January 18, 2017

Via Electronic Mail to: 2014_interim_guidance@uspto.gov

Attention: Elizabeth Shaw, Office of Patent Legal Administration

Re: IBM Corporation's Comments on "Notice of Roundtables and Request for Comments Related to Patent Subject Matter Eligibility," 81 Fed. Reg. 71485 (October 17, 2016)

IBM thanks the United States Patent and Trademark Office (Office) for requesting comments on the scope of subject matter eligibility. In the comments below, IBM demonstrates that the Supreme Court's "abstract ideas" test is fatally flawed, and that the only solution is for Congress to amend the Patent Act with respect to subject matter eligibility.

Summary

The Supreme Court's "abstract ideas" exception is curtailing innovation in large sectors of the United States economy, including in cutting edge areas of information technology such as artificial intelligence.[1] *CLS Bank v. Alice* and subsequent decisions have failed to provide a meaningful standard for applying this exception and, as a consequence, it is it impossible to predict the patentability of many inventions with reasonable certainty. *Alice* is dressed up like a true legal test, but when applied to actual inventions, it becomes apparent that underneath there is no substance. *Alice* calls for a number of inquiries that give the appearance of reasoned analysis, but these inquires are so amorphous that the outcome is inherently subjective.

It is well known that strong patent laws promote innovation, and that is just as true for the field of information technology. Software has become the preferred medium of innovation throughout the useful arts, and future investment in these inventions often depends upon our patent system providing the right incentives. While the impact of *Alice* is difficult to measure empirically, there are many examples of computer-related inventions that were held to be ineligible subject matter under *Alice* in fields of information technology as diverse as data security,[2] controlling access to content,[3] distributed data processing,[4] image processing,[5] bandwidth partitioning,[6] vehicle tracking,[7] aircraft control,[8] and television system control.[9]

Rather than tracking the individual questions presented in the Office's Federal Register notice, parts I and II of IBM's comments below focus on demonstrating that legislation amending the Patent Act is needed because the "abstract ideas" test fails at two important goals:

(I) Clarity. As Justice Stevens noted, in "the area of patents, it is especially important that the law remain stable and clear."[10] The *Alice* test is unworkably ambiguous and the problems with this approach cannot be fixed by the usual course of case-by-case development. For thirty-five years courts have struggled unsuccessfully to develop a clear subject matter eligibility test for computer-related inventions, and there is no reason to expect future court decisions to do any better at untangling this case law.

(II) Promoting technological progress. The *Alice* test excludes from patentability many inventions in the field of information technology, a key driver in our technological future. It is important that the reach of the patent laws, and the incentives they provide, be available to these areas of invention. The scope of eligibility should not be defined by the courts, but rather by Congress, the branch designed to address such issues of economic policy.

Part III of IBM's comments suggest guidelines for Congress to consider when drafting legislation to address the scope of patentable subject matter. Congress should help promote technological progress by amending the Patent Act to set forth a clearer requirement that promotes innovation in all sectors of our economy. In addition to clarity, Congress should provide a subject matter requirement that is rarely used to invalidate claims (i.e., a "coarse filter"), thereby allowing the other well developed and more easily applied patentability requirements to do their independent work. Finally, the subject matter requirement should focus on the invention as defined in the claims and should prohibit integrating the other patentability requirements into the subject matter eligibility analysis.

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Discussion

I. Two and one-half years of cases since *Alice* have shown it to be fatally flawed

A. Step 1 of *Alice* yields arbitrary results because determining the "abstract idea" to which an invention is "directed" is in the eye of the beholder

The identification of an "abstract idea" is itself too abstract an exercise to be of any value towards reaching a rational decision on whether an invention is patentable subject matter. Inventions are nothing more than "ideas" conceived of by the inventor, which is why patents are characterized as "intellectual property." And all patent claims are fundamentally "abstract" in nature—a claim is not an actual tangible thing, but instead comprises a group of words that recite an abstracted, open-ended list of the invention's basic features. If step 1 of the *Alice* test simply asks whether the invention involves an "abstract idea," then all inventions are implicated.

Without clear and objective guidance on how the *Alice* test should be applied, almost any invention in the field of information technology can reasonably be characterized as directed to not just one, but many different abstract ideas. Without clarification of what it means to be "directed to" an abstract idea, there is no reasonable basis for concluding that one of these many characterizations is more appropriate than another. But as the Federal Circuit recently noted in *Amdocs v. Openet*, there is no "single, universal definition of 'abstract idea,'"[11] and there is no reason to believe that the courts will ever be able to provide an adequate definition. As the *Amdocs* panel acknowledged, the failure to develop a "usable" or "workable" definition "is not for want of trying; to the extent the efforts so far have been unsuccessful it is because they often end up using alternative but equally abstract terms or are overly narrow."[12]

The en banc Federal Circuit observed in *Alice* that "deciding 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."[13] As a consequence, courts have resorted to an "I know it when I see it" approach.[14] This might work in some areas of the law where everyone has a common base of experience and understanding with the issue, so as to

instinctively know when what they see is "it." But asking applicants, examiners and judges to evaluate the almost philosophical question of whether the claim is directed to an idea that is abstract gives them free reign to simply apply their own inclination. The result is a subjective determination that defies predictability.

The "abstract idea" characterization is an artificial exercise with no right or wrong answer. Because the same claim can be characterized as directed at many different abstract ideas, there is no solid basis for saying that any one way is right or wrong. In *DDR Holdings v. Hotels.com*, for example, the defendant itself characterized the allegedly abstract idea in numerous ways, and the dissent characterized it in yet another, leading the Federal Circuit majority to decline any attempt at identifying the abstract idea and instead to focus on step 2.[15] Another example is the recent decision in *TSM Media v. Tivo*, where the district court vacated an earlier ruling by a prior judge in the same case in large part because the new judge and prior judge simply had different opinions on the identity of the abstract idea to which the claims were directed.[16] In another recent case, *Apple v. Ameranth*, the Federal Circuit downplayed the fact that the PTAB itself characterized the invention as directed to two different abstract ideas because, the Federal Circuit acknowledged, "[a]n abstract idea can generally be described at different levels of abstraction."[17] A legal test that has so many different correct answers is not a legal test at all. Rather, it is an invitation for the person making the decision to decide it any way he or she wants.

As a recognition of the difficulty with the first step of the *Alice* test, some courts have understandably skipped past this step to go directly to step 2.[18] But that second part of the test is just as ambiguous and difficult to apply.

