

# Can You Patent Software and Business Methods in the U.S.? How Did We Get Here and Where Do We Now Stand?

Abraham Kasdan\*†

## Introduction

The rise of the Information Age and the increased use of the Internet have spawned many software-based technologies and business methods. This has raised the important question of whether software and computer-implemented business methods can be protected under U.S. patent law. The U.S. Supreme Court addressed this important question last summer in *Alice Corp. v. CLS Bank International (Alice)*,<sup>1</sup> the latest in a chain of Supreme Court decisions on this topic that have spanned a period of more than forty years.

The patent claims at issue in *Alice* were directed to a computer-implemented escrow service for facilitating settlement of financial transactions by using a third party intermediary. The Supreme Court unanimously held that the patent claims were invalid because they covered nothing more than the abstract idea of intermediated settlement. In *Alice*, the Supreme Court provided some guidance for determining whether a patent claim is drawn to a patent-ineligible “abstract idea,” by outlining the following two-part test: (1) “determine whether the claims at issue are directed to a patent-ineligible concept,” i.e., an abstract idea; and if so (2) determine if the claim recites an “inventive concept”—i.e., “an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.”<sup>2</sup>

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\* Abraham Kasdan, PhD (akasdan@wiggin.com) is a partner in the New York City office of Wiggin and Dana LLP, specializing in all aspects of intellectual property. The views expressed in this article are his own and are not attributable to Wiggin and Dana LLP or its clients. Abe graduated with a B.S. *magna cum laude*, in Physics from The City College of New York. He received his Ph.D. in Physics from New York University and received his J.D. *cum laude* from New York Law School. He is also an adjunct professor at New York Law School, where he has taught courses in patent licensing.

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<sup>1</sup> 134 S. Ct. 2347 (2014).

<sup>2</sup> *Id.* at 2355 (alteration in original) (citations omitted) (internal quotation marks omitted).

*Alice* has left the law very unsettled. Although it articulated a two-part test, it unfortunately provided no further guidance on how to determine when a claim covers an “abstract idea” in the first instance, or when a claim to an abstract idea includes a sufficient inventive concept to make it patent eligible, leaving it to the lower courts to wrestle with these issues. One thing is clear: in the wake of *Alice*, a growing number of district court decisions and decisions from the U.S. Court of Appeals for the Federal Circuit (“Federal Circuit”) are invalidating patents on the grounds that their claims only cover patent-ineligible abstract ideas.

This Article reviews the history of Supreme Court jurisprudence on the patent ineligibility of abstract ideas and provides observations on the current state of the law and the need for further guidance from the courts. It also offers suggestions for counsel on how to improve the chances that a client’s software or business method inventions are eligible for patent protection.

## I. General Background

U.S. patent law defines what may be patented in 35 U.S.C. § 101: “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”<sup>3</sup>

Although this statute defines what is eligible for patent protection in very broad terms, U.S. courts have historically identified three judicial exceptions to what may be patented. These three exceptions are (1) laws of nature, (2) natural phenomena (even if just discovered), and, most significant for this Article, (3) abstract ideas.<sup>4</sup> Patent claims that do nothing more than cover these three judicially-created exceptions are not patent eligible, even if the claimed inventions are otherwise novel<sup>5</sup> and not obvious.<sup>6</sup>

The rationale for these three exceptions to what otherwise is broad subject matter patent-eligibility, finds its origin in public policy concerns that patent monopolies should not be granted to cover the basic building blocks and tools that all inventors utilize as part of the inventive process. “A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.”<sup>7</sup> On the other hand, “[w]hile a scientific truth, or the mathematical expression of it,

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<sup>3</sup> 35 U.S.C. § 101 (2012).

<sup>4</sup> See, e.g., *Gottschalk v. Benson*, 409 U.S. 63 (1972).

<sup>5</sup> 35 U.S.C. § 102 (2012).

<sup>6</sup> *Id.* § 103.

