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 *AMICUS CURIAE* INTERNATIONAL BUSINESS MACHINES CORPORATION IN SUPPORT OF NEITHER PARTY

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CORPORATE DISCLOSURE STATEMENT

Amicus curiae states that it does not have any parent corporation and that no publicly held company owns more than 10% of its stock.

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STATEMENT OF INTEREST[1]

International Business Machines Corporation (IBM) is a globally recognized leader in the field of information technology research, development, design, manufacturing, and related services. During IBM's more than 100-year history, its employees have included five Nobel laureates, five National Medal of Science recipients, and ten winners of the National Medal of Technology. IBM has been a leader in developing breakthrough software innovations, including the relational database, the FORTRAN programming language, and the virtual machine. The United States Patent and Trademark Office (PTO) has granted IBM tens of thousands of United States patents; more patents each year than any other entity for the last 21 years.[2] Accordingly, IBM has long served as a leading advocate for sound patent policy.

In light of its sizeable patent portfolio and diverse business interests, IBM can provide a balanced view of patent eligibility standards—particularly as they relate to the patenting of computer-implemented inventions such as those implemented in software. As

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[1] Pursuant to Supreme Court Rule 37.6, *amicus curiae* states that no counsel for any party authored this brief in whole or in part and that no entity or person, aside from *amicus curiae* and its counsel, made any monetary contribution toward the preparation or submission of this brief. Pursuant to Supreme Court Rule 37.3, counsel of record for all parties have consented to this filing in letters on file with the Clerk's office.

[2] *See, e.g.*, Press Release, IFI Claims Announces Top U.S. Patent Assignees of 2013 (Jan. 13, 2014), http://bit.ly/1f9qR4q ("IBM is at the top of the list again with a record-setting 6,809 patents, continuing a dominance that has lasted 21 straight years.").

a leading recipient, licensee, and licensor of patents, IBM has a compelling interest in the development of clear and consistent rules governing patent eligibility and is committed to maintaining both the integrity of the United States patent laws and the quality of patents themselves. IBM has frequently been involved in patent litigation, both as a patentee seeking to enforce its patent rights and as an accused infringer defending itself against others' claims. As a major force in the information technology industry, IBM has firsthand knowledge of the critical role the patent laws have played over the last few decades in protecting software investments and information technology research and development.

INTRODUCTION AND SUMMARY OF ARGUMENT

Software is not a new technology. It has been around in various forms for well over half a century. During that time, it has become one of the fundamental building blocks of innovation and technological advancement, and a critical part of our Nation's economy. Software is the medium for innovation in every field, from automobiles to manufacturing to medicine. The fact that the Court is now—in 2014—actively considering such a basic question as whether computer-implemented inventions such as software are even eligible for patent protection is deeply troubling.

This Court's felt need to review whether computer-implemented inventions such as software are patent-eligible is an unmistakable indicator that § 101 jurisprudence in this area has proven unworkable. This Court has repeatedly grappled with

§ 101 and the judicially-created exceptions to that provision: "laws of nature, natural phenomena, and abstract ideas." *Diamond v. Diehr*, 450 U.S. 175, 185 (1981). With respect to this last exception—abstract ideas—despite the Court's best efforts, not to mention those of IBM and others that saw promise in § 101's ability to weed out problematic patents, a workable test for when a computer-implemented invention is a patent-ineligible abstract idea has not emerged.

There should be no serious question that computer-implemented inventions such as software constitute patent-eligible subject matter under § 101. Courts and amici agree that the technological functions carried out via software could also be implemented through computer hardware in the form of integrated circuits (chips) or other discrete electronic components, and the patent eligibility of those tangible devices is beyond question. Accordingly, there is no principled reason to draw distinctions between hardware and software when it comes to § 101 patent eligibility. Still, arguments that computer-implemented inventions such as software are not patent eligible persist and are proffered with increasing frequency as computer-implemented inventions become more pervasive and as innovative software brings computer implementation within the ken of many ordinary computer users.

Questions concerning the patent eligibility of even the most technologically innovative software are being raised as a consequence of the unworkability of the abstract idea doctrine as applied to computer-implemented inventions. Drawing on this Court's case law, courts and commentators have repeatedly

expressed concern that a patentee can "preempt" an entire field or fundamental idea by claiming the implementation of a well-worn concept on a computer. *See Diehr*, 450 U.S. at 187 ("Their process admittedly employs a well-known mathematical equation, but they do not seek to pre-empt the use of that equation."); *Parker v. Flook*, 437 U.S. 584, 589 (1978) (expressing concerns with claims that would "'wholly preempt'" a field); *Gottschalk v. Benson*, 409 U.S. 63, 72 (1972) ("[I]f the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself."); *see also Bilski v. Kappos*, 130 S. Ct. 3218, 3231 (2010) (concluding that the disputed claims "would pre-empt [risk hedging] in all fields, and would effectively grant a monopoly over an abstract idea"). In many cases, courts appear to have adopted the view that implementation on a computer has become so commonplace as to be technologically meaningless and that, as a result, a patentee claiming the implementation of an abstract idea on a computer is claiming nothing more than the abstract idea itself.

While it may be true that the steps required to implement an abstract idea on a computer are well established and thus likely within the capability of one skilled in the art, the implementation of that idea on a computer, however minimal the effort, definitively separates that specific technological implementation from the idea itself. Technology has enabled an astounding diminishment of the man-machine interface, but it has not erased the need for that interface and, as a result, even the most problematic computer-implemented invention will be meaningfully different from and narrower than the

associated abstract idea. Thus, computer-implemented inventions will always fall outside the abstract idea exception and are patent eligible under § 101.

