

July 25, 2014

Via Electronic Mail
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Attention: Raul Tamayo, Senior Legal Advisor; and
Caroline D. Dennison, Senior Legal Advisor,
Office of Patent Legal Administration

Re: IBM Corporation Comments in response to "Request for Comments and Extension of Comment Period on Examination Instruction and Guidance Pertaining to Patent-Eligible Subject Matter," 79 Fed. Reg. 36786 (June 30, 2014)

IBM thanks the United States Patent and Trademark Office (Office) for the opportunity to comment on the Preliminary Examination Instructions in view of the Supreme Court Decision in *Alice Corporation Pty. Ltd. v. CLS Bank International, et al. (Alice)* dated June 25, 2014 (Preliminary Instructions). Patent-eligibility under 35 USC § 101 and the judicially-created "abstract idea" exception are issues of paramount importance to IBM as an innovator and patentee in the field of information technology. The Office's interpretation and application of the *Alice* decision in examining patent applications and reviewing issued patents is critical for promoting innovation and maintaining a balanced patent system.

The Preliminary Instructions fairly summarize the *Alice* decision at a high level. We do not believe *Alice* has a significant effect on the patent eligibility of the vast majority of information technology inventions, including software. The Court declined to address the scope of the "abstract idea" exception beyond analyzing the claims at issue, and that aspect of the opinion must be respected. Nevertheless, detailed guidance for examining inventions in this field, including examples, is needed. The *Alice* opinion itself lacks detailed examples or guidance for either identifying abstract ideas or applications of an abstract idea that would be sufficient to render a claimed invention eligible. Examiners and applicants alike will need more assistance to fairly and reliably prepare, prosecute, and examine information technology inventions.

We respectfully offer views on general principles we believe should guide analysis under 35 USC § 101 in light of the *Alice* decision, and analyze a few patented inventions whose eligibility should be beyond dispute using the *Alice* framework. We strongly encourage the Office to provide a wide range of detailed examples, including analysis of both eligible and ineligible claims, to help guide examiners and practitioners. Feedback from the patent community, for example

through Office roundtables or conferences, will also be critical for developing workable guidance for examiners and practitioners.

General Principles

Subject matter eligibility analysis often raises questions about whether there should be special rules for certain areas of technology. As the Office noted in the Preliminary Instructions, the *Alice* decision confirms that there is no excluded category of subject matter, nor are there special requirements for eligibility for any area of technology, including software and business methods. We agree with the Office and believe this is the right policy for promoting innovation, but because the *Alice* opinion did not establish practical ground rules for determining eligibility, specific guidance directed to information technology (or computer-implemented) inventions is needed to show how to apply the general framework described in that opinion to specific inventions. Similarly, the specific guidance the Office provided for laws of nature, natural phenomena, and/or natural products,¹ is unlikely to be helpful in analyzing information technology inventions, which themselves are more likely to raise eligibility issues with respect to the abstract idea exception. Therefore, we strongly urge the Office to formulate guidance and examples specific for information technology inventions as they may implicate the abstract idea exception rather than simply relying on the Mayo guidelines in this area.

1. Step One Inquiry

The first inquiry under *Alice* is whether the claim is directed to an abstract idea. The most important aspect of the Step One inquiry is that it should occur infrequently. As the Supreme Court has explained, "courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'"² As the Office notes in the Preliminary Instructions, "at some level, all inventions embody, use, reflect, rest upon or apply abstract ideas," and thus "an invention is not rendered ineligible simply because it involves an abstract concept." It follows that the test for eligibility is a "coarse filter,"³ and the vast majority of inventions that fall into the four statutory categories should be patent eligible.

Moreover, the claimed invention must be evaluated "as a whole."⁴ Therefore, examiners should not be hunting for excluded subject matter, but rather evaluating the true nature of the invention as claimed. As the Court explained in *Diamond v. Diehr*:

¹ 2014 Procedure For Subject Matter Eligibility Analysis Of Claims Reciting Or Involving Laws Of Nature/Natural Principles, Natural Phenomena, And/Or Natural Products (March 2014) (http://www.uspto.gov/patents/law/exam/myriad-mayo_guidance.pdf) (last visited July 22, 2014).

² *Diamond v. Diehr*, 450 U.S. 175, 182 (U.S. 1981) (citations omitted).

