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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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**In re:**

**75 Fed. Reg. No. 143 (pp. 43922-43928)**

**July 27, 2010**

***Comments on Interim Guidance for Determining Subject Matter  
Eligibility for Process Claims in View of Bilski v. Kappos***

**Attention:**

The Honorable David J. Kappos  
Under Secretary of Commerce for Intellectual Property  
and Director of the United States Patent and Trademark Office  
Mail Stop Comments - Commissioner for Patents  
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invest in, inventions with the mission to energize and streamline an invention economy that will drive innovation around the world.

Intellectual Ventures offers these comments with the goal of building a long-term constructive partnership with the Patent and Trademark Office (“Office”) in its aim to improve examination practice. We support a strong patent system, and are a substantial customer of the Office’s services.

We believe that appropriate and consistent standards for substantive examination are an important part of the patent system because they help achieve high-quality patents and public reliance upon those patents, and we offer our comments in the furtherance of these goals.

In the Request, the Office stated:

Members of the public are invited to review the Interim *Bilski* Guidance (below) and provide comments. The Office is particularly interested in receiving comments in response to the following questions:

1. What are examples of claims that do not meet the machine-or-transformation test but nevertheless remain patent-eligible because they do not recite an abstract idea?

2. What are examples of claims that meet the machine-or- transformation test but nevertheless are not patent-eligible because they recite an abstract idea?

3. The decision in *Bilski* suggested that it might be possible to “defin[e] a narrower category or class of patent applications that claim to instruct how business should be conducted,” such that the category itself would be unpatentable as “an attempt to patent abstract ideas.” *Bilski* slip op. at 12. Do any such “categories” exist? If so, how does the category itself represent an “attempt to patent abstract ideas?”

Intellectual Ventures appreciates the efforts of the Office to seek guidelines to improve efficiency and consistency for the Office and the community. Intellectual Ventures also appreciates the Office’s acknowledgment that the machine-or-transformation test is not the sole test in determining subject matter eligibility, and its setting forth a variety of balancing factors to provide flexibility in this determination for current and future technologies.

However, Intellectual Ventures is concerned that the factor-based approach set forth in the Guidelines is overly vague and subjective, and that this will make uniform, consistent, and high-quality patent examination difficult to achieve. In particular, the primary weaknesses are: (1) the lack of a definition of “abstract idea” and other terms set forth in the factors for determining whether a method claim is a claim to an abstract idea; and (2) lack of guidance to patent examiners for properly evaluating and assigning objective weights to the factors.

- a. **The Office should clearly define the terms set forth in the factors and provide additional guidance to the Examiners with respect to their application, through examples or otherwise.**

Terms such as “specific,” “particular,” “general,” and “abstract,” which are used throughout the factors, should be defined.

The first factor described in the Guidelines relates to the method’s recited or inherent execution by a particular machine or apparatus, but the Guidelines fail to define what constitutes “a particular machine.” Will a general-purpose computer qualify as a particular machine under the Guidelines? Will a special-purpose computer qualify as a particular machine under the Guidelines? If so, any computer can, merely by being programmed with a new application, be reconfigured as a specific machine. *Cf. In re Bernhart*, 417 F.2d 1395 (CCPA 1969).

The Guidelines also do not define “a particular apparatus”. Does a “computer memory” or “storage device” satisfy the particular apparatus factor? The Guidelines further fail to provide Examiners with guidance regarding when a method is *inherently* executed by a machine.

Another factor set forth in the Guidelines involves whether a machine implements the steps of the method, where integral use of a machine to achieve performance of the method weighs in favor of subject matter eligibility. Can an applicant satisfy this factor of the analysis by claiming the invention as a *computer-implemented* process? Such computer implementation may be integral to achieving the efficient performance of the method.

The Guidelines also do not provide guidance in determining when involvement of a machine recited or inherently in a method claim is extra-solution activity. Is it necessary to recite the machine or apparatus in the central body of the claim to avoid its consideration as extra-solution activity? If so, where are the boundaries between the extra-solution steps and the central steps in the body of the claim? How will Examiners know whether a claimed machine or apparatus “imposes meaningful limits” on the execution of the claimed method steps?

The second main factor relating to the method’s involving a transformation of a particular article also gives rise to uncertainty. For example, will transformation of a signal that represents a physical measurement suffice? “[A] particular article” seems to suggest that a *physical object* must be transformed, which is at odds with Federal Circuit precedent in *Arrythmia*. Will transformation of a seismic signal qualify as transformation of a “particular article,” or must the signal be a particular type of seismic sensing signal? Further, what is a “particular transformation”? What about transformation of data, as in *In re Abele*, which was cited favorably in *In re Bilski*, but which is not specifically mentioned in the Guidelines?