To be sure, patents that do no more than implement an otherwise abstract idea on a computer through conventional programming raise concerns reminiscent of those identified in this Court's § 101 jurisprudence, and such patents are part and parcel of a larger challenge facing our Nation's patent system. Patentees have all too often obtained patent protection for very straightforward ideas by simply stating in their patent application that the idea will be executed in a specific technological medium. *See, e.g.*, *Bilski*, 130 S. Ct. at 3230 (the "prohibition against patenting abstract ideas 'cannot be circumvented by attempting to limit the use of the formula to a particular technological environment'" (quoting *Diehr*, 450 U.S. at 191-92)). And patentees have repeatedly been able to secure overbroad patents that threaten to undermine innovation. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1303 (2012) (discussing concerns with foreclosing future innovation).

But as IBM's day-to-day real-world experience has repeatedly confirmed, a muscular application of the abstract idea doctrine is not a useful tool for addressing these problems in the computer-implemented invention context. As this Court has recognized, "all inventions at some level embody" an abstract idea. *Mayo*, 132 S. Ct. at 1293. And unlike laws of nature and natural phenomena, abstract ideas defy the demarcation of meaningful boundaries that

make the development of clear and administrable rules possible. As a result, efforts to apply the abstract idea doctrine to computer-implemented inventions quickly devolve into an undisciplined parsing and rewriting of the relevant claims such that courts end up evaluating a claim of their own making—not what the inventor actually claimed. *See* 35 U.S.C. § 112(b) (the "*inventor*" must "particularly point[] out and distinctly claim[] the subject matter which" he "regards as the invention" (emphasis added)). Moreover, the unwieldy nature of the abstract idea doctrine makes it impossible to apply that doctrine to computer-implemented inventions as a "threshold test." *Bilski*, 130 S. Ct. at 3225. Every patent implements some abstract idea and attempting to isolate and assess the extent to which a computer-implemented invention "preempts" or "monopolizes" an abstract idea will always require more than the quick look that § 101 contemplates.

While the prospect of preempting abstract concepts through their implementation on a computer understandably leads courts to ask § 101-type questions, the answer to this § 101-type concern actually lies in § 103's bar on obvious patents. The very same innovations that have eroded the man-machine interface and made programming a much more accessible feat than it once was have also made it far more likely that the computer implementation of an idea would be readily within the grasp of skilled programmers and thus obvious.

In addition to avoiding the pitfalls of applying the abstract idea doctrine in an area where it is has proved unworkable, focusing on obviousness when evaluating

computer-implemented inventions has much to recommend it. The test for whether a patent is invalid for obviousness under § 103 is clear and easy to apply. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 402, 406 (2007). First, courts and patent examiners must determine the scope and content of the relevant prior art. Second, the level of skill of the ordinary artisan must be identified. Third, the scope and content of the claimed invention must be defined through the process of claim construction. *See KSR*, 550 U.S. at 406. And finally, with that information in hand, courts must determine whether § 103's requirements have been met.

The prior art analysis required under § 103 entails construing and evaluating the actual claim and each claim element, thus ensuring a focused inquiry into the actual invention at issue (as opposed to an unjustified parsing and effective rewriting of the claims). Relatedly, while continually evaluating patents under § 101 does nothing to combat problems with broadly drafted patents, further developing § 103 doctrine can play a critical role in increasing patent quality and can also assist in keeping any inquiry into "inventiveness" where it belongs. And perhaps most importantly, the more fine-grained analysis that § 103 mandates ensures that the patent-eligibility of broad swaths of technology will not be called into question, fostering the certainty that investment in innovation demands.

ARGUMENT

I. The Substantial Uncertainty Regarding The Patent-Eligibility Of Computer-Implemented Inventions Endangers A Critical Part Of Our Nation's Economy And Threatens Innovation.

Software—the computer-readable code embodying functionality in virtually every modern system or device—plays a vital role in our everyday lives. It provides the means by which computers run word processing programs, enables e-mail communication and Web browsing, allows cellphones to connect to wireless networks, aids air traffic controllers in safely scheduling the arrival and departure of flights, and permits physicians to diagnose and treat illnesses. "[S]oftware implemented innovations power our modern world, at levels of efficiency and performance unthinkable even just a few years ago," and "patent protection is every bit as well-deserved for software-implemented innovation as for the innovations that enabled man to fly, and before that for the innovations that enabled man to light the dark with electricity, and before that for the innovations that enabled the industrial revolution." David J. Kappos, Under Sec'y of Commerce for Intellectual Prop., Keynote Address at the Ctr. for Am. Progress: An Examination of Software Patents (Nov. 20, 2012), http://1.usa.gov/1cZCeaj ("Kappos Nov. 2012 Speech").

More than this, software plays a crucial role in our Nation's economy. The world's most innovative and productive software companies are all U.S. companies. In 2009, the software industry added over $276 billion

to the U.S. economy. *See, e.g.*, OECD STAN Database for Structural Analysis, http://bit.ly/1egQzAh. In 2010, consumers and businesses in the United States invested over $257 billion in new or replacement software. Bureau of Econ. Analysis, *Private Fixed Investment in Equipment & Software* 7, http://1.usa.gov/1f9vYBI. United States software exports generate more than $20 billion in revenue annually. Econ. & Statistics Admin. & U.S. Patent & Trademark Office, *Intellectual Property and the U.S. Economy: Industries in Focus* 55 (2012), http://1.usa.gov/1jqp5j1 ("2012 PTO Report"). And the software industry's innovative impact is multiplied many times over by the fact that downstream businesses benefit from and capitalize on software innovation. *Id.* at ii (describing the "domino effect" of innovation in the software industry).