B. Determining if the claim has "significantly more" than the abstract idea, step 2 of *Alice*, compounds the degree of subjectivity and confusion

In almost all situations, the claimed invention will have some limitations that restrict application of the "abstract idea" identified in step 1 of the test, so the ultimate issue under *Alice* turns on whether those additional limitations are "significant" enough, which is necessarily a value judgement. To begin with, absent a clear definition of what it means to be abstract, it is impossible to determine what is significantly more than that which is merely abstract. Moreover, while some examples of "significant enough" exist in the case law, there is no standard for judging whether a limitation is significantly more than the idea. Rather, step 2 boils down to requiring the judge, examiner or other evaluator to conclude whether they view this particular claim as simply too broad. That is, it requires making the big balancing determination of whether the monopoly incentive provided by a patent for this particular claim outweighs the cost of denying the public the free rights to practice that claim.

No examiner or judge has the ability, on a case-by-case basis, to make the naked assessment of whether the impact of the claim is such that society will be better or worse off by the granting of a patent (i.e., whether the "more" is "significant" enough). The *Alice* test asks every examiner and judge to apply a policy based threshold on a case-by-case basis, which no individual in their situation can be expected to do well. The admonishment of Judge Hand

regarding an analogous issue, emphasizing that judges should follow the law enacted by Congress in § 103 rather than their predetermined biases, is just as appropriate here: "It is not for us [i.e., judges] to decide what 'discoveries' shall 'promote the progress of science and the useful arts' sufficiently to grant any 'exclusive right' of inventors."[19] History has proven that such complex question ought to be decided by Congress.

The vagueness of *Alice's* step 2 is made exponentially worse by the dictate that no patentable weight be given to "conventional" claim features when applying this test. Asking a judge or examiner to strip away what they view as "conventional" limitations, without the legal and evidentiary framework of sections 102 and 103 and required "as a whole" obviousness analysis, invites unpredictable and arbitrary decisions. By incorporating such a filter into the subject matter eligibility analysis, the *Alice* test takes the patent law backward towards the unacceptably vague "invention" test that was replaced in 1952 by the section 103 obviousness requirement, which relies upon specific prior art evidence and facts found based on that evidence.[20] As Judge Rich explained more than 50 years ago, "testing patentability by the presence of 'invention' gives judges and the Patent Office too much freedom to decide patentability of new and useful inventions on the basis of a personal view as to what should be patentable, instead of accepting the view of the legislature on that question of national policy."[21]

Apparently novel uses of known technology have been summarily found to be "conventional" and of no "significance" for the purposes of *Alice's* step 2.[22] But if the claimed invention is nothing more than a conventional use of known prior art, then it should fail under section 102 or 103, in which case there would be no need to go down the rabbit hole of an *Alice* subject matter analysis. The law should not allow decision makers to give in to the temptation of avoiding the time and work involved in reviewing evidence, and making specific factual findings based on that evidence, as required under sections 102 and 103. Congress specifically added section 103 to replace the vague concept of "invention" that prior courts had been applying.[23] Unfortunately, *Alice* has reintroduced that vague standard into almost every case in which a 101 rejection is made.

C. The law since *Alice* has become <u>less</u> clear

As explained above, the Federal Circuit recently acknowledged there is no usable test to define "abstract ideas" for the purpose of *Alice* step 1, and the courts have provided no standard to decide if a claim has "significantly more" than the abstract idea for the purpose of step 2. This led one district court judge to charitably characterize the state of the law as of February 2016 as "somewhat confused."[24] Unfortunately, despite numerous judicial efforts, the law of subject matter eligibility is still as confusing today as it has been for much of the last thirty-five years.

The *post-Alice* law is characterized by two levels of confusion and unpredictability: what the approach should be, and how that approach will be applied to a particular claim. Since *Alice*, some courts have reached a conclusion on eligibility of claims by trying to strictly apply the two steps set out by the Supreme Court in *Alice*, despite the shortcomings outlined above. Other courts, apparently out of concern with the lack of substance in the *Alice* two-step, have fallen back on requiring a comparison of each subject claim to the facts in prior cases.[25] Other

decisions have skipped step 1 and gone right to step 2, as discussed above. Still other courts have held that the touchstone is whether the claim is directed to "a desired goal without means for achieving that goal."[26] And other courts seem to focus on preemption as the key factor. Finally, at least one judge has expressed the absolute view that "claims directed to software implemented on a generic computer are categorically not eligible for patent."[27] The variety of approaches is confusing by itself, and the unpredictability resulting from the numerous and conflicting approaches used leave applicants guessing as to how their claim will be examined.[28] As the history of the subject matter issue shows, unless an approach is specifically overruled, it may be applied by a decision maker in a later case. But even if the courts settled on a single one of these approaches, none of them provide a substantive framework that allows for any degree of predictability.

The case comparison approach, which requires comparing each new claim to the claims in prior cases, is just as unworkable as the two steps of the *Alice* test. The Office's own table of Subject Matter Eligibility Court Decisions lists over sixty Federal Circuit and Supreme Court decisions, some of which are decades old, and the number of such cases is likely to continue its rapid growth.[29] If you include district court and PTAB cases, there are hundreds of decisions to consider. Due to time constraints alone, it is impossible to take into account all the relevant cases, and it is hard to know if any past cases have been indirectly overruled through the twists and turns of this body of law. There is no way for an applicant or examiner to keep in mind the "murky morass that is § 101 jurisprudence"[30] when drafting or evaluating a claim, and there is no way to know which prior (or future) case a reviewing court may someday view as dealing with an invention most like the claimed invention under evaluation. If a court makes a "bad decision," the case comparison approach allows that poor decision to echo through the years. A case comparison approach is rarely used when evaluating obviousness because the facts relevant to evaluating each claim are very different, and this concern is just as great in the subject matter eligibility context. Case comparison is inherently flawed because it compares the claims before the court or examiner, which by definition are for "new" inventions, against claims from older cases, which inevitably will be different. Finally, the case comparison approach does not provide the applicant any certain way to extrapolate forward to glean tests and boundaries that enable claim drafting.

An approach that focuses on whether the claim is directed to a desired goal (i.e., without means for achieving that goal) is also not workable. Just as inventions can be viewed at different levels of abstraction, a means for achieving a goal can, at another level, be viewed as a goal itself. In addition, just as invention often stems from the recognition of a problem, an inventor should be able to define their invention in terms of a goal or a problem that has been solved. As Judge Plager noted, Congress has clearly provided that drafting claims as a means for performing a function is statutory subject matter.[31] If a patent specification does not contain adequate disclosure to support a claim that contains functional language, then that claim should be rejected or found invalid under section 112(b) or (f), not under section 101.