<sup>7</sup> *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1853).

is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be.”<sup>8</sup>

Patent claims directed to software and business methods usually do not raise concerns over monopolization of laws of nature or natural phenomena. However, their eligibility for patent protection has repeatedly been scrutinized under the “abstract idea” exception to § 101. The practical boundaries of this “abstract idea” exception are perhaps the most difficult to articulate and delineate of the three judicially-created exceptions.

The U.S. Supreme Court has considered the scope of the “abstract idea” exception multiple times, most recently in its *Alice* decision of June 2014.<sup>9</sup> The following sections review the historical development of the Supreme Court’s § 101 jurisprudence concerning the “abstract idea” exception, with focus on the claims at issue in these cases. (It is important to do so because any consideration of what constitutes a claim to an “abstract idea” that does not keep the claim language in mind, can itself become too abstract an exercise.)

## II. The Supreme Court’s Decisions in the 1970’s–1980’s

The notion that abstract ideas, *per se*, are not eligible for patent protection finds its origins in U.S. case law that goes back more than 150 years. However, it was not until the 1970’s that the Supreme Court began to delineate the boundaries of the abstract idea exception in a trilogy of cases decided well before the advent of the Information Age as it exists today.

### A. *Gottschalk v. Benson*

The first of these three cases was *Gottschalk v. Benson*,<sup>10</sup> in which the Supreme Court held that method claims directed to implementing a computer algorithm were not patent eligible processes under § 101.<sup>11</sup> Although seeming to close the door on the patentability of computer programs, the Supreme Court cautioned that its decision was more limited.<sup>12</sup>

*Benson* arose from the U.S. Patent and Trademark Office’s (“USPTO”) rejection of patent claims directed to methods for converting between two different coding schemes used to represent binary numbers (i.e., from BCD coding to binary coding).<sup>13</sup> The claims recited steps for implementing a spe-

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<sup>8</sup> *Mackay Radio & Tel. Co. v. Radio Corp. of America*, 306 U.S. 86, 94 (1939).

<sup>9</sup> *See Alice*, 134 S. Ct. at 2352.

<sup>10</sup> 409 U.S. 63 (1972).

<sup>11</sup> *Id.* at 64.

<sup>12</sup> *See id.* at 71–72.

<sup>13</sup> *See id.* at 64–66. In BCD (“Binary Coded Decimal”) coding, each decimal digit 0–9 is represented by a four bit binary number (e.g., 0 = 0000, 1 = 0001, . . . 9 = 1001). For example, the BCD code for 19 would be 00011001, while the binary code would be 10011.

cific algorithm that performed the conversion.<sup>14</sup> The issue before the Supreme Court was whether these claims covered a patent-eligible “process” within the meaning of § 101.<sup>15</sup>

Note that method Claim 8 required its steps to be performed in particular computer hardware (i.e., in a “reentrant shift register”), while method Claim

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<sup>14</sup> *Id.* at 73–76. Specifically, the claims at issue recited the following:

Claim 8 reads:

The method of converting signals from binary coded decimal form into binary which comprises the steps of

- (1) storing the binary coded decimal signals in a reentrant shift register,
- (2) shifting the signals to the right by at least three places, until there is a binary ‘1’ in the second position of said register,
- (3) masking out said binary ‘1’ in said second position of said register,
- (4) adding a binary ‘1’ to the first position of said register,
- (5) shifting the signals to the left by two positions,
- (6) adding a ‘1’ to said first position, and
- (7) shifting the signals to the right by at least three positions in preparation for a succeeding binary ‘1’ in the second position of said register.

Claim 13 reads:

A data processing method for converting binary coded decimal number representations into binary number representations comprising the steps of

- (1) testing each binary digit position ‘1,’ beginning with the least significant binary digit position, of the most significant decimal digit representation for a binary ‘0’ or a binary ‘1’;
- (2) if a binary ‘0’ is detected, repeating step (1) for the next least significant binary digit position of said most significant decimal digit representation;
- (3) if a binary ‘1’ is detected, adding a binary ‘1’ at the (i+1)th and (i+3)th least significant binary digit positions of the next lesser significant decimal digit representation, and repeating step (1) for the next least significant binary digit position of said most significant decimal digit representation;
- (4) upon exhausting the binary digit positions of said most significant decimal digit representation, repeating steps (1) through (3) for the next lesser significant decimal digit representation as modified by the previous execution of steps (1) through (3); and
- (5) repeating steps (1) through (4) until the second least significant decimal digit representation has been so processed.