The software and information technology industries are also a constant bright spot in an economy that continues to struggle to create jobs. In 2006, the industries employed more than 2.7 million Americans, adding 400,000 jobs between 1997 and 2006. Software & Info. Indus. Ass'n, *Software & Information Driving the Global Knowledge Economy* 8 (2008). That marked growth is in sharp contrast to other industries' declines—job creation in the transportation equipment manufacturing and chemical manufacturing sectors, for example, declined by 13% during this time period. *Id.* And the U.S. Department of Labor projects that the software labor market will continue to be among the fastest growing through at least 2016. U.S. Dep't of Labor, Bureau of Labor Statistics, *Occupational Outlook Handbook* 9 (2008).

The current uncertainty regarding the patent eligibility of computer-implemented inventions such as software puts all this at risk. Clarity and predictability in the patent law are imperative. *See Bilski*, 130 S. Ct. at 3231 (Stevens, J., concurring) ("In the area of patents, it is especially important that the law remain stable and clear."). That is because ambiguity in the rules governing patents breeds uncertainty discouraging investment in the research and development necessary to create new and useful technologies. *See, e.g.*, Kappos Nov. 2012 Speech, *supra* (describing how "uncertainty" in the patent law "stifle[s] innovation").

And while certainty in the patent law is important as a general matter, it is absolutely critical in the technology sector. Firms operating in that sector spend billions of dollars on research and development aimed at bringing new products to market. "[I]n order to invest the necessary resources," companies "need some assurance that they will benefit from and recover the costs of the creation of intellectual property." 2012 PTO Report at 1.[3]

IBM is a case in point. Of the approximately $6 billion IBM invests annually in research and development, approximately half, or $3 billion, is

[3] Calling the patent eligibility of computer-implemented inventions such as software into question sends a signal that is likely to encourage certain foreign governments to redouble their efforts to marginalize U.S. software intellectual property rights, or to take advantage of a gaping hole in the U.S. patent system to lure investment away from the U.S. *See* Keith E. Maskus, *Intellectual Property Rights in the Global Economy* 143-70 (2000) (explaining how strong and comprehensive intellectual property regimes attract investment).

directed to software innovation. And IBM is continually expanding its research and development in new and exciting ways. Earlier this year, for example, IBM announced the formation of a new business unit—the IBM Watson Group—heralding the dawn of a new era of cognitive computing. At the core of this new era of computing are software, services, and applications that think, learn, and discover insights by metabolizing massive amounts of data. *See* Press Release, IBM Forms New Watson Group to Meet Growing Demand for Cognitive Innovations (Jan. 9, 2014), http://ibm.co/LZt6NC. IBM relies on patents to help protect such creative endeavors. Clear rules governing patent eligibility and patentability thus yield real and tangible benefits, not just to innovative firms, but to the consumers that ultimately benefit from the creation of innovative products.[4]

[4] Lest there be any doubt, software innovations are not adequately protected by copyright law, which only protects the specific "expression" of a software program—not the high level functionality implemented in software products. This is true as both a matter of text and precedent. The Copyright Act provides that "copyright protection" does not "extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work." 17 U.S.C. § 102(b). And courts have long recognized that copyright law cannot be invoked to protect the functional aspects of software. *See, e.g.*, *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 49 F.3d 807 (1st Cir. 1995) (holding that the menu command hierarchy of a computer spreadsheet program was "uncopyrightable"), *aff'd per curiam by an equally divided Court*, 516 U.S. 233 (1996).

II. The Patent Eligibility Of Computer-Implemented Inventions Should Be Beyond Dispute.

There should be no debate that computer-implemented inventions such as software are eligible for patent protection. But, as the Federal Circuit's deeply divided en banc opinion in this case abundantly demonstrates, the abstract idea exception has proven extremely difficult to apply to computer-implemented inventions and has created substantial uncertainty in an area where clear and administrable rules are imperative.

A. The Abstract Idea Doctrine Is Unworkable in the Computer-Implemented Invention Context.

Courts and commentators alike have repeatedly noted the elusive nature of the abstract idea doctrine. *CLS Bank Int'l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269, 1277 (Fed. Cir. 2013) ("[D]eciding whether or not a particular claim is abstract can feel subjective and unsystematic, and the debate often trends toward the metaphysical, littered with unhelpful analogies and generalizations."); *MySpace, Inc. v. GraphOn Corp.*, 672 F.3d 1250, 1259 (Fed. Cir. 2012) ("When it comes to explaining what is to be understood by 'abstract ideas' in terms that are something less than abstract, courts have been less successful."); Donald S. Chisum, *Weeds and Seeds in the Supreme Court's Business Method Patents Decision: New Directions for Regulating Patent Scope*, 15 Lewis & Clark L. Rev. 11, 14 (2011) (The "abstract idea preemption inquiry can lead to subjectively-derived, arbitrary and unpredictable results. This uncertainty does

substantial harm to the effective operation of the patent system."). And that general problem is particularly pronounced in the computer-implemented invention context. Many functions that were traditionally performed in the mechanical or analog world can now be discharged digitally in the virtual world far more efficiently, which is why software is the medium of choice for both implementation and innovation. *See* Marc Andreessen, *Why Software Is Eating The World*, Wall St. J. (Aug. 20, 2011), http://on.wsj.com/1aD0OUh. The availability of patent protection has stimulated innovations that have unlocked the potential of computers through both hardware and software. Given the unquestioned patent eligibility of hardware, there really should be no question regarding the patent eligibility of software. And yet that question persists, and, if anything, has become more prevalent with time as software has become the dominant means for imparting function to all types of machines.