Further, the Guidelines do not define or provide examples of what constitutes a “practical application of an abstract idea.” Will a method of securing communications through specific

encryption protocols be statutory, even though not tied to a machine or transforming signals representative of real world objects?

Additional questions raised by the Guidelines are why a method's production of predictable and repeatable results should not weigh in favor of its patentability.

**b. The Office should provide guidance to the Examiners regarding the relevant factors for different method claims and the weighting that should apply to each of the relevant factors.**

The Guidelines indicate that relevant factors, both in favor of and against patent eligibility, should be weighed in making a determination as to whether a method claim should be disqualified as being a claim to an abstract idea, but the Guidelines provide inconsistent guidance as to which factors should be considered. In particular, the Guidelines indicate that each case presents different factors and only some of the factors are present in each application, but go on to say that it is improper to make a conclusion based on one factor while ignoring other factors.

Should the Examiners apply all of the factors, regardless of their relevance? If so, how should the irrelevant factors be weighted? If not, the Office should provide guidance to the Examiners regarding how to determine which factors should be considered for different types of claims. Publication of training examples would be helpful in this regard.

The Guidelines further do not provide guidance as to how Examiners should weigh the factors considered. The Office should define objective weightings for each of the factors, according to their importance.

**II. The Office should re-instruct Examiners in regard to the appropriate sources of guidance for both method and non-method claims.**

Intellectual Ventures has observed that some Examiners are applying the 2009 Guidelines to non-method claims and asks that the Examiners be re-instructed that the Bilski Guidelines apply **only** to method claims, but do not provide guidance regarding subject matter eligibility of non-method claims. In particular, Examiners should be reminded and re-instructed to continue to follow the relevant sections of MPEP § 2106 that apply to treatment of system, apparatus, and computer-readable media claims. Treatment of those types of claims is governed by cases such as *In re Alappat*, *In re Beauregard*, and *In re Lowry*, rather than *Bilski v. Kappos*.

### III. Comments on Questions Set Forth by the USPTO

#### a. Question 1: What are examples of claims that do not meet the machine-or-transformation test but nevertheless remain patent-eligible because they do not recite an abstract idea?

Intellectual Ventures suggests that the USPTO look to *AT&T v. Excel* as its primary conceptual guide in determining whether a method claim is subject matter eligible. Intellectual Ventures refers the Office to the method claims in *AT&T vs. Excel Communications*, 172 F.3d 1352 (Fed. Cir. 1999). As demonstrated below, *AT&T vs. Excel*, although relying in part on the useful, concrete, and tangible result test for determining whether the claimed method taken as a whole is practically applied, relies on *Arrythmia* for its holding, which was not a useful, concrete, and tangible result case. *Arrythmia*, described herein, recognized that transformation of signals that represent real world phenomena can suffice to meet the transformation test. That is to say, the transformation need not be one of a tangible object like cured rubber, as in *Diamond v. Diehr*. *AT & T v. Excel* is therefore in line with the law as interpreted and set forth by the U.S. Supreme Court in *Bilski* and should not be dismissed out of hand, because it mentioned the *State Street Bank* test. Consequently, for at least the reasons set forth herein, we ask that the USPTO adopt *AT&T v. Excel* as its primary conceptual guide.

#### 1. The method claim of AT&T illustrates how an abstract idea may be patentable where it does not preempt all other uses of the idea.

The claim under consideration in *AT&T v. Excel*, reproduced below, is a method claim that recites features for transforming information, but does not, other than in its preamble, recite a machine:

*A method for use in a telecommunications system in which interexchange calls initiated by each subscriber are automatically routed over the facilities of a particular one of a plurality of interexchange carriers associated with that subscriber, said method comprising the steps of:*

generating a message record for an interexchange call between an originating subscriber and a terminating subscriber, and

including, in said message record, a primary interexchange carrier (PIC) indicator having a value which is a function of whether or not the interexchange carrier associated with said terminating subscriber is a predetermined one of said interexchange carriers.

*172 F.3d at 1354.*

The case involved whether the method claim constituted statutory subject matter. In deciding the issue, the Federal Circuit indicated that:

The Supreme Court has construed § 101 broadly, noting that Congress intended statutory subject matter to "include anything under the sun that is made by man." See *Diamond v. Chakrabarty*, 447 U.S. 303, 309, 65 L. Ed. 2d 144, 100 S. Ct. 2204 (1980) (quoting S. Rep. No. 82-1979, at 5 (1952); H.R. Rep. No. 82-1923, at 6 (1952)); see also *Diamond v. Diehr*, 450 U.S. 175, 182, 67 L. Ed. 2d 155, 101 S. Ct. 1048 (1981). Despite this seemingly limitless expanse, the Court has specifically identified three categories of unpatentable subject matter: "laws of nature, natural phenomena, and abstract ideas." See *Diehr*, 450 U.S. at 185.