While some *post-Alice* cases relied on a preemption test to determine if the claims were patent eligible, the Office has pointed out that other courts have not done so, and the Office has instructed its examiners not to consider preemption directly.[32] The reluctance to employ a direct

preemption analysis may be based on the concern that it is generally impossible to know whether at some time in the future someone will find another way, other than as literally claimed, to apply the "abstract idea." This concern is especially real because there is no process or procedure for gathering any actual evidence or doing fact finding on this issue.

Since *Alice*, the Office has issued numerous memorandums to the examiners and updates to its guidelines. While IBM appreciates the Office's efforts, the fact that the Office believes it necessary to constantly provide such guidance illustrates that the law in this area is far from clear. If the Federal Circuit and the Office have been unable to clarify the Supreme Court's abstract ideas exemption after all these years, there is no reason to think they will ever be able to do so.

D. The fact that the courts have struggled for thirty-five years to find a way to clarify the *Benson-Flook-Diehr* trio shows that doing so is an exercise in futility

As Justice Breyer pointed out during an oral argument, "[i]f you look at the Court's cases, they seem to say *Flook*, one thing, and *Diehr*, another thing."[33] Even though there are fundamental inconsistencies between *Flook* and *Diehr*, the Supreme Court has not overruled either case and instead has treated them both as good law. The inconsistencies between these two cases has caused decades of confusion among the courts, examiners, and inventors.[34] This is illustrated, for example, by the fact that there were twelve separate, often conflicting, written opinions of the en banc Federal Circuit judges in just the *Bilski* and *Alice* cases alone.[35] The Supreme Court's decades of insistence on upholding the judicial exception of abstractness, without overruling its earlier conflicting jurisprudence and without ever providing appropriate definitions and clear tests, leaves no choice for improving the status quo by any other means than legislation. The information technology industry can't wait another thirty-five years while the courts try to sort this out.

II. Computer-related inventions should be broadly eligible for patent protection because that is the best way to promote technologies that are key to this nation's future

A. Computer-related inventions are a main driver of our economy

Alice's impact has been felt most in the field of computer-related inventions and bio-technology. Cutting edge technologies historically have been at the center of the biggest patent battles, and thus it is not surprising we currently have so many challenges to the subject matter that has the most value to our economy. In 2012, the software sector directly contributed about $425 billion to the U.S. Gross Domestic Product.[36] In addition, the software industry's innovative impact is multiplied many times over by the fact that downstream businesses benefit from and capitalize on software innovation.[37]

Information technology, and software in particular, lie at the core of innovation in most industries, from cars to drug development to machine tools. Many functions that were traditionally performed in the mechanical or analog world can now be discharged digitally far more efficiently, which is why software is the medium of choice for implementation of new

inventions. In his 2011 essay "Why Software is Eating the World," technology entrepreneur Marc Andreessen explained how software enabled innovations had become the main value driver throughout our economy.[38] That is more true than ever today, and software is expected to play an even bigger role in the future. In other words, it is not just the traditional software industry or the "technology sector" that benefits from computer-related inventions. Rather, innovations in almost every sector of our economy generally involve and are embodied in computer technology (e.g., software). Even simple objects, such as a pencil, may be first specified using computer aided design tools or manufactured using the software tools underlying 3D printing.

For this reason, restricting the patent eligibility of computer-related inventions impacts our entire economy. For example, the rapid growth of the "internet of things" over the next few years will result in all manner of devices and things – from cooking pots to smart watches to road beds to biochip transponders on farm animals – being wired with information technology and connected to the Internet. This innovation will change our world, but optimizing such investments will require that we have the right incentive system in place.

In the information technology industry, we also see important innovation taking place at the human/machine interface, such as in the fields of artificial intelligence and "cognitive computing," which involves computers doing more and more of the functions that in the past only humans could do. This is a deep area of technology advancement requiring a huge investment, but the patent incentive will be undermined if courts can exempt technology from the scope of eligible subject matter because they view it as "computerizing" something formerly done by humans. Such oversimplifications of technology are an inevitable and unfortunate byproduct of *Alice* and similar subject matter tests.

B. The benefits of patent protection are just as important to fueling computer-related innovation as for all other technologies

The Office is well aware of the important role that the patent system plays as an incentive to, in the words of the Constitution, "promote . . . the useful arts."[39] A U.S. President who was also an inventor explained it best with this famous phrase: the patent system adds "the fuel of interest to the fire of genius."[40]

A central feature of our patent system has been that it is technology neutral. The incentives for creating software-implemented innovation should be the same as for any other type of innovation. As then-Director David Kappos noted, "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."[41]

There is no reason that the patent system should disfavor software innovation. Some have criticized computer-related patent applications as being of a scope disproportionate to their technological disclosure, and others have raised concerns about claims to software implemented inventions lacking concrete borders. Of course, these concerns apply to all fields of invention, and they can and are being addressed by the Office by applying the requirements of section 112. The Supreme Court and the Office have recently expanded the emphasis on section 112, and we

should expect that to improve patent quality for all applications, including computer-related applications.[42] Another concern about computer-related inventions expressed in the earlier days of the digital age was a lack of related prior art against which to meaningfully examine such applications, but today the body of prior art available to examiners is as robust as in any other field of invention.

The United States software industry is among our most innovative and most profitable. Yet the United States is falling behind other jurisdictions in recognizing the subject matter eligibility of computer related inventions.[43] Failure to provide a clear test for subject matter eligibility, and failure to restore the United States to (at least) parity with respect to other nations will result in loss of competitiveness of our software industry (and those industries that depend on the software industry, as discussed above). The Office noted in its 2012 report that, "in 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."[44] Firms operating in the information technology sector spend billions of dollars on research and development aimed at bringing new products to market, and IBM is a case in point. Of the billions of dollars IBM invests annually in research and development, approximately half is directed to software innovation. Clear rules that provide broad 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.

Furthermore, intellectual property licensing generates a United States trade surplus that is now vulnerable. In IBM's field of information technology, for example, software exports generated between 50 and 57 billion dollars in 2012.[45] Moreover, exports of software and related services grew by 9 percent to 10 percent per year between 2006 and 2012, nearly 50% faster than all U.S. exports.[46] And the software and information technology industries have been a bright spot in an economy that often struggles to create jobs, directly employing more than 2.5 million Americans in 2014, and indirectly supporting nearly 7.5 million more jobs.[47] But the United States is now the most hostile of major patent systems with respect to patentability of computer implemented inventions. If information technology inventions are more broadly eligible for patent protection outside the U.S. than in the U.S., this will encourage investors to fund companies outside the U.S, inhibit U.S. industry, and send U.S. jobs overseas.