Precisely because computers unlock new fields for innovation, there is a need to distinguish between efforts to occupy a field by simply taking a well-known abstract idea and articulating a few generic steps to implement it on a computer, and true innovations that unlock the potential of computers. And because concerns with preempting an entire field are often associated with § 101, *see Bilski*, 130 S. Ct. at 3231, there is an understandable impulse to treat the implementation of an abstract idea on a computer as no different from the abstract idea itself.

That view is irreconcilable with the "wide scope" of § 101 and its aim of providing "expansive" coverage

to the fruits of invention, *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980), the narrow dimensions of the judicially-created exceptions to patent-eligibility, and the nature of implementing ideas on a computer. Even if the steps to implement an idea are well within the capability of "a person having ordinary skill in the art," 35 U.S.C. § 103, it remains true that implementation on a computer is an application on a machine; it is not an amorphous idea or a creation of the mind. Accordingly, while the concept of an abstract idea implemented conventionally on a computer raises issues reminiscent of this Court's concerns regarding "preemption" and excess "monopolization," *see Bilski*, 130 S. Ct. at 3231; *Mayo*, 132 S. Ct. 1293, computer-implemented inventions are more than the abstract idea itself and are ill-suited for evaluation under the abstract idea rubric.

B. The Fractured Opinion Below Demonstrates the Futility of Attempting to Apply the Abstract Idea Doctrine to Computer-Implemented Inventions.

The Federal Circuit's varied attempts to apply abstract idea precedent in this case demonstrate the doctrine's failure in the computer-implemented invention context. Looking to "guideposts" he identified in this Court's precedents, Judge Lourie derived a four-step test for assessing whether an invention falls within the abstract idea exception. A court should begin by determining "whether the claimed invention fits within one of the four statutory classes set out in § 101," 717 F.3d at 1282—*viz.* whether the claim is to a "process, machine, manufacture, or composition of matter," § 101. If the

claim is to one of these statutory classes, the court must next assess whether any abstract idea is implicated by the claimed invention. 717 F.3d at 1282. To the extent the invention implicates an abstract idea, the court should then "identify" whatever "fundamental concept appears wrapped up in the claim"—"one cannot meaningfully evaluate whether a claim preempts an abstract idea until the idea supposedly at risk of preemption has been unambiguously identified." *Id.* Finally, the "inquiry … proceeds to the requisite preemption analysis," which requires an evaluation of whether a claim "contains additional substantive limitations that narrow, confine, or otherwise tie down the claim so that, in practical terms, it does not cover the full abstract idea itself." *Id.*

Chief Judge Rader took a different approach. Noting § 101's expansiveness, the Chief Judge concluded that in determining whether a claim falls under the abstract idea exception, the relevant inquiry is whether the claim "includes *meaningful* limitations restricting it to an application." 717 F.3d at 1299. Whether such a limitation is sufficiently meaningful for computer-implemented invention claims turns on "whether the claims tie the otherwise abstract idea to a *specific way* of doing something with a computer, or a *specific computer* for doing something; if so, they likely will be patent eligible." *Id.* at 1302.[5]

As a brief review of only two of the five opinions in this case makes plain, courts cannot develop a

[5] The different approaches endorsed by Chief Judge Rader and Judge Lourie yielded different conclusions regarding the patent eligibility of the apparatus claims at issue.

single reliable test for the abstract idea exception when it comes to computer-implemented inventions. And the struggle evident in this case is merely the most recent example of the turmoil this doctrine has caused the courts, the PTO, and—most critically—innovators for decades.[6] The blame for that failure does not fall on the Federal Circuit alone. The "guideposts" developed by this Court over the years, and supported through recommendations by well-intended amici such as IBM, *see, e.g.*, Brief for Amicus Curiae International Business Machines Corporation, *Bilski*, 130 S. Ct. 3218, 2009 WL 2418481, at *5 (2009) (encouraging the Court to adopt a "technological contribution" test for patent eligibility), have after decades of struggling failed to yield a formulation of the abstract idea exception that can be administered to computer-implemented inventions with any degree of predictability.

C. Real-World Experience Confirms That the Abstract Idea Doctrine Is Ill-Suited for Application to Computer-Implemented Inventions.

Based on its day-to-day real-world experience, IBM has concluded that the abstract idea doctrine's failure is not due to the elusiveness of the proper test,

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[6] *See, e.g.*, *In re Iwahashi*, 888 F.2d 1370 (Fed. Cir. 1989) (applying the Freeman-Walter-Abele test, which provided that an algorithm was patent eligible only if it is employed in a physical process or machine); *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (en banc) (applying the "useful, concrete, and tangible result" test); *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008), *aff'd but criticized sub nom. Bilski v. Kappos*, 130 S. Ct. 3218 (2010) (applying the "machine or transformation" test).

but rather because the doctrine should not be applied to computer-implemented inventions. IBM, like this Court, has grave concerns about non-innovative patents that crowd out true innovation by occupying entire fields of computer innovation without actually advancing the use of computers in practical terms. And IBM, like this Court, initially believed that a § 101 abstract idea test could be formulated to address concerns about preemption. But real-world experience has convinced IBM that while the abstract idea concept helps identify a serious problem, it does not provide a workable solution to the problem. Unlike this Court, which wrestles with the abstract idea doctrine episodically (albeit with increasing frequency), IBM wrestles with that doctrine on a daily basis in the context of the questioned patent-eligibility of sophisticated software that goes well beyond efforts to perform a known function using a computer. Indeed, allegations that computer-implemented inventions such as software are, in fact, patent-ineligible are now legion. *Cf. MySpace*, 672 F.3d at 1261 (discussing the possibility that a § 101 challenge will become a "toss-in for every defendant's response to a patent infringement suit"). That is because the malleability of the abstract idea concept casts the patent eligibility of even highly innovative and sophisticated inventions into doubt.