*Id.*

<sup>15</sup> *Id.* at 64.

13 was a broader “data processing method” that did not require any particular hardware to be used by the conversion process.<sup>16</sup>

In a relatively short decision penned by Justice Douglas, the Supreme Court found these claims to be abstract, in the sense that they covered steps that could just be performed mentally.<sup>17</sup> Harkening back to its earlier precedent, the Supreme Court repeated the three exceptions to patent eligibility: “Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.”<sup>18</sup>

The Supreme Court went on to find the *Benson* claims to be abstract because they were not limited to any particular end uses and would therefore cover future use of the algorithm by anyone:

Here the ‘process’ claim is so abstract and sweeping as to cover both known and unknown uses of the BCD to pure binary conversion. The end use may (1) vary from the operation of a train to verification of drivers’ licenses to researching the law books for precedents and (2) be performed through any existing machinery or future-devised machinery or without any apparatus.<sup>19</sup>

In finding these claims not patentable under the “abstract ideas” exception to § 101, the Supreme Court expressed its concern that granting a patent monopoly on such claims would wholly pre-empt others from using the claimed mathematical formula and would effectively be granting a patent on an “idea” *per se*.

Significantly, however, the Supreme Court emphasized that its holding did not require all process claims to meet the so-called “machine or transformation” test to be patentable and did not preclude all software patents:

It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a ‘different state or thing.’ We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents. It is said that the decision precludes a patent for any program servicing a computer. We do not so hold . . . It is said we freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology. Such is not our purpose.<sup>20</sup>

Nonetheless, the *Benson* Supreme Court equated claims that covered computer implementation of a mathematical algorithm with claims that would pre-empt others from using a mathematical formula, and therefore held that they were claims to abstract ideas that were not eligible for patent protection.

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<sup>16</sup> *Id.*

<sup>17</sup> *See id.* at 67.

<sup>18</sup> *Id.*

<sup>19</sup> *Id.* at 68.

<sup>20</sup> *Id.* at 71.

Viewed in its historical context, the *Benson* decision was handed down at a time when the Supreme Court, reflecting the predominant view then shared by many others including the U.S. Patent and Trademark Office, was not comfortable with extending patent protection to inventions embodied in software, a relatively new field. Some years earlier, a 1966 Report by the President's Commission on the Patent System (appointed by President Johnson) had rejected a proposal that software programs be considered patentable subject matter, in part based on practical concerns over the ability of the U.S. Patent and Trademark Office to properly examine software patent applications (a concern that still exists today).<sup>21</sup> Reflecting this institutional aversion at the time to extending patent protection to software inventions, the Court concluded its *Benson* decision by stating that “[i]t may be that the patent laws should be extended to cover these programs, a policy matter to which we are not competent to speak . . . . If these programs are to be patentable, considerable problems are raised which only committees of Congress can manage.”<sup>22</sup>

While *Benson* did not foreclose the patentability of software under certain circumstances, it did not answer the question of what type of claim language would pass muster under § 101 when seeking patent protection on software. All *Benson* did was narrowly hold that a claim directed to a method for implementing a mathematical algorithm on a computer should be rejected under § 101 as covering an abstract idea.

### **B. Parker v. Flook**

Six years later, in *Parker v. Flook*,<sup>23</sup> the Supreme Court had another opportunity to consider whether a claim that included a mathematical algorithm was patent-eligible under § 101. In *Flook*, the U.S. Patent and Trademark Office had rejected the claim at issue on the basis of *Benson*, but the Court of Customs and Patent Appeals (the predecessor to the Federal Circuit) reversed, interpreting *Benson* as only applying to situations where a claim would entirely pre-empt others from using a mathematical formula or algorithm.<sup>24</sup>

The claim at issue in *Flook* was generally directed to chemical processing, in which a mathematical formula was used to update “an alarm limit” for a process variable.<sup>25</sup> Specifically, the *Flook* claim recited:

A method for updating the value of at least one alarm limit on at least one process variable involved in a process comprising the catalytic chemical conversion of hydro-

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<sup>21</sup> *Id.* at 71–72.