³ See *Research Corp. Techs. v. Microsoft Corp.*, 627 F.3d 859, 869 (Fed. Cir. 2010).

⁴ *Alice* at 305.

"[T]he respondents here do not seek to patent a mathematical formula. Instead, they seek patent protection for a process of curing synthetic rubber. Their process admittedly employs a well-known mathematical equation, but they do not seek to preempt the use of that equation. Rather, they seek only to foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process. ... Obviously, one does not need a "computer" to cure natural or synthetic rubber, but if the computer use incorporated in the process patent significantly lessens the possibility of "overcuring" or "undercuring," the process as a whole does not thereby become unpatentable subject matter.

(*Diehr* at 187). *Diehr* stands for the principle (*inter alia*) that the mere presence of a mathematical formula in a claim does not implicate the abstract idea exception or otherwise render a statutory claim ineligible. Therefore, examiners should not need to evaluate under Step One claims that merely contain some type of abstract concept or mathematical formula; the examiner should look to the claimed invention as a whole to determine whether 35 USC § 101 is implicated, which should be a rare occurrence.

Furthermore, the challenge in identifying abstract ideas is greater than identifying laws of nature or natural phenomena in the sense that the latter are pre-existing and merely "discovered" while abstract ideas under the current approach provided by the Court need not be – the excluded abstract idea of "intermediated settlement" was, at one time, an original idea attributable to one or more people. Therefore, the first step of the *Alice* subject matter eligibility inquiry must be undertaken with great care to avoid excluding eligible inventions that merely build on an abstract concept.

To that end, we believe it is critical that examiners base identification of abstract ideas under step one on specific, documented evidence and analysis, not unsupported examiner assertions. The examiner must identify with specificity the abstract idea and why it is believed to be excluded under *Alice*. For example, in *Alice*, the Court cited a number of references for the proposition that intermediated settlement was a fundamental economic practice.⁵ A fully supported rejection will also provide applicants with a reasonable opportunity to respond both in remarks and possible amendments, but an unsupported and unexplained rejection will leave the applicant with no guidance whatsoever on how to protect an invention.

Regarding the specific categories of abstract ideas identified in *Alice* and the Preliminary Instructions, we urge the Office to exercise caution and provide more specific guidance. The Preliminary Instructions recite four categories referred to as "examples" of abstract ideas, including the fundamental economic

⁵ See *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 189 L. Ed. 2d 296, 306 (U.S. 2014)

practices (and/or methods of organizing human activities) represented by the claims in *Alice* and *Bilski*, as well as “an idea of itself,” and “mathematical relationships/formulas.” These categories, however, are not examples. In fact, the Court explicitly declined to provide any definition for “abstract ideas,” instead limiting its analysis to the claims at hand:

“In any event, we need not labor to delimit the precise contours of the ‘abstract idea’ category in this case. It is enough to recognize that there is no meaningful distinction between the concept of risk-hedging in *Bilski* and the concept of intermediated settlement at issue here.”

Alice, at 307. Thus, the most that can be said of the *Alice* decision is that it finds *Alice*’s claims ineligible as abstract ideas and reaffirms the holdings of prior decisions such as *Bilski v. Kappos*, *Rubber-Tip Pencil Co. v. Howard*, *Gottschalk v. Benson*, *Parker v. Flook*, and *Diamond v. Diehr*. It would be inconsistent with the decision to extract a category such as “an idea of itself” and give it any weight.

Requiring the examiner to provide specific evidence to support the rejection of a claim as ineligible abstract will ensure that these open-ended conceptual descriptions of an “abstract idea” do not swallow the rule of 35 USC § 101 which includes within the broad range of eligible inventions any process, product, apparatus, or chemical composition.

2. Step Two Inquiry

If the examiner has proven that an abstract idea is covered by the claimed invention, then the claim must be evaluated to determine whether it covers a patent-eligible application of that idea. Although the Court provided some general guidance in this area reflected in the Preliminary Instructions, we believe this inquiry would also benefit from specific examples directed to information technology. For example, *Bilski* and *Alice* focus the inquiry on abstract business methods implemented through application software on a computer system. Inventions directed to system software (described further below in the examples) should not be susceptible to analysis as “abstract ideas,” but in any event have functionality entirely defined through the use of computer hardware and should thus be eligible in all cases under Step Two because they control how the computer operates, and/or the computer defines how the process operates. Guidance from the Office along these lines would be very helpful for the patent community.