The highly innovative and enormously valuable invention of public key cryptography, the inventors of which have been inducted into the National Inventors Hall of Fame, provides an example. *See* U.S. Patent No. 4,200,770. The advent of the internet and electronic communication over public channels presented a challenge for secure communications,

since public lines are easily susceptible to eavesdropping. The breakthrough invention of public key cryptography elegantly solved this problem, enabling secure communication over public computer networks. The innovation requires only that two communicating parties maintain their own individual secret private keys. These private keys are used to create public keys that cannot be reverse engineered. The public keys can thus be exchanged over public networks and used to generate secure ciphers for decrypting messages without ever transmitting the private key between the communicating parties. The solution is particularly valuable because the computational requirements to create these keys and ciphers can be readily implemented via conventional programming techniques.

Without the patented invention of public key cryptography, the secure communication needed to enable modern electronic commerce would not exist. And yet, this groundbreaking invention is vulnerable to a finding of patent ineligibility under current abstract idea jurisprudence. Cryptography—"the science or study of the techniques of secret writing, especially code and cipher systems, methods, and the like," *Webster's Unabridged Dictionary* 485 (2d ed. 2001)—has existed for thousands of years as a means for people to privately communicate over a distance. *See, e.g.*, Simon Singh, *The Code Book: The Science of Secrecy from Ancient Egypt to Quantum Cryptography* (1999) (describing the history of cryptography). For example, Julius Caesar used cryptography to encode messages sent to his fellow generals during the Gallic Wars. *See id.* at 9-11. And when Benjamin Franklin sought to enlist French scholar Charles Dumas as an

American agent during the Revolutionary War, they communicated using a numeric cipher. *See* Edmund C. Burnett, *Ciphers of the Revolutionary Period*, 22 Am. Hist. Rev. 330-31 (1917). As a result, the crucial innovation of public key cryptography could be characterized as nothing more than a conventional computerization of the ancient and "abstract idea" of encryption, rendering it patent ineligible.[7]

D. The Amorphousness of Abstract Ideas, Their Substantial Difference From § 101's Other Exceptions, and § 101's Status as a Threshold Test All Help Explain the Doctrine's Failure as Applied to Computer-Implemented Inventions.

There are several reasons for the abstract idea doctrine's failure to yield an administrable test in the computer-implemented invention context. As an initial matter, as this Court has recognized, "all inventions at some level embody, use, reflect, rest upon or apply … abstract ideas." *Mayo*, 132 S. Ct. at 1293. "Any claim can be stripped down, simplified, generalized, or paraphrased to remove all of its concrete limitations, until at its core, something that could be characterized as an abstract idea is revealed." *CLS*, 717 F.3d at 1298. As a result, anytime a court

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[7] Public key cryptography is not unique in this respect. Scores of highly innovative inventions, including countless other inventions by innovators who have been inducted into the National Inventors Hall of Fame, would be vulnerable under the current view of the abstract idea doctrine. *See, e.g.*, U.S. Patent No. 2,612,994 (optical scanners that read bar codes); U.S. Patent No. 5,572,218 (the technology enabling GPS location).

begins its analysis by looking for an abstract idea, it is surely going to find one. But pursuing that approach to its logical end would "eviscerate patent law." *Mayo*, 132 S. Ct. at 1293.

Relatedly, the abstract idea exception is fundamentally different from the other judicially-created exceptions to patent eligibility. Unlike laws of nature and natural phenomena, which exist in nature and are discovered, abstract ideas do not exist in nature and are instead created. Consequently, abstract ideas have no core of clearly verboten subject matter. Laws of nature and natural phenomena have boundaries capable of clear delineation. A court might be able to assess in an administrable and workable way whether a patentee attempts to claim "the heat of the sun, electricity, or the qualities of metals," *Funk Bros. Seed Co. v. Kalo Inoculant Co.,* 333 U.S. 127, 130 (1948), "a new mineral discovered in the earth or a new plant found in the wild," "the law of gravity," or "$E=mc^2$," *Chakrabarty,* 447 U.S. at 309. But abstract ideas lack clear lines of demarcation and thus force line-drawing that re-writes the claim in unpredictable ways never contemplated by the inventor, turning on a subjective inquiry that makes the development of the type of clear rules on which innovation depends impossible.

The end result is that any application of the abstract idea exception involves an undisciplined parsing and rewriting of the claims such that the court's ultimate analysis of the patent eligibility of an invention turns on the assessment of something that bears little-to-no resemblance to what is actually

claimed.[8] That fatally flawed enterprise quickly devolves into a subjective and free-floating inquiry that defies predictable results. Allowing courts to rule based on subjective intuitions might work in some areas of the law, but patent law is not one of them. *See Bilski*, 130 S. Ct. at 3231 (Stevens, J., concurring) ("In the area of patents, it is especially important that the law remain stable and clear.").