<sup>22</sup> *Id.* at 72–73.

<sup>23</sup> 437 U.S. 584 (1978).

<sup>24</sup> *Id.* at 587.

<sup>25</sup> *Id.* at 585.

carbons wherein said alarm limit has a current value of  $B_0 + K$  wherein  $B_0$  is the current alarm base and  $K$  is a predetermined alarm offset which comprises:

- (1) Determining the present value of said process variable, said present value being defined as PVL;
- (2) Determining a new alarm base,  $B_1$ , using the following equation:  $B_1 = B_0(1.0 - F) + PVL(F)$  where  $F$  is a predetermined number greater than zero and less than 1.0;
- (3) Determining an updated alarm limit which is defined as  $B_1 + K$ ; and thereafter
- (4) Adjusting said alarm limit to said updated alarm limit value.<sup>26</sup>

The Court of Customs and Patent Appeals had upheld the patentability of Claim 1 under § 101 because it interpreted the claim, based on the preamble language, to be limited to the field of “catalytic chemical conversion of hydrocarbons,” and therefore not wholly pre-emptive of the recited algorithm.<sup>27</sup>

However, the U.S. Supreme Court reversed. Looking first to the patent specification, the Court stated that the only difference between conventional methods for changing alarm limits and what was described in the specification was the mathematical algorithm set forth in step (2) of the claim:

The patent application does not purport to explain how to select the appropriate margin of safety, the weighting factor, or any of the other variables. Nor does it purport to contain any disclosure relating to the chemical processes at work, the monitoring of process variables, or the means of setting off an alarm or adjusting an alarm system. All that it provides is a formula for computing an updated alarm limit. Although the computations can be made by pencil and paper calculations, the abstract of disclosure makes it clear that the formula is primarily useful for computerized calculations producing automatic adjustments in alarm settings.<sup>28</sup>

The Supreme Court acknowledged that unlike the claims in *Benson*, the *Flook* claim did not wholly pre-empt the mathematical formula, and that the last step of updating the alarm limit required some additional “post-solution” activity that was outside of the mathematical formula.<sup>29</sup> Nonetheless, while noting that “[t]he line between a patentable ‘process’ and an unpatentable ‘principle’ is not always clear,” the Supreme Court held that the *Flook* claim covered an abstract principle that was not patentable under § 101.<sup>30</sup>

Setting forth reasoning that the Court would return to and emphasize many years later in *Alice*, the *Flook* Court ascribed no patentability to the mathematical formula *per se*, because it was one of the “basic tools of scientific

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<sup>26</sup> *Id.* at 596–97 (citations omitted).

<sup>27</sup> *Id.* at 586.

<sup>28</sup> *Id.* at 586.

<sup>29</sup> *See id.* at 589–90.

<sup>30</sup> *See id.* at 588–90.

and technological work,”<sup>31</sup> and concluded that § 101 was not met in this case because the claimed process was otherwise devoid of any “inventive concept”:

Respondent’s process is unpatentable under § 101, not because it contains a mathematical algorithm as one component, but because once that algorithm is assumed to be within the prior art, the application, considered as a whole, contains no patentable invention. Even though a phenomenon of nature or mathematical formula may be well known, an inventive application of the principle may be patented. Conversely, the discovery of such a phenomenon cannot support a patent unless there is some other inventive concept in its application.<sup>32</sup>

In other words, stripped of the claimed formula as a basis for patentability, the Court found nothing left in Claim 1 that constituted an “inventive concept.” This notion that an additional “inventive concept” has to be included to make an otherwise abstract claim patent eligible, is at the heart of the much more recent *Mayo* and *Alice* Supreme Court decisions discussed below.

As to the claim in *Flook*, in the absence of such requisite inventive concept, the fact that use of the formula in Claim 1 was arguably limited by its preamble language to the field of chemical hydrocarbon conversion was not enough to make the claim patent eligible under § 101.<sup>33</sup> The Court was still concerned that a broad range of potential uses of the formula within that field would be preempted.