As we describe the Step Two analysis in more detail below in conjunction with our examples, we believe a useful guide for determining when a computer implementation is “significantly more” than an abstract idea and thus imparts eligibility is the specific relationship between the computer and the method embodying an abstract idea. If the computer implementation changes the

method – *i.e.* is required by the claims to impart functionality which could not be provided without it (and still achieve the purpose of the invention), then that should impart eligibility. Likewise, if the method as applied on the computer changes the way the computer operates – *i.e.* making it work more efficiently – then that too should impart eligibility.

3. Other considerations – Compact prosecution

The Office must not adopt a framework under which the eligibility inquiry is performed first before any other patentability evaluation. *Alice* does not require, nor is it efficient, for the Office to sequence examination in this way.⁶ For example, we do not understand how the examiner can ensure a proper subject matter eligibility inquiry if the examiner does not understand the claims because they are indefinite under 35 USC § 112(b). In determining if an idea is “long prevalent” the examiner may discover a § 102 reference anticipating the invention. And it seems impossible to evaluate the “significantly more” aspects of Mayo Step 2 without considering §§ 102 and 103. The Court acknowledged this in the Mayo decision: “We recognize that, in evaluating the significance of additional steps, the §101 patent-eligibility inquiry and, say, the §102 novelty inquiry might sometimes overlap.”⁷

Instead, we strongly urge the Office to reaffirm the principles of compact prosecution to maintain proper focus for all patentability inquiries. For example, the question of whether a claim is directed to an abstract idea encompassing a “fundamental economic principle” involves determining whether the principle is in fact fundamental – prior art must be examined, but other considerations such as established practices in the field would also seemingly be relevant.⁸ This inquiry must not be the same as the novelty or non-obviousness inquiries for there to be integrity in the statutory sections, but it will be more difficult for examiners and applicants to distinguish the two if they are done separately in a vacuum. The Office should provide clear guidance to distinguish these inquiries and instruct examiners how they can be performed in the context of compact prosecution.

Specific Examples

1. System software – BIOS code.

In general, the Office should clarify that system software is not excluded from patent eligibility under the abstract idea exception to 35 USC § 101.

⁶ See Director's Forum: A Blog from USPTO's Leadership, “Some Thoughts on Patentability,” Under Secretary of Commerce for Intellectual Property and Director of the USPTO David Kappos (Friday, July 27, 2012) (http://www.uspto.gov/blog/director/entry/some_thoughts_on_patentability) (last visited July 22, 2014).

⁷ *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1304 (U.S. 2012)

⁸ See *Alice* at 306.

System software includes firmware such as BIOS and device drivers, operating systems such as Linux or Windows, and middleware such as web servers, databases, virtual machines, and Java. System software is inextricably linked to hardware, and has no meaning outside the context of computer implementation. Therefore, we can not think of an instance where system software could represent an “abstract idea” disconnected from its application on a computer. Similarly, the use of the computer represents the only meaningful embodiment of such an invention. One example of a patent claim covering system software is the following claim directed to BIOS software:

Example Claim 1

A method for loading BIOS into a local computer system which has a system processor and volatile memory and non-volatile memory, the method comprising the steps of:

- (a) responding to powering up of the local computer system by requesting from a memory location remote from the local computer system the transfer to and storage in the volatile memory of the local computer system of BIOS configured for effective use of the local computer system,
- (b) transferring and storing such BIOS, and
- (c) transferring control of the local computer system to such BIOS.

Claim 15 of U.S. Patent No. 5,230,052 to Richard A. Dayan et al., entitled “Apparatus and method for loading BIOS into a computer system from a remote storage location”

2. Software that provides unique functionality – RISC and encryption

While some software implements a solution that could be achieved (albeit without flexibility) in specially-configured hardware, some software provides a solution to a problem that reconfiguration of the hardware cannot solve (e.g., due to time or physical space requirements). The fact that changes in functionality can be implemented through software creates exponentially more resulting hardware functionality than the same information technology system without the software. Software of this type clearly satisfies Step One since, again, we can not imagine software that changes computer functionality would be considered to be directed to an abstract idea. Such software also clearly satisfies Step Two since it changes the functionality of the computer itself. Guidance from the Office clearly indicating the eligibility of this type of software would be very helpful to the patent community.