The problems with the application of the abstract idea doctrine are exacerbated further by § 101's function as a "threshold test." *Bilski*, 130 S. Ct. at 3225. Section 101 is supposed to serve as a "coarse" filter, with the other more specific and demanding aspects of Title 35 doing the real work of sorting the wheat from the chaff. In other words, § 101 should operate as a quick look that ensures that patents are directed to a process, machine, manufacture, or

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[8] *See, e.g.*, *CLS Bank Int'l v. Alice Corp. Pty*, 717 F.3d 1269, 1286 (Fed. Cir. 2013) (recasting the claim as nothing more than "the idea of third-party intermediation"); *CLS Bank Int'l v. Alice Corp. Pty.*, 685 F.3d 1341, 1357 (Fed. Cir. 2012) (Prost, J., dissenting) (recasting the claim as nothing more than the ancient idea of "'credit intermediation'"); *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can. (U.S.)*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (recasting the claims as "'the use of the abstract idea of [managing a stable value protected life insurance policy]'"); *Ultramercial, LLC v. Hulu, LLC*, No. CV 09-06918 RGK, 2010 WL 3360098, at *6 (C.D. Cal. Aug. 13, 2010) (recasting an eleven step claim as the abstract idea of using "advertisement as an exchange or currency") *rev'd*, 657 F.3d 1323 (Fed. Cir. 2011); *cf. Ultramercial, Inc. v. Hulu, LLC*, 722 F.3d 1335, 1350 (Fed. Cir. 2013) ("The claim does not cover the use of advertising as currency disassociated with any specific application of that activity. It was error for the district court to strip away these limitations and instead imagine some 'core' of the invention.").

composition of matter, and do not claim to monopolize the basic building blocks of innovation. *See, e.g.*, *Chakrabarty*, 447 U.S. at 309. Inventions implementing laws of nature and natural phenomena are amenable to this coarse filter, but computer-implemented inventions—which may implement abstract ideas—are not. As a result, the abstract idea doctrine has often been used as an ill-fitting proxy for analysis of the other Title 35 inquiries that themselves tend to weed out efforts to patent the types of well-known abstract ideas the courts are struggling with.[9]

In the absence of a doctrinal change in direction, the problems with the abstract idea doctrine will only get worse. "[T]imes change" and "[t]echnology and other innovations progress in unexpected ways." *Bilski*, 130 S. Ct. at 3227. Section 101 is a "dynamic provision designed to encompass new and unforeseen inventions." *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred*

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[9] In *Mayo*, this Court addressed the problem of potential "overlap" between § 101 issues and those raised under other sections, such as § 102 and § 103. As discussed above, this overlap expresses itself in the difficulty lower courts have had in applying the abstract idea exception to computer-implemented inventions, and their reliance on novelty and obviousness analysis, such that § 101 no longer operates as the coarse filter it is meant to be. By contrast, IBM submits that computer-implemented inventions such as software will always be patent-eligible under § 101, and that the concerns this Court has addressed regarding preemption and excess monopolization can be ably and properly addressed in the computer-implemented invention context through application of § 103 specifically. *See infra*. Moreover, an important concern this Court expressed with looking beyond § 101 in *Mayo* is inapplicable—unlike natural laws and phenomena, abstract ideas may appropriately be considered as part of the prior art. *See* 132 S. Ct. at 1304.

Int'l, Inc., 534 U.S. 124, 135 (2001). Indeed, in a patent system that functions as Congress intended, the creation of new and innovative technologies would be encouraged. But the development of emerging technologies requires innovators to take substantial financial and technological risks, making the certainty of patent eligibility in such technologies all the more imperative. The current regime foreshadows that each emerging technology will be forced to deal with repeated attacks and defend the patent eligibility of its innovations against allegations that those innovations fall within the ever-broadening abstract ideas exception. Worse still, the current skepticism regarding the patent eligibility of computer-implemented inventions—even highly innovative ones—suggests that each time a new technology reaches a certain threshold of ubiquity, the appropriateness of providing patent protection for that technology will be called into question despite the fact that it is the protection the patent system provides that allowed the technology to advance to that point in the first place.[10]

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[10] None of the foregoing is meant to suggest that this Court should adopt and endorse some sort of field-specific patent-eligibility test for computer-implemented inventions such as software. A field-specific test along those lines would conflict with the plain text of § 101, which makes no distinction between various technological fields, and this Court's general application of the laws of nature, natural phenomena, and abstract idea exceptions. Rather, IBM's view is that, while many of the computer-implemented inventions that the Court may find troubling are likely unpatentable under § 103, *see infra* pp. 26-32, those inventions will always constitute patent-eligible subject matter under the generally applicable § 101 test. *See Research Corp. Techs., Inc. v. Microsoft Corp.*, 627 F.3d 859, 869 (Fed. Cir.

The rapid evolution of computer technology illustrates this concern. Incentives provided by the patent system have helped turn computers from room-sized behemoths used only by scientists to ubiquitous hand-held devices that can be used for all manner of complex activities. This astonishing progression, however, has led courts to ignore the fact that scores of enormously innovative and highly valuable inventions were necessary to accomplish this transformation and erode the barrier between man and machine. In allowing this more intuitive interface to obscure the presence of the machine in patent eligibility analysis, courts are effectively declaring the erosion of the interface complete. That declaration threatens the development of further interface-eroding innovations that promise a new era where computers will be able to think more like humans. "Cognitive computing" systems will closely emulate human thought processes and be able to learn and deliver insight based on their accumulated knowledge. *See, e.g.*, Cognitive Computing, http://ibm.co/1l5Ud9e. Adopting an abstract idea test that ascribes no weight to the presence of a computer at this critical time endangers this technology before it even leaves the starting gate.

2010) ("[I]nventions with specific applications or improvements to technologies in the marketplace are not likely to be so abstract that they override the statutory language and framework of the Patent Act."); *see also Chakrabarty*, 447 U.S. at 308 (noting the "wide scope" and "expansive" coverage of § 101).