In this case, the method claims at issue fall within the "process" category of the four enumerated categories of patentable subject matter in § 101.

*172 F.3d at 1355.*

The landmark language of *AT&T v. Excel*, reproduced below, is particularly instructive in explaining that an abstract idea may qualify as patent eligible subject matter. The Federal Circuit in *AT&T v. Excel* explains how the reduction of a mathematical algorithm representing an abstract idea to a practical application in *Alappat* rendered the subject matter patent eligible:

In *Alappat*, we set out our understanding of the Supreme Court's limitations on the patentability of mathematical subject matter and concluded that:

[The Court] never intended to create an overly broad, fourth category of [mathematical] subject matter excluded from § 101. Rather, at the core of the Court's analysis . . . lies an attempt by the Court to explain a rather straightforward concept, namely, that certain types of mathematical subject matter, *standing alone*, represent nothing more than *abstract ideas until reduced to some type of practical application*, and thus that subject matter is not, in and of itself, entitled to patent protection. *Id.* at 1543, 31 U.S.P.Q.2D (BNA) at 1556-57 (emphasis added).

Thus, the *Alappat* inquiry simply requires an examination of the contested claims to see if the claimed subject matter as a whole is a disembodied mathematical concept representing nothing more than a "law of nature" or an "abstract idea," or **if the mathematical concept has been reduced to some practical application rendering it "useful."** *Id.* at 1544, 31 U.S.P.Q.2D (BNA) at 1557.

*172 F.3d at 1357 (emphasis by italics in the original and emphasis by bolding added).*

Judges Plager, Clevenger, and Rader in *AT&T v. Excel* provide clear guidance as to how an abstract idea may become patentable by its application:

In this case, Excel argues, correctly, that the PIC indicator value is derived using a simple mathematical principle (p and q). But that is not determinative because AT&T does not claim the Boolean principle as such or attempt to forestall its use in any other application. It is clear from the written description of the '184 patent that AT&T is only claiming a process that uses the Boolean principle in order to determine the value of the PIC indicator. **The PIC indicator represents information about the call recipient's PIC, a useful, non-abstract result that facilitates differential billing of long-distance calls made by an IXC's subscriber.** Because the claimed process applies the Boolean principle to produce a useful, concrete, tangible result without pre-empting other uses of the mathematical principle, on its face the claimed process comfortably falls within the scope of § 101. *See Arrhythmia Research Tech. Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1060, 22 U.S.P.Q.2D (BNA) 1033, 1039 (Fed. Cir. 1992) ("That the product is numerical is not a criterion of whether the claim is directed to statutory subject matter.")

*172 F.3d at 1358 (emphasis added).*

**2. *AT&T v. Excel* further held that a humanly useful transformation of information from one form into another satisfies the Supreme Court's transformation test for patentable subject matter.**

Excel argued that transformation of data from one form into another did not satisfy the Supreme Court's "transformation" jurisprudence, but the Federal Circuit, relying on *Arrhythmia*, soundly rejected this argument, as described below:

Excel argues that method claims containing mathematical algorithms are patentable subject matter only if there is a "physical transformation" or conversion of subject matter from one state into another. The physical transformation language appears in *Diehr*, see 450 U.S. at 184 ("That respondents' claims involve the transformation of an article, in this case raw, uncured synthetic rubber, into a different state or thing cannot be disputed."), and has been echoed by this court in *Schrader*, 22 F.3d at 294, 30 U.S.P.Q.2D (BNA) at 1458 ("Therefore, we do not find in the claim any kind of data transformation.").



**The notion of "physical transformation" can be misunderstood. In the first place, it is not an invariable requirement, but merely one example of how a mathematical algorithm may bring about a useful application.** As the Supreme Court itself noted, "when [a claimed invention] is performing a function which the patent laws were designed to protect (e.g., transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101." *Diehr*, 450 U.S. at 192 (emphasis added). **The "e.g." signal denotes an example, not an exclusive requirement.**

**This understanding of transformation is consistent with our earlier decision in *Arrhythmia*, 958 F.2d 1053, 22 U.S.P.Q.2D (BNA) 1033 (Fed. Cir. 1992). *Arrhythmia*'s process claims included various mathematical formulae to analyze electrocardiograph signals to determine a specified heart activity. See *id.* at 1059, 22 U.S.P.Q.2D (BNA) at 1037-38. The *Arrhythmia* court reasoned that the method claims qualified as statutory subject matter by noting that the steps transformed physical, electrical signals from one form into another form - a number representing a signal related to the patient's heart activity, a non-abstract output. See *id.*, 22 U.S.P.Q.2D (BNA) at 1038. The finding that the claimed process "transformed" data from one "form" to another simply confirmed that *Arrhythmia*'s method claims satisfied § 101 because the mathematical algorithm included within the process was applied to produce a number which had specific meaning - a useful, concrete, tangible result - not a mathematical abstraction. See *id.* at 1060, 22 U.S.P.Q.2D (BNA) at 1039.**

*172 F.3d at 1358-1359 (emphasis added).*

Thus, the Federal Circuit held that a "claimed process that 'transformed' data from one 'form' to another simply confirmed that *Arrhythmia*'s method claims satisfied § 101 because the mathematical algorithm included within the process was applied to produce a number which had specific meaning," which was "not a mathematical abstraction," or abstract idea, but instead referred to a humanly useful application of the claimed idea: differential billing.