Below we include two examples directed to inventions whose functionality would not be possible through the use of hardware alone – one to a Reduced

Instruction Set Computer (Example Claim 2 is for optimizing a compiler) and one to an encryption method (Example Claim 3).

Example Claim 2

A method for use within the code optimization phase of an optimizing compiler operable to move certain range check instructions out of single entry strongly connected regions (SCR) or loops and into linear regions of the instruction stream whereby computational efficiency is increased with no loss of program accuracy,

said method comprising placing a range check trap instruction into the header node of the SCR provided there is only one conditional exit from the SCR based on the induction variable, and additional conditional exits none of which are based on the induction variable, modifying the conditional exit test based on the value of the induction variable (v), and inserting additional checks at the loop exit point(s) to insure that the induction variable has reached the value it would have obtained in the original (unmodified) program.

Claim 1 of U.S. Patent No. 4,642,765 to John Cocke et al., entitled "Optimization of range checking"

Example Claim 3

A method for establishing cryptographic communications comprising the step of:

encoding a digital message word signal M to a ciphertext word signal C, where M corresponds to a number representative of a message and

$$0 \leq M \leq n-1$$

where n is a composite number of the form

$$n=p \cdot q$$

where p and q are prime numbers, and

where C is a number representative of an encoded form of message word M,

wherein said encoding step comprises the step of:

transforming said message word signal M to said ciphertext word signal C whereby

$$C=M^e(\text{mod } n)$$

where e is a number relatively prime to $(p-1) \cdot (q-1)$.

Claim 23 of U.S. Patent No. 4,405,829 to Ronald L. Rivest et al., entitled "Cryptographic communications system and method"

3. Application software – context-sensitive "help"

As described above, we believe the type of software inventions that implicate the eligibility analysis are directed to application software. *Alice* provides an example of application software that is ineligible under the Supreme Court's abstract idea framework. On the other hand, application software such as that described below is clearly directed to eligible subject matter. First, with respect to Step One, the claimed context-sensitive help software method is not directed to an abstract idea. It combines display functionality and word processing to produce a "help" tool keyed on a specific text location in an on-line document.

Even if an abstract idea could be identified, the method requires a very specific application of computer technology in the context of editing a document which provides meaningful limitations. To see how this example fully satisfies Step Two, let us assume that "providing context-sensitive help" is an abstract idea. This idea could be practically applied using computer technology in many ways, such as by providing directions based on a person's location or identifying preferred security protocols depending on network usage. Even if we limited the "abstract idea" to context-sensitive help for word processing, this could mean searching for references related to the topic covered by the document. The invention in Example Claim 4 thus represents one of a vast number of ways to provide context-sensitive help, and one which has no analog without the use of a computer and display – the method would not operate. Therefore, Example Claim 4 satisfies Step Two in a manner we describe above in our proposed framework, because the functionality of the method depends on the computer environment.

Example Claim 4

A system for providing context-sensitive on-line documentation to an operator of a data processor having storage means, display means, and means for receiving inputs from said operator, comprising:

an application executed by said data processor for performing a number of different functions selected by an operator;

a unitary readable document stored in said data processor and containing text at predetermined locations relating to respective ones of said functions;

a set of screens stored in said data processor containing information relating to the selection of different ones of said functions and further containing data identifying a number of labels associated with various cursor positions in said screens;

a display manager executed by said data processor and responsive to said functions selected by said operator during execution of said application for selecting among said screens in said set, and responsive to operator-selected ones of said cursor positions for selecting certain of said labels;

a browse utility initiated by a command from said operator during the execution of said application to access said document, and then executed by said data processor in place of said application, and responsive to said display manager for presenting on said display means text at those predetermined locations in said document corresponding to said certain labels, said browse utility further including means for moving from said predetermined locations to arbitrary other locations in said document under operator control, and means responsive to yet a further command from said operator for terminating execution of said browse utility and returning to said application.

Claim 1 of U.S. Patent No. 4,970,678 to Robert Sladowski et al., entitled "System for providing context-sensitive on-line documentation in a data processor"

Conclusion

In conclusion, IBM appreciates the opportunity to comment on the Preliminary Instructions. We also look forward to working with the Office to develop more detailed guidelines, and strongly encourage the Office to communicate with the public and obtain feedback on how computer-implemented inventions are being examined and to develop workable subject matter eligibility guidelines through collaboration with the patent community.

Respectfully submitted,

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