III. Many Of The Concerns This Court Has Addressed In Its § 101 Abstract Idea Precedents Would Be Better Addressed Under § 103.

This Court's abstract idea case law has identified a problematic class of patents, some of which involve computer-implemented inventions, that invoke concerns associated with § 101 and preemption. While further development of the abstract idea concept in this area is not the solution, § 101 itself provides the answer. That section explains that in addition to being patent eligible, a claimed invention must also satisfy "the conditions and requirements of this title," § 101—"any claimed invention must be novel, § 102, nonobvious, § 103, and fully and particularly described, § 112." *Bilski*, 130 S. Ct. at 3229. This Court has made clear that these patentability requirements are more than an afterthought. "These limitations serve a critical role in adjusting the tension, ever present in patent law, between stimulating innovation by protecting inventors and impeding progress by granting patents when not justified by the statutory design." *Id.* Section 103—which provides that "[a] patent for a claimed invention may not be obtained … if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains"—is not just relevant. It is the ideal tool for weeding out the individual problematic patents this Court has identified without placing a whole class of valuable inventions at risk.

A. Obviousness Doctrine Is Comparatively Straightforward and Capable of Addressing the Concerns Identified in This Court's § 101 Precedents.

First and foremost, the test for whether a patent is invalid for obviousness under § 103 is clear and easy to apply, especially when compared to the abstract idea doctrine. This Court has explained that "obviousness" "analysis is objective" and requires an "expansive and flexible" assessment of the claimed invention. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 402, 406, 415 (2007); *see id.* at 419 ("What matters is the objective reach of the claim."). The Court has also set forth the exact contours of the analysis. First, courts and patent examiners must determine the scope and content of the relevant prior art. Second, the level of skill of the ordinary artisan must be identified. Third, the scope and content of the claimed invention must be defined through the process of claim construction. *See KSR*, 550 U.S. at 406. And finally, with that information in hand, courts must determine whether § 103's requirements have been met.

A straightforward application of this Court's obviousness case law makes plain that the patents the Court has identified as problematic under the abstract idea doctrine would be invalid under § 103. If a patent purports to claim the use of a known concept at a high level of generality implemented on a computer using a conventional approach, that patent will be invalid as obvious. In the Federal Circuit's vacated panel opinion in this case, Judge Prost in dissent described the patented method as ancient: "In any event, this basic idea of 'credit intermediation' is not just

abstract; it is also literally ancient." *CLS Bank Int'l v. Alice Corp. Pty. Ltd.*, 685 F.3d 1341, 1357 (Fed. Cir. 2012) (Prost, J. dissenting) (dating back to the Roman Empire). Judge Prost further described implementation on a computer as "incidental," and lacking inventiveness: "One need not be a computer scientist to suspect that this level of computer implementation is not inventive." *Id.* If these statements are taken as true, that would lead to the conclusion that the claims in suit are obvious, since the invention involves no more than the "combination of familiar elements according to known methods" that "yield[s] predictable results" or a "combination" of known elements that "was obvious to try." *KSR*, 550 U.S. at 416, 421.

B. The Courts and the PTO Have Demonstrated Their Capacity to Apply § 103 in a Relatively Clear and Predictable Manner.

Experience bears out the superiority of § 103 as a workable tool for weeding out patents that do no more than implement a well-worn idea on a computer. In stark contrast to its struggles with applying the abstract idea doctrine, the Federal Circuit has displayed relatively little difficulty in applying the concept of obviousness. Indeed, the Federal Circuit has applied this Court's decision in *KSR* on multiple occasions and not once revealed a level of disagreement that comes close to the deep theoretical divisions reflected in the multiple opinions in this case. *See, e.g.*, *Soverain Software LLC v. NewEgg Inc.*, 705 F.3d 1333, 1337-38 (Fed. Cir. 2013); *Thomson Licensing SAS v. Int'l Trade Comm'n*, 527 F. App'x

884, 889 (Fed. Cir. 2013); *Odom v. Microsoft Corp.*, 429 F. App'x 967, 973 (Fed. Cir. 2011); *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1327-33 (Fed. Cir. 2009); *Asyst Techs., Inc. v. Emtrak, Inc.*, 544 F.3d 1310, 1314-15 (Fed. Cir. 2008); *Riocoh Co. v. Quanta Computer Inc.*, 550 F.3d 1325, 1333 (Fed. Cir. 2008); *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1262 (Fed. Cir. 2007); *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (all applying *KSR*). Perhaps even more tellingly, and in contrast to the numerous grants of certiorari in § 101 cases over the last several years, this Court has not needed to take a § 103 case since *KSR*.

The Federal Circuit's decision in *Leapfrog* is particularly instructive. In *Leapfrog*, a unanimous Federal Circuit panel (Judge Mayer, Judge Lourie, and Judge Dyk) held that a pre-existing learning tool for children recast in the medium of modern technology was invalid for obviousness. A tool for allowing a child to identify "a single letter in a word and hear the sound of the letter as it is used in that word" was already known in the art. 485 F.3d at 1161. The invention at issue in *Leapfrog* simply took that tool and "updated [it] with modern electronics that were common by the time of the alleged invention." *Id.* at 1160. As the Federal Circuit explained, "[a]pplying modern electronics to older mechanical devices has be[come] commonplace," and such efforts are undeserving of patent protection under § 103. *Id.* at 1161. Applying exactly that reasoning would result in the § 103 invalidation of the types of patents this

Court has identified as problematic in its § 101 case law.[11]