**3. *AT&T v. Excel* expressly held that, because the claims at issue were method claims whose data transformation satisfied the "transformation" requirement, a machine inquiry was unnecessary.**

The Federal Circuit in *AT&T v. Excel* held that the transformation of humanly useful data from one form into another was a "transformation" under controlling Supreme Court precedent,

and further held that, since the claims at issue were pure process claims, any inquiry as to whether the claims lacked structural limitations was unnecessary:

Excel also contends that because the process claims at issue lack physical limitations set forth in the patent, the claims are not patentable subject matter. This argument reflects a misunderstanding of our case law. ... Since the claims at issue in this case are directed to a process in the first instance, a structural inquiry is unnecessary.

*172 F.3d at 1359 (citations omitted).*

**4. Those portions of *AT&T v. Excel* relied upon herein are valid under both the Federal Circuit's *Bilski* decision and the Supreme Court's *Bilski* opinion.**

The Federal Circuit *Bilski* decision made clear that only those parts of the “useful, tangible, and concrete result” cases that relied solely on the useful, tangible, and concrete result analysis were overruled in that decision. In addition, the Federal Circuit in *Bilski* indicated that the “useful, tangible, concrete result” cases could aid in determining whether a claim was drawn to a fundamental principle or a practical application of such principle:

**To be sure, a process tied to a particular machine, or transforming or reducing a particular article into a different state or thing, will generally produce a "concrete" and "tangible" result as those terms were used in our prior decisions. But while looking for "a useful, concrete and tangible result" may in many instances provide useful indications of whether a claim is drawn to a fundamental principle or a practical application of such a principle,** that inquiry is insufficient to determine whether a claim is patent-eligible under § 101. And it was certainly never intended to supplant the Supreme Court's test. Therefore, we also conclude that the "useful, concrete and tangible result" inquiry is inadequate and reaffirm that the machine-or-transformation test outlined by the Supreme Court is the proper test to apply. n19 As a result, **those portions** of our opinions in *State Street* and *AT&T* **relying solely** on a "useful, concrete and tangible result" analysis should no longer be relied on.

*In re Bilski*, 545 F.3d 943, 959-960 (Fed. Cir. 2008) (emphasis added).

The portions of *AT&T v. Excel* to which we refer do not rely solely on the useful, tangible, and concrete result test, but rather rely, for example, on the fact that the Federal Circuit held that such claims met the Supreme Court's "transformation" jurisprudence under *Arrhythmia*. The

portions relied on cite other bases as well, such as usefulness. Accordingly, the portions of *AT&T v. Excel* relied upon herein would still be valid in that such portions are still good law even under the Federal Circuit's *Bilski* decision.

**5. Intellectual Ventures submits that the following method claims are exemplary of claims that do not meet the machine-or-transformation test, but that are nonetheless statutory.**

While a claim that simply recites an encryption algorithm might be an abstract idea, a claim that recites a practical application of the encryption algorithm, such as claim 4 of U.S. Patent No. 5,048,086, reproduced below, is patent eligible subject matter regardless of its failing the machine-or-transformation test:

A method of encrypting data comprising the steps of:

- calculating a value to be used as a random starting point;
- generating an initial state of a predetermined logistic difference equation having the form  $x_{n+1} = \mu x_n (1 - x_n)$ , where  $\mu$  is a cryptographic key,  $x_n$  is the random starting point, and  $x_{n+1}$  is an iterated result;
- iterating the logistic difference equation by using successive  $x_{n+1}$  values to  $x_n$  and repeating the calculation a selected number of times, the random value  $x_n$  and the key value  $\mu$  having a selected mathematical precision, for a selected number of iterations to thereby generate a sequence of encrypting iterates;
- converting the encrypting iterates into binary form; and
- summing the encrypting iterates in binary form with digital data to generate encrypted data.

Similarly, a method for data compression is a practical application of a mathematical algorithm, and is patent eligible. For example, claim 1 of U.S. Patent No. 7,751,475, reproduced below, is patent eligible, despite failing to meet the machine-or-transformation test:

A computer-implemented method for compressing data, the method comprising:

- transforming the data from a first domain to a second domain;
- applying a wavelet transform to the data in the second domain to yield a plurality of wavelet coefficients;