As in *Benson*, the *Flook* Court cautioned that its decision should not be interpreted as foreclosing the patentability of all computer programs. It was clearly not comfortable ruling in this area. Instead, it looked to Congress to provide guidance on this issue:

Neither the dearth of precedent, nor this decision, should therefore be interpreted as reflecting a judgment that patent protection of certain novel and useful computer programs will not promote the progress of science and the useful arts, or that such protection is undesirable as a matter of policy. Difficult questions of policy concerning the kinds of programs that may be appropriate for patent protection and the form and duration of such protection can be answered by Congress on the basis of current empirical data not equally available to this tribunal.<sup>34</sup>

Thus, neither *Benson* nor *Flook* sounded the death knell for software patents. Rather, they both stand for the proposition that a claim that only recites steps for computer processing a mathematical formula or algorithm, without more, is not patentable subject matter under § 101, even if those steps are limited to a general field of use.<sup>35</sup> That “more,” according to *Flook*, is the requirement

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<sup>31</sup> *Id.* at 591–92 (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

<sup>32</sup> *Id.* at 594.

<sup>33</sup> *See id.* at 589–92.

<sup>34</sup> *Id.* at 595.

<sup>35</sup> *See Benson*, 409 U.S. at 73; *Flook*, 437 U.S. at 594.

that an “inventive concept” be articulated in the claim, over and above the formula or algorithm.

### C. *Diamond v. Diehr*

Of the trilogy of § 101 Supreme Court cases during the 1970’s–1980’s time period, only *Diamond v. Diehr*<sup>36</sup> upheld the patent eligibility of claims containing a mathematical algorithm.

In *Diehr*, the claims at issue were directed to methods of operating a rubber-molding press using a digital computer.<sup>37</sup> Representative Claim 1 recited:

1. A method of operating a rubber-molding press for precision molded compounds with the aid of a digital computer, comprising:

providing said computer with a data base for said press including at least,

natural logarithm conversion data (ln), the activation energy constant (C) unique to each batch of said compound being molded, and a constant (x) dependent upon the geometry of the particular mold of the press,

initiating an interval timer in said computer upon the closure of the press for monitoring the elapsed time of said closure,

constantly determining the temperature (Z) of the mold at a location closely adjacent to the mold cavity in the press during molding,

constantly providing the computer with the temperature (Z),

repetitively calculating in the computer, at frequent intervals during each cure, the Arrhenius equation for reaction time during the cure, which is  $\ln v = CZ + x$  where  $v$  is the total required cure time,

repetitively comparing in the computer at said frequent intervals during the cure each said calculation of the total required cure time calculated with the Arrhenius equation and said elapsed time, and opening the press automatically when said comparison indicates equivalence.<sup>38</sup>

The U.S. Patent and Trademark Office had rejected Claim 1 and similar claims as not being patent eligible subject matter under § 101.<sup>39</sup> As it had done in *Flook*, the Court of Customs and Patent Appeals reversed, and the USPTO appealed to the Supreme Court.<sup>40</sup>

In *Diehr*, the Supreme Court reiterated that laws of nature, natural phenomena, and abstract ideas are excluded from patent protection and that, on this basis, it had previously held in *Benson* and *Flook* that an algorithm,

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<sup>36</sup> 450 U.S. 175 (1981).

<sup>37</sup> *See id.* at 175.

<sup>38</sup> *See id.* at 179 n.5.

<sup>39</sup> *Id.* at 179.