Federal district courts have also demonstrated their capacity to apply obviousness case law in a relatively straightforward manner—including in cases involving computer-implemented inventions. *See, e.g.*, *Advanceme, Inc. v. RapidPay, LLC*, 509 F. Supp. 2d 593 (E.D. Tex. 2007); *CollegeNet, Inc. v. ApplyYourself, Inc.*, Nos. 02-484, 02-1359, 2008 WL 4793683 (D. Or. Oct. 28, 2008). And clear guidance from the courts has allowed the PTO to develop and apply the post-*KSR* obviousness standard without substantial controversy. *See Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in* KSR International Co. v. Teleflex Inc., 72 Fed. Reg. 57,526 (Oct. 10, 2007); *see* Ali Mojibi, *An Empirical Study of the Effect of* KSR v. Teleflex *on the Federal Circuit's Patent Validity Jurisprudence*, 20 Alb. L.J. Sci. & Tech. 559, 562-64 (2010).

C. Technological Innovation, Respect for Claims as Drafted, and the Need for Increased Patent Quality All Counsel in Favor of Reliance on § 103.

Developments in computer technology have themselves underscored the superiority of § 103 to weed out non-innovative efforts to patent the

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[11] The problem of imprecise or vague claims is addressed by 35 U.S.C. § 112's requirement that every claimed invention be fully enabled and described. *See, e.g.*, *LizardTech, Inc. v. Earth Res. Mapping, Inc.*, 424 F.3d 1336 (Fed. Cir. 2005); *Biosig Instruments, Inc. v. Nautilus, Inc.*, 715 F.3d 891 (Fed. Cir. 2013) (cert. granted on Jan. 10, 2014).

application to computers of well-understood abstract ideas. Highly innovative computer software has substantially diminished the man-machine interface to the point where it is relatively straightforward to implement ideas on a computer. Section 101 provides no guidance for distinguishing between highly-innovative software and the non-innovative recitation of a series of steps that take an abstract idea and implement it on a computer. Section 103, by contrast, was purpose-built for such an exercise, and provides the tools for ascertaining patentability in individual cases without casting doubt on the patent eligibility of an entire category of highly-innovative computer-implemented inventions.

Moreover, focusing on whether claims are obvious in light of the prior art will force courts and patent examiners to analyze the actual invention claimed. As explained, the abstract idea doctrine requires that a claim be dissected and the abstract idea removed so that what remains of the claim can be evaluated in isolation. That artificial enterprise results in an ill-advised and impermissible rewriting of the claims. Conversely, § 103 analysis requires a detailed focus on the claims (and each element of the claims) as actually drafted.

Relatedly, while the unworkable § 101 analysis does nothing to combat problems with broadly drafted field-preempting patents for computer-implemented inventions, further developing § 103 doctrine can play an important role in increasing patent quality. Section 101's abstract idea exception is a blunt instrument, and every time it is applied all inventions that bear any relation to the relevant abstract idea are

called into question. While that creates substantial uncertainty, it does nothing to promote patent quality. Section 103, on the other hand, incentivizes patentees to draft clean claims that distinguish themselves from the prior art and make clear that what is claimed was in no way obvious to the person having ordinary skill in the art. Focusing on the more fine-grained analysis of § 103 in the area of computer-implemented inventions will foster further development of obviousness jurisprudence and thus enhance the quality of patent drafting. It will also avoid needlessly calling into question the patentability of broad swaths of technology and thus foster the certainty that investment in innovation demands.

This Court recognized in *KSR* that obviousness doctrine is a powerful filter, which enables patent examiners to reject obvious claims and, in turn, forces patent applicants to explain why their inventions are deserving of patent protection. *See* 550 U.S. at 427. *KSR* also emphasized that § 103 questions are ultimately questions of law, which should enable courts to analyze obviousness explicitly and thus provide further guidance promoting clear rules. *Id.* Section 103 is thus capable of ensuring that claims that are insufficiently innovative will not receive patent protection.

Finally, focusing on § 103 will help courts and patent examiners resist the temptation to conduct an "inventiveness" analysis under § 101. *Cf. CLS*, 717 F.3d at 1335 (Rader, C.J., additional reflections). This Court has specifically disapproved any analysis of "inventiveness" under § 101, recognizing that "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. Before the 1952 Patent Act, courts often attempted to identify whether an invention involved "creative work," "inventive faculty," or a "flash of creative genius" when assessing patentability. *See* Giles S. Rich, *Principles of Patentability*, 28 Geo. Wash. L. Rev. 393, 404 (1960). In an effort to standardize that "inventiveness" inquiry, the 1952 Act codified what is now the § 103 nonobviousness requirement. *See Dann v. Johnston*, 425 U.S. 219, 225-26 (1976) (Explaining that although "an exercise of the inventive faculty" had been used as a judicial test, "it was only in 1952 that Congress, in the interest of uniformity and definiteness, articulated the requirement in a statute, framing it as a requirement of nonobviousness." (internal quotation marks and footnote omitted)); S. Rep. No. 82-1979 Revision Notes, *reprinted in* 1952 U.S.C.C.A.N. 2394, 2410-11 (1952) (Section 103 is an "explicit statement" providing for the invalidation of patents "on the ground of lack of invention."). Focusing on § 103 doctrine thus helps to keep any inquiry into inventiveness where it belongs.

CONCLUSION

For all these reasons, this Court should hold that computer-implemented inventions such as software constitute patent-eligible subject matter under 35 U.S.C. § 101, and that potential patentability problems with such inventions should be addressed under the other requirements of the patent statute, predominantly under 35 U.S.C. § 103.

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