C. The *Alice* test goes far beyond preventing patents on fundamental principles and reaches deeply into the subject matter of traditional innovations

The Supreme Court described the judicially created exclusion of abstract ideas as based on a concern that granting of patents on the basic tools of scientific and technological work might tend to impede innovation more than it would tend to promote it.[48] While IBM agrees that fundamental principles of science should not be patent eligible, this concern does not justify any of the Supreme Court, Federal Circuit, or district court subject matter eligibility case law. While a person should not be able to get a patent on the formula $e=mc^2$, none of the inventions at issue in the line of cases before or after *Alice* rise to that level. For example, the claim at issue in *Alice*, with its recitation of limitations such as a shadow credit record and a shadow debit record, would not give the patent owner exclusive rights to activity that is truly *fundamental* to

technological or economic progress.[49] In fact, CLS Bank started the litigation at issue in *Alice* by filing a declaratory judgement action alleging, among other things, that CLS Bank did not infringe Alice's patents[50] (suggesting that even CLS Bank could carry out its business without infringing Alice's patents). While it is true that some recent cases have involved seemingly overbroad claims, if warranted, those claims should be found invalid under §§ 102, 103 or 112 rather than under § 101.

What began with valid concerns about preemption of fundamental science has gone well beyond that realm to encompass all manner of innovation in the information technology space. At IBM, we believe that the work we do is vital to society, but we cannot imagine that all of the IBM patent applications that have received *Alice* rejections rise to the level of basic tools of scientific and technological work. Truly fundamental building blocks of innovation that warrant concern should not be confused with rank and file innovations. Very few of the novel, non-obvious abstract ideas (however defined) that the Office regularly sees are of such a *fundamental* nature that providing exclusive patent rights on the idea would impede innovation.

A court could be expected to 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"[51] or "the law of gravity."[52] But "abstract ideas" tests lack clear 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 subject matter eligibility test should be a "coarse filter" that only weeds out claims to basic tools of scientific and technological work.

D. Congress did not intend to exempt information technology from the scope of patentable subject matter

The requirement imposed by *Alice* and its predecessor cases is not based on the patent statute, but rather is completely a matter of judge made law. Congress explicitly defined the scope of eligible subject matter in section 101 as any "process, machine, manufacture, or composition of matter, or any new and useful improvement thereof."[53] Congress made no indication in the Patent Act that the test should extend beyond those categories.

The general scope of eligible patent subject matter should not be defined by courts, but rather is precisely the type of policy issue best addressed by Congress. Defining the metes and bounds of the patent system is fundamental to our country's innovation policies, and major changes such as created by *Alice* are the province of Congress to make – or correct – by hearing from stakeholders and weighing the effect on our economy. As the Supreme Court put it in *Microsoft v. i4i Ltd.*, the courts are "in no position to judge the comparative force of these policy arguments."[54] The courts are, by design, tightly constrained in their ability to gather public input, and are, by design, not responsive to influence by the voters. When a court makes a decision, that decision is necessarily directed at the facts of the particular case before it. The court receives a few page-constrained briefs by admittedly interested parties, perhaps a few amicus briefs, and a short oral hearing. It has no good mechanism to ask follow up questions as

it goes through its deliberations or to vet its decision with any and all interested stakeholders before it becomes final. In addition, it is hard for a court to modify a decision once it is made.

By contrast, Congress is the branch that, by design, can gather formal and informal public input on policy matters. Congress can hold hearings, meet individually and at the staff level with interested parties, and deliberate for an extended period of time before enacting legislation. Once a new law is implemented, Congress can make amendments (unlike courts, which are restricted by precedent). Congress has the power to make a new law prospective so as to avoid sweeping away huge investments made in consideration of patents granted before Congress enacted the new law (unlike courts, whose decisions generally impact all patents, including those granted in the past). Congress is responsive to the will of the people and is evaluated by voters on a regular basis. Most importantly, Congress is the branch that was designed to decide, as a political matter, the nation's economic policy.

Enacting legislation to define the scope of patentable subject matter may not be simple. But policy decisions such as this are Congress's job, and it has deep experience addressing sensitive matters impacting all aspects of our nation. The unworkable nature of the current law of patent eligible subject matter is due in part to the difficulty the courts have with policy issues. IBM submits that Congress is the branch that should define this policy and they should begin the work to define it now.

E. Attempting to address concerns about abusive patent enforcement or poor quality patents by restricting subject matter eligibility has significant adverse consequences

IBM has over the years shared the same concerns with abusive patent enforcement as others in the patent community, as well as concerns about patents that are vague, old or overbroad. Many of these concerns have been addressed by important recent changes to the patent laws, such as the America Invents Act, enhanced pleading requirements in the Federal Rules, and case law changes. The inter partes review process, for example, is addressing the problem of poor quality patents and provides an alternative to challenging patent validity that can be much less expensive than the cost of patent infringement litigation.[55] The Office has continued efforts, such as its initiative to increase the clarity of the patent application record,[56] that will also reduce the problem of abusive patent enforcement.

Whether or not further reform is needed, the statutory subject matter requirement is the wrong tool to address concerns with abusive patent enforcement. It is too blunt and results in far too many legitimate inventions being found unpatentable. Relying on *Alice* to reduce abusive patent enforcement has the effect of throwing the baby out with the bathwater. As discussed above, the *Alice* test is ambiguous and unworkable, and the various other tests that the courts have used over the years have likewise failed to provide clarity, predictability and efficacy. Application of the *Alice* test usually boils down to an exercise in conclusory decision making. A rigorous, evidence based application of *Alice* – to the extent it is even possible – would actually be more costly to the bench and bar than the other available tools, such as analysis under section 102, 103 and 112. The inevitable reality is that some patents are of poor quality or are asserted by irresponsible parties, but this is not a reason to make it next to impossible to enforce patents in a certain technical area. Narrowing the scope of eligible subject matter does not address the

specific problems of patent quality or litigation abuse, but rather picks winners and losers based on types of innovation, awarding enforceable patent rights to those lucky enough to work in a field arbitrarily deemed to fall on the right side of the line.

As discussed above, courts are invalidating patents based on subjective conclusions tending toward the metaphysical, without gathering or evaluating actual evidence. One judge has suggested that "[f]rom a practical perspective, addressing section 101 at the outset of litigation will have a number of salutary effects."[57] In his view, "[p]atent eligibility issues can often be resolved without lengthy claim construction, and an early determination that the subject matter of asserted claims is patent ineligible can spare both litigants and courts years of needless litigation."[58] IBM agrees that *Alice* has been used to resolve litigation at the outset, with relatively little cost, but IBM submits that the reduced cost is due to a lack of reasoned analysis behind those decisions. A court can reach an early ruling that avoids having to undertake claim construction, for example, but in doing so it is likely to invalidate claims without ever determining what those claims mean.