<sup>40</sup> *See id.* at 175.

or mathematical formula, like a law of nature, could not be the subject of a patent.<sup>41</sup>

However, in contrast to the *Benson* and *Flook* claims, the Court viewed the *Diehr* claims as not seeking to monopolize a mathematical formula, but rather as only covering a process for curing rubber that employed a well-known mathematical formula—without seeking to pre-empt other uses of that formula.<sup>42</sup> Justice Rehnquist summarized the Court’s reasoning that these claims were patent eligible under § 101, as follows:

A mathematical formula as such is not accorded the protection of our patent laws, *Gottschalk v. Benson*, 409 U.S. 63, 93 S. Ct. 253, 34 L.Ed.2d 273 (1972), and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment. *Parkerv. Flook*, 437 U.S. 584, 98 S. Ct. 2522, 57 L. Ed.2d 451 (1978). Similarly, insignificant post-solution activity will not transform an unpatentable principle into a patentable process. *Ibid.* To hold otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection. On the other hand, when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, 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. Because we do not view respondents’ claims as an attempt to patent a mathematical formula, but rather to be drawn to an industrial process for the molding of rubber products, we affirm the judgment of the Court of Customs and Patent Appeals.<sup>43</sup>

It is noteworthy that *Diehr* included a vigorous dissent by four Justices, authored by Justice Stevens, who argued that the majority decision was wrongly based on a misreading of the underlying patent application, a conflation of § 101 with the novelty inquiry required by § 102, and that the *Diehr* claims were substantially similar to those in *Flook* that the Court had found to be unpatentable several years earlier.<sup>44</sup>

### III. The Advent of Business Method Patents

After its 1981 *Diehr* decision, the Supreme Court was silent on the § 101 patentability of “abstract ideas” until 2010. During the intervening time period, however, the Federal Circuit issued its 1998 en banc decision in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*,<sup>45</sup> which held that

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<sup>41</sup> See *id.* at 219.

<sup>42</sup> See *id.* at 192–93.

<sup>43</sup> *Id.* at 191–93.

<sup>44</sup> See *id.* at 208 (Stevens, J., dissenting) (“Their method of updating the curing time calculation is strikingly reminiscent of the method of updating alarm limits that Dale Flook sought to patent . . . . The essence of the claimed discovery in both cases was an algorithm that could be programmed on a digital computer.”).

<sup>45</sup> 149 F.3d 1368 (1998).

methods of doing business were eligible for patent protection under § 101, notwithstanding prior case law that might have suggested otherwise.<sup>46</sup>

In particular, relying on its own precedent in interpreting the Supreme Court's prior decisions, the Federal Circuit held that (1) there was no statutory basis for invoking a judicially-created "business method" exception to patentability, and (2) claims directed to methods of doing business were subject to the same patentability requirements as any other process or method claims.<sup>47</sup> In this regard the Federal Circuit took the position that business method claims passed the eligibility requirement of § 101, even if they included mathematical algorithms, as long as they produced a "useful, concrete and tangible result."<sup>48</sup>

#### IV. The Supreme Court's Recent Decisions

The Federal Circuit's *State Street* decision in 1998, combined with the explosive growth of Internet commerce in the following years, spurred the filing of numerous business method patent applications, including many that claimed computer-implemented ideas.<sup>49</sup> Many of these applications and resulting patents raised concerns as to whether their claims violated the "abstract idea" exception to § 101. These concerns finally reached the Supreme Court in *Bilski v. Kappos*.<sup>50</sup>

##### A. *Bilski v. Kappos*

The claims in *Bilski* were directed to computer-implemented systems and methods for hedging risk in commodity transactions. For example, method Claim 1 of the *Bilski* patent application recited the following:

1. A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
  - (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
  - (b) identifying market participants for said commodity having a counter risk position to said consumers; and

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<sup>46</sup> *Id.* at 1375–77.

<sup>47</sup> *See id.* at 1375.

<sup>48</sup> *See id.* at 1373 (citation omitted).

<sup>49</sup> *See* Keith E. Maskus & Eina Vivian Wong, *Searching for Economic Balance in Business Method Patents*, 8 WASH. U. J.L. & POL'Y 289, 290 (2002).

<sup>50</sup> 561 U.S. 593 (2010).

