetz has helped promote the status and growth of the independent software industry.

Amicus Richard A. Epstein is the Laurence A. Tisch Professor of Law at New York University School of Law. He is also the James Parker Hall Distinguished Service Professor Emeritus of Law and Senior Lecturer at the University of Chicago Law School, and the Peter and Kirsten Bedford Senior Fellow at the Hoover Institution. Among other areas of expertise, he specializes in intellectual property law.

Amicus Daniel F. Spulber is the Elinor Hobbs Distinguished Professor of International Business and Professor of Strategy at the Kellogg School of Management, Northwestern University. He is also Professor of Law at the Northwestern University Law School. In addition to other articles and research in the field of intellectual property, he is author of “Should Business Methods be Patentable” (Spring 2011: Volume 3, Number 1 – Journal of Legal Analysis).

Amicus Jay P. Kesan is a professor at the University of Illinois College of Law and is the H. Ross & Helen Workman Research Scholar Director

for the Program in Intellectual Property and Technology Law. Mr. Kesan's work focuses on patent law, intellectual property, entrepreneurship, and agricultural biotechnology law, among other areas. Mr. Kesan was appointed by federal judges to serve as a special master in patent litigations, and has served as a technical and legal expert and/or counsel in patent matters. He also serves on the boards of directors/advisors of start-up technology companies.