Administration of the patent system involves costs to the patent owners, litigants, and the government. Undermining the patent system may avoid these costs, but it also undermines the benefits that the patent system provides. Decisions after *Alice* have often been justified based on the business model of the patent owner, perversely using a system designed to spur innovation to punish a certain segment of the business community currently out of favor. While IBM is sympathetic to curbing abuses, the remedies must be carefully tailored to avoid collateral damage. The statutory subject matter requirement is not the way to address these problems.

III. Subject matter legislation should meet core objectives of clarity, rarity, and simplicity

Rather than offer a specific legislative proposal at this time, IBM offers the following objectives for legislation on the issue of patentable subject matter.

A. The patent community needs fundamental requirements, such as subject matter eligibility, to be clear and repeatable

Clarity is particularly important for patent law because "[u]ncertainty is the enemy of innovation."[59] The "abstract ideas" test defies the demarcation of meaningful boundaries that make the development of clear and administrable rules possible. As Professor Chisum has noted, the uncertainty created by tests like *Alice* "can lead to subjectively-derived, arbitrary and unpredictable results" which "does substantial harm to the effective operation of the patent system."[60]

In the Office's roundtable on November 14, 2016, a number of commenters stated that the examiners have been inconsistent in their application of the subject matter case law, and that they often provide only boilerplate rejections rather than real analysis of the issue.[61] IBM agrees with these concerns, but submits that the fault lies not in the examiners themselves (or the Office in general), but in the vagaries of the *Alice* test. The PTO has been very responsible in providing

examiner guidance and training materials as new cases are decided, but one can only teach what is teachable.

An unclear subject matter requirement causes applicants, the Office and potential licensees to spend extra resources trying to determine if a particular claim meets that requirement, as well as expending resources drafting, filing, prosecuting and examining applications that are later found to be ineligible for patent protection. Given the nature of the *Alice* test and the state of the continuously changing case law, IBM has found it difficult for even our attorneys and patent agents to understand how to apply the *Alice* test to the new invention disclosures we see every day. As for our thousands of inventors, who are knowledgeable in their field of invention but not experts in the field of patent law, IBM has found it nearly impossible to expect them to understand whether a new invention is eligible subject matter under the undefined *Alice* test. It is asking much to expect inventors and invention evaluators, who decide where to invest time and money based in part on whether IBM can receive patent protection on their innovations, to understand whether or not a court evaluating subject matter eligibility many years in the future will find their computer-related innovation as significantly more than an idea that is abstract.

For these reasons, Congress must enact a statutory subject matter requirement that is clear, objective and repeatable. Such legislation should avoid adding to section 101 terms or phrases that have not been or cannot be crisply defined. Any new test has to be one that minimizes further argument on the boundaries of patent eligible subject matter.

B. Recent Supreme Court rulings should be specifically overruled and replaced with a "coarse filter" for subject matter eligibility

Given the problems with *Alice* and the other "abstract ideas" cases, the only way to undo the confusion is for Congress to specifically supersede *Alice* and its progeny. All of the past tests utilized by the courts should be abandoned because none of them have worked, which is why the courts keep creating new tests. A fresh start is the only way to properly and effectively create meaningful and concise law.

Congress should not simply abrogate section 101 altogether because the well-understood categories in section 101 are a useful scope of patent eligibility. But Congress should not codify any version of the "abstract idea" subject matter exception. As explained above, that test is critically flawed because it is undefined and too easy for judges to use to invalidate patents without any understanding of the technology or link to specific claim language. Similarly, Congress should not adopt a practical application test, as has been suggested, because this is just a way of saying "not abstract" and suffers from the same lack of clarity, consistency, and certainty. It also should not adopt the preemption variant of the test because it is also not specific or repeatable.

IBM wrestles with the "abstract idea" doctrine on a daily basis in the context of the questioned patent-eligibility of sophisticated software that looks nothing like efforts to perform a known function using a computer. Indeed, allegations that computer-implemented inventions are

patent-ineligible are now legion. That is because the malleability of the abstract idea concept casts the patent eligibility of even highly innovative and sophisticated inventions into doubt. One who has to attempt to explain the *Alice* subject matter test to an inventor, as IBM does regularly, will recognize the complete lack of substantive guidance that the test provides.

In a recent amicus brief, the U.S. Government explained that, rather than relying on the subject matter requirement, it is generally better to leave the question of validity to those specific provisions of the Patent Act which "permit more nuanced factual distinctions [and] are the principal tools that Congress has provided for 'drawing a line between the things which are worth to the public the embarrassment of an exclusive patent, and those which are not.'"[62] As Judge Plager observed, if we focus on subject matter eligibility issues only in extreme cases, "[t]he litigants will then be left to address the invalidity defenses of §§ 102, 103, and 112, as the statute provides, and the litigants, the trial court, and [the Federal Circuit] would have some semblance of a chance at arriving at a predictable and understandable result."[63]

Subject matter analysis should play its intended role of providing a "coarse filter" to weed out clearly ineligible subject matter. Once an invention is determined to be a process, product, apparatus or chemical composition, the Office and the courts should rarely be asking the question of whether the invention constitutes patent eligible subject matter. As discussed above, 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. Rather, the subject matter requirement should operate as a filter that most claims pass through, with the other more specific and demanding aspects of Title 35 doing the real work of sorting the wheat from the chaff. Section 101 should operate as a quick look that ensures that patents are directed to a process, machine, manufacture, or composition of matter, and do not claim to monopolize the basic building blocks of innovation.

C. Subject matter eligibility analysis should consider the invention as a whole and should not consider novelty, obviousness, claim definiteness or disclosure issues

Applicants take great care to draft claims "particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention."[64] Inventors have to live and die by their claims when it comes to determining if another party is infringing those claims. Accordingly, the patentability of inventions should be evaluated based on the claimed invention as defined by the inventor. Unfortunately, under *Alice* and similar cases the analysis of subject matter eligibility has too easily become an excuse to try to simplify an invention down to its "gist." It is an open invitation to disregard the language of the claim. Once a court or examiner has lost focus on the claim language, they are no longer evaluating the inventor's actual invention.

The section 102, 103 and 112 requirements play an important role in the patent system, but the considerations Congress provided behind these requirements should not be comingled with subject matter analysis. Once a court or examiner starts looking at whether parts of the claim meet these requirements – for example, by failing to give any weight to claim limitations that they view as "conventional" – they are no longer evaluating the invention as a whole. In

addition, each of these statutory provisions have been interpreted in hundreds of cases and courts have developed clearly understood substantive and procedural aspects. When courts and examiners conclude that under *Alice* they will not give weight to a claim limitation that is conventional, or that they view a claim as ineligible subject matter because it does not have enough specification support, they often will do so without applying these substantive and procedural safeguards (often without relying on any actual evidence to support their conclusion). For this reason, Congress should make clear that a subject matter eligibility analysis is not an excuse to escape the well-defined substantive law and evidentiary process by relying on a truncated version of the novelty and non-obviousness requirements as part of the subject matter considerations.

Old habits die hard. For more than a decade from the passage of the 1952 Patent Act until the *Graham* decision, court's continued to apply a vague "invention" standard instead of the statutory nonobviousness requirement in section 103.[65] To avoid a similar lingering impact of the case law from *Benson* to *Alice*, Congress should expressly require the subject matter eligibility analysis consider the invention as a whole and not permit subjectively stripping out of claims elements. It should also expressly prohibit consideration during a subject matter analysis of the novelty, non-obviousness, claim scope, or disclosure support of the claim or any of its limitations, which should be evaluated as independent requirements under 35 U.S.C. §§ 102, 103, and 112.

Conclusion

IBM appreciates the Office raising the important issue of subject matter eligibility and providing us with the opportunity to comment on this issue. We are hopeful that the roundtables and comments in response to the request for comments will begin to build a record on this issue which Congress and the public can use to fashion a legislative solution to the problem of lack of clarity around subject matter eligibility. The stakes are too high to delay.

We look forward to working with the Office to improve eligibility guidance for examiners and the public. We strongly encourage the Office to continue to solicit feedback on how inventions are being examined and to continue to collaborate with the public on this issue.

Respectfully submitted,

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END NOTES

[1] IBM's comments primarily address the subject matter of information technology because that is the industry we know best, but many of these comments apply just as well to other industries. This includes industries most directly impacted by *Alice*, such as biotechnology. In addition, because software is the principal medium of innovation today, these comments also apply to almost every sector of our innovation economy.

[2] *Epicor Software Corp. v. Protegrity Corp.*, No. CBM2015-00002 (PTAB, Apr. 20, 2016) (final written decision) (holding as ineligible subject matter claims in U.S. Pat. No. 6,321,201 to data security system for a database having multiple encryption levels); U.S. Pat. Appl. No. 13/256,082, office action of Sept. 25, 2015 (rejecting as ineligible subject matter claims to a method of protecting medical output to be stored on a portable computer-readable medium).

[3] *OpenTV, Inc. v. Apple*, No. 5-15-cv-02008 (N.D. Cal. Jan. 28, 2016) (holding as ineligible subject matter claims in U.S. Pat. No. 7,644,429 to a system for affording conditional access to subscribers); U.S. Pat. Appl. No. 11/316,493, office action of Sept. 8, 2015 (rejecting as ineligible subject matter claims to a method of rights issuer authorization for a content distribution system).

[4] *Appistry, Inc. v. Amazon.com*, No. 2-15-cv-01416 (W.D. Wash. July 19, 2016) (holding as ineligible subject matter claims in U.S. Pat. No 8,682,959 to fault tolerant processing of information via networked computers).

[5] U.S. Pat. Appl. No. 12/444,594, office action of Dec. 11, 2015 (rejecting as ineligible subject matter claims to an apparatus that renders, processes and displays images of blood flow in a fetal heart).

[6] U.S. Pat. Appl. No. 14/475,615, office action of July 31, 2015 (rejecting as ineligible subject matter claims to a method partitioning internet connection bandwidth).

[7] *MacroPoint v. FourKites*, No. 1:15-CV-1002 (N.D. Ohio Nov. 6, 2015) (holding as ineligible subject matter claims in U.S Pat. No. 8,604,943 to a system for providing location information of a vehicle), *aff'd without opinion*, Appeal No. 2016-1286 (Fed. Cir. Dec. 8, 2016).

[8] *Thales Visionix, v. United States*, 122 Fed. Cl. 245 (Fed. Cl. July 20, 2015) (holding as ineligible subject matter claims in U.S. Pat. No. 6,474,159 to a system for tracking motion of an object, which was alleged to be critical to the success of the F-35 Joint Strike Fighter).

[9] *Technology Development & Licensing v. General Instrument*, Slip Op. at 3, No. 1:07-cv-04512 (N.D. Ill. Dec. 06, 2016) (holding as ineligible subject matter claims in U.S. Pat. No. RE 35,952 to a television control system for selecting a television channel). In a prior ex parte reexamination decision, the PTAB had found these claims were patentable over asserted prior art. *See id.*, Slip Op. at 2.

[10] *Bilski v. Kappos*, 561 U.S. 593, 614 (2010) (Stevens, J., concurring).

[11] *Amdocs (Isr.) Ltd. v. Openet Telecom*, 120 U.S.P.Q.2D 1527, 1531 (Fed. Cir. 2016).

[12] *Id.* at 1531-32.

[13] *CLS Bank Int'l v. Alice Corp.*, 717 F.3d 1269, 1277 (Fed. Cir. 2013) (en banc), *aff'd Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014).

[14] *See, e.g., Eclipse IP v. McKinley Equip*., No. 14-742-GW, Slip. Op. at 4 (C.D. Cal. Sept. 4, 2014).

[15] *DDR Holdings v. Hotels.com*, 773 F.3d 1245, 1257 (Fed. Cir. 2014) ("NLG characterizes the allegedly abstract idea in numerous ways, including 'making two web pages look the same,' 'syndicated commerce on the computer using the Internet,' and 'making two e-commerce web pages look alike by using licensed trademarks, logos, color schemes and layouts.' . . . The dissent characterizes DDR's patents as describing the entrepreneurial goal 'that an online merchant's sales can be increased if two web pages have the same look and feel.'").

[16] *TNS Media Research v. Tivo Research & Analytics*, No. 11-cv-4039, Slip. Op. at 14, 24-25 (SDNY Nov. 29, 2016) (while Judge Scheindlin had described the claim as constituting an "abstract concept of matching consumer data to households using a double-blind matching strategy," Judge Forrest described the same claim as "directed at the concrete idea that there are today numerous digital media platforms which can be mined for information about second-by-second or minute-by-minute household viewing that data can be as granular as whether the volume is turned down during a commercial break, or whether the channel is switched away and then switched back.").

[17] *Apple v. Ameranth*, 120 U.S.P.Q.2D 1844, 1853 (Fed. Cir. 2016) ("As the Board has done, the claimed abstract idea could be described as generating menus on a computer, or generating a second menu from a first menu and sending the second menu to another location. It could be described in other ways, including, as indicated in the specification, taking orders from restaurant customers on a computer.").

[18] *See, e.g.*, *DDR Holdings*, 773 F.3d at 1257; *Elec. Power Group v. Alstom*, 830 F.3d 1350, 1353 (Fed. Cir. 2016) ("the two stages involve overlapping scrutiny of the content of the claims . . . [and] there can be close questions about when the inquiry should proceed from the first stage to the second"); *BASCOM v. AT&T Mobility*, 827 F.3d 1341, 1349 (Fed. Cir. 2016) ("[T]he claims and their specific limitations do not readily lend themselves to a step-one finding that they are directed to a nonabstract idea. We therefore defer our consideration of the specific claim limitations' narrowing effect for step two.").

[19] *Reiner v. I. Leon*, 285 F.2d 501, 503 (2nd Cir. 1960) (quoting U. S. Constitution, Article 1, § 8).

[20] *See Graham v. John Deere Co.*, 383 U.S. 1, 17 (U.S. 1966).

[21] *See* Giles S. Rich, "The Vague Concept of 'Invention' as Replaced by § 103 of the 1952 Patent Act," 14 Fed. Cir. B.J. 147, 162 (2004) (reprinting Kettering Award Acceptance Speech delivered in June 1964) (herein "Rich, The Vague Concept of Invention").

[22] *See, e.g., Va. Innovation Scis., Inc. v. Amazon.com, Inc.,* No. 1:16-cv-00861, Slip Op. at 21-26 (E.D.Va. Jan. 5, 2017) (holding an apparatus for processing signals to accommodate reproduction by an alternative display terminal was not patentable subject matter, and dismissing the patentee's assertion that the PTAB had found that the subject matter in question was not taught by the prior art, because it was "an example of abstract ideas repackaged in conventional technology"); *Ex parte Hiroyuki Itagaki*, No. 2015-002702, Slip. Op. at 4-7 (P.T.A.B Dec. 30, 2016) (reversing rejections under § 103, but holding that magnetic resonance imaging (MRI) apparatus invention was not eligible subject matter because it "does not operate in an unconventional manner to achieve an improvement in its functionality"); *Netflix v. Rovi Corp.*, 114 F. Supp. 3d 927, 937 (N.D. Cal. 2015) ("Notably, the search for an 'inventive concept' places no importance on the novelty of the abstract idea. A novel idea is still an abstract idea, and is therefore unpatentable."), *aff'd Netflix v. Rovi Corp.*, No. 2015-1917 (Fed. Cir. Nov. 7, 2016).

[23] Rich, The Vague Concept of Invention, at 156-57.

[24] *TNS Media Research*, Slip. Op. at 1.

[25] *See, e.g., Amdocs*, 120 U.S.P.Q.2D at 1532 ("Instead of a definition, then, the decisional mechanism courts now apply is to examine earlier cases in which a similar or parallel descriptive nature can be seen—what prior cases were about, and which way they were decided.").

[26] *Amdocs*, 120 U.S.P.Q.2D at 1544 (Reyna, J., dissenting); *see Apple*, 120 U.S.P.Q.2D at 1856 ("Generally, a claim that merely describes an 'effect or result dissociated from any method by which [it] is accomplished' is not directed to patent-eligible subject matter.").

[27] *IV v. Symantec*, 838 F.3d 1307, 1323 (Fed. Cir. 2016) (Mayer, J., concurring).

[28] As of today, it is unclear which test is legally correct. In *Amdocs*, for example, the majority opinion held that the dissent's approach of focusing on whether the claim is directed to a desired goal is "not now the law, either in statute or in court decision," *Amdocs*, 120 U.S.P.Q.2D at 1532, while the dissent stated that the majority's case comparison approach is contrary to *Alice* and undermines multiple Federal Circuit precedents, *id.* at 1542 (Reyna, J., dissenting).

[29] USPTO, "Subject Matter Eligibility Court Decisions Through December 15, 2016" (available at https://www.uspto.gov/sites/default/files/documents/ieg-dec-2016-sme_crt_dec.xlsx).

[30] *MySpace v. GraphOn Corp.*, 672 F.3d 1250, 1260 (Fed Cir. 2012).

[31] *Amdocs*, 120 U.S.P.Q.2D at 1532 (citing 35 U.S.C. § 112(f)).

[32] Robert Bahr, UPSTO Deputy Commissioner for Patent Examination Policy, "Memorandum - Recent Subject Matter Eligibility Decisions," at 3-4 (Nov. 2, 2016) (available at https://www.uspto.gov/sites/default/files/documents/McRo-Bascom-Memo.pdf) ("Examiners should continue to use the *Mayo/Alice* framework . . . to resolve questions of preemption.").

[33] *Mayo Collaborative Sers. v. Prometheus Labs.*, S. Ct. No. 10-1150, Transcript of Oral Argument, December 7, 2011, at 14 (available at https://www.supremecourt.gov/oral_arguments/argument_transcripts/10-1150.pdf). *Flook* was decided in 1978, and *Diehr* was decided more than thirty-five years ago, in 1981. *See Parker v. Flook*, 437 U.S. 584 (1978); *Diamond v. Diehr*, 450 U.S. 175 (1981).

[34] The courts have continuously developed new subject matter eligibility case law over the years, but the application of these cases to particular claims has generally been unclear and difficult. For example, one test for subject matter eligibility in use during the 1980s and 1990s was the *Freeman-Walter-Abele* test, which itself went through years of evolution. *See In re Freeman*, 573 F.2d 1237 (C.C.P.A. 1978); *In re Walter*, 618 F.2d 758 (C.C.P.A. 1980); *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982). This test was largely replaced by the "practical application" and then "useful, concrete and tangible results" tests in the mid 1990s. *See In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994); *State Street Bank v. Signature Financial Group*, 149 F.3d 1368 (Fed. Cir. 1998). A third test was the "machine or transformation test," which the Supreme Court has suggested is still a "useful and important clue,"*Bilski v. Kappos*, 561 U.S. 593, 603 (2010), though it is not clear how exactly it should be used today. And, for now at least, we have the *Alice* test.

[35] *See In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), *aff'd Bilski v. Kappos*, 130 S. Ct. 3218 (2010); and *CLS Bank v. Alice Corp.*, 717 F.3d 1269 (Fed. Cir. 2013) (en banc), *aff'd Alice v. CLS Bank*, 134 S.Ct. 2347 (2014).

[36] *See* SIIA, "The U.S. Software Industry: An Engine for Economic Growth and Employment," at 4 (2014) (available at https://www.siia.net/Admin/FileManagement.aspx/LinkClick.aspx?fileticket=yLPW0SrBfk4%3D&portalid=0).

[37] *See* Econ. & Statistics Admin. & U.S. Patent & Trademark Office, "Intellectual Property and the U.S. Economy: Industries in Focus," at ii (2012) (available at https://www.uspto.gov/about-us/organizational-offices/office-policy-and-international-affairs/office-chief-economist/uspto) (describing the "domino effect" of innovation in the software industry).

[38] Marc Andreessen, "Why Software Is Eating the World," Wall Street Journal (Aug. 20, 2011).

[39] U.S. Const., Art. I, Sec. 8, cl. 8.

[40] Abraham Lincoln, "Second Lecture on Discoveries and Inventions, February 11, 1859" (reprinted in Collected Works of Abraham Lincoln, Volume 3, at 363 (available at http://quod.lib.umich.edu/l/lincoln/lincoln3/1:87?rgn=div1;view=fulltext).

[41] David J. Kappos, Under Sec'y of Commerce for Intellectual Prop., "Keynote Address at the Center for American Progress: An Examination of Software Patents" (Nov. 20, 2012) (available at http://1.usa.gov/1cZCeaj).

[42] *See Nautilus v. Biosig Instruments*, 134 S. Ct. 2120 (2014); U.S. Patent & Trademark Office, Michelle Lee, Under Sec'y of Commerce for Intellectual Prop., "Results of the Clarity of the Record Pilot" (Nov. 08, 2016) (available at https://www.uspto.gov/blog/director/entry/results_of_the_clarity_of).

[43] *See* "Kappos Calls For Abolition Of Section 101 Of Patent Act," LAW360, Apr. 12, 2016 ("Kappos, who led the patent office from 2009 to 2013, said he has begun telling clients that patent protection for biotechnology and software inventions is more robust in other countries like China and Europe and they are better off seeking patents in those places, because of the way U.S. courts have interpreted Section 101.") (available at https://www.law360.com/articles/783604/kappos-calls-for-abolition-of-section-101-of-patent-act); Jacob Schindler, "No 'pendulum' here: software patent protection is only getting stronger in China," IAM, Oct. 31, 2016 (new draft guidelines for patent examination in China's State Intellectual Property Office "is the latest reminder that in the post-*Alice* environment, many observers say software protection is easier to obtain in China than in the US.") (available at http://www.iam-media.com/blog/detail.aspx?g=68b9744c-ee2c-4f35-a3d7-2115faec7253).

[44] *See* Econ. & Statistics Admin. & U.S. Patent & Trademark Office, "Intellectual Property and the U.S. Economy: Industries in Focus," at 1 (2012) (available at https://www.uspto.gov/about-us/organizational-offices/office-policy-and-international-affairs/office-chief-economist/uspto).

[45] Software and Information Industry Association, "The U.S. Software Industry: An Engine for Economic Growth and Employment" at 2 (2014) (available at https://www.siia.net/Admin/FileManagement.aspx/LinkClick.aspx?fileticket=yLPW0SrBfk4%3D&portalid=0) ("About 12 percent of U.S. software production is exported, totaling some $50 billion to $57 billion

in 2012. Moreover, exports of software and related services have grown by 9 percent to 10 percent per-year since 2006, nearly 50 percent faster than all U.S. exports.").

[46] *Id.*

[47] Business Software Association, "The $1 Trillion Economic Impact of Software" (2016) (http://softwareimpact.bsa.org/).

[48] *See Alice v. CLS Bank*, 134 S. Ct. 2347, 2354 (2014).

[49] *See id.* at 2352, n.2 (quoting claim 33 of the '479 patent).

[50] *See id.* at 2353.

[51] *Funk Bros. Seed Co. v. Kalo Inoculant Co*., 333 U.S. 127, 130 (1948).

[52] *Diamond v. Chakrabarty,* 447 U.S. 303, 309 (1980).

[53] 35 U.S.C. § 101 (2016).

[54] *Microsoft v. i4i Ltd*., 564 U.S. 91, 113 (2011).

[55] According to the PTO's statistics of November 30, 2016, in 67% of the final written decisions as of that date all instituted claims were found unpatentable; in 15% of the final written decisions some claims were found unpatentable; and in only 17% of the final written decisions did all claims survive as patenable. *See* U.S. Patent & Trademark Office, "Patent Trial and Appeal Board Statistics," November 30, 2016, at 10 (available at https://www.uspto.gov/patents-application-process/appealing-patent-decisions/statistics/aia-trial-statistics).

[56] *See* Robin Evans, "Clarity of the Record Pilot," presentation to the Patent Public Advisory Committee Quarterly Meeting on November 3, 2016 (available at https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0ahUKEwj-wd37z4DRAhUK2IMKHdKhDLcQFggkMAE&url=https%3A%2F%2Fwww.uspto.gov%2Fsites%2Fdefault%2Ffiles%2Fdocuments%2F20161103_PPAC_Clarity_Record_Pilot.pdf&usg=AFQjCNGjlqWqQ9eejAVAXCwpjF9EnfnHMw&sig2=HWIg3QLC_-gK99lQDxxM8w&cad=rja).

[57] *Ultramercial v. Hulu*, 772 F.3d 709, 718 (Fed. Cir. 2014) (Mayer, J. concuring).

[58] *I/P Engine v. AOL*, 576 Fed. Appx. 982, 996 (Fed. Cir. 2014) (unpublished) (Mayer, J. concuring).

[59] *In re Bilski*, 545 F.3d 943, 977 (Fed. Cir. 2008) (Newman, J., dissenting), *aff'd Bilski v. Kappos,* 561 U.S. 593 (2010).

[60] 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).

[61] Ryan Davis, "Alice Rejections Frustrating Patent Applicants, USPTO Told," LAW360 (Nov. 15, 2016).

[62] *MySpace*, 672 F.3d at 1261 (quoting Brief for the United States as Amicus Curiae Supporting Neither Party at 26-32, *Mayo Collaborative Serv. v. Prometheus Labs.*, 132 S. Ct. 1289 (2012).

[63] *MySpace*, 672 F.3d at 1262.

[64] 35 U.S.C. § 112(b) (2016).

[65] *See* George M. Sirilla, "35 U.S.C. 103: From Hotchkiss to Hand to Rich, the Obvious Patent Law Hall-of-Famers," 32 J. Marshall L. Rev. 437, 524 (1999) (noting that some courts "stubbornly resisted recognizing any intention in § 103 to reverse the drift in the courts toward applying a stricter patentability standard. They continued to dismiss any such intention by simply stating that '[t]he Patent Act of 1952 did not change the basic tests for determining patentability.'") (quoting *Belden v. Air Control Prods*., 144 F. Supp. 248, 252 (W.D. Mich. 1956)).