(c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.<sup>51</sup>

The U.S. Patent and Trademark Office had rejected this and other *Bilski* claims for being directed to abstract ideas and therefore not in compliance with § 101.<sup>52</sup> The Federal Circuit, sitting en banc, affirmed the Patent and Trademark Office's rejections, but in a highly splintered en banc decision that resulted in five different opinions.<sup>53</sup> In particular, the Federal Circuit rejected *State Street's* "useful, concrete and tangible result" test for patentability of a claim that involved an abstract idea, and resurrected the prior "machine or transformation" test as the sole test for determining whether a claimed process was patent eligible under § 101.<sup>54</sup>

Under this resurrected "machine or transformation" test, if the process (1) was tied to a particular machine or apparatus, or (2) transformed an article into a different state or thing, then it was patent eligible.<sup>55</sup> The Federal Circuit held that the *Bilski* claims failed this resurrected test, and were therefore abstract ideas that were not patent eligible.<sup>56</sup>

The U.S. Supreme Court granted certiorari and issued a decision that affirmed the en banc Federal Circuit judgment of invalidity, but for different reasons. In its 2010 *Bilski* decision, the Supreme Court rejected the "machine or transformation" test as being the only test for determining § 101 patentability.<sup>57</sup> Citing to its own precedent, the Supreme Court held that transformation of an article to a different state or thing served as only a "clue" to patentability of a process claim that did not include particular machines, but was not necessarily determinative.<sup>58</sup>

Interestingly (and rather ironically in view of the *Benson* Court's concern over software patents), almost 40 years after *Benson*, the *Bilski* Supreme Court voiced its concern that relying solely on the "machine or transformation" test would "create uncertainty as to the patentability of software, advanced diagnostic medicine techniques, and inventions based on linear programming, data compression, and the manipulation of digital signals."<sup>59</sup>

However, in the same breath, the Supreme Court engaged in its own form of hedging, by caveating that it was not commenting on the patentability of

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<sup>51</sup> *Id.* at 599.

<sup>52</sup> *See id.*

<sup>53</sup> *See id.* at 593; *see In re Bilski*, 545 F.3d 943, 943 (Fed. Cir. 2008).

<sup>54</sup> *See In re Bilski*, 545 F.3d at 959–60.

<sup>55</sup> *Id.* at 961–62.

<sup>56</sup> *See id.* at 963.

<sup>57</sup> *Bilski*, 561 U.S. at 593–94.

<sup>58</sup> *Id.*

<sup>59</sup> *Id.* at 604–05.

any of these technology categories, or holding that they should or should not receive patent protection, stating that “[n]othing in this opinion should be read to take a position on where that balance ought to be struck.”<sup>60</sup>

*Bilski* further affirmed *State Street* by holding that business methods were not categorically excluded from patentability under § 101, stating that “a business method is simply one kind of ‘method’ that is, at least in some circumstances, eligible for patenting under § 101.”<sup>61</sup>

Notwithstanding its confirmation that business methods were not *per se* patent ineligible, the Supreme Court found that the *Bilski* claims covered unpatentable abstract ideas, relying on its precedents in *Benson*, *Flook*, and *Diehr*.<sup>62</sup> Unfortunately, the Supreme Court provided little by way of substantive reasoning to support this conclusion. The Court simply stated that “[h]edging is a fundamental economic practice long prevalent in our system of commerce and taught in any introductory finance class[.]” and that “[t]he concept of hedging, described in claim 1 and reduced to a mathematical formula in claim 4, is an unpatentable abstract idea . . . [that] would pre-empt use of this approach in all fields.”<sup>63</sup>

Consistent with its previous decisions on this subject, the U.S. Supreme Court stopped short of providing more concrete guidance to practitioners and the lower courts on how they should go about determining when a claim only covers an unpatentable abstract idea, or what needs to be added to an abstract idea claim to make it patent eligible under § 101. As a result, confusion continued to reign in § 101 jurisprudence.

## B. Alice v. CLS Bank

In June of last year, the Supreme Court issued its long awaited decision in *Alice Corp. v. CLS Bank International*. It was hoped by many that the Supreme Court would finally provide more guidance regarding the scope of the “abstract idea” exception to patentability, particularly as applied to software and business method patents.

*Alice* involved the assertion of multiple patents having system, method, and software media claims against CLS Bank. The asserted claims were generally directed to a computerized process for using a trusted third party intermedi-

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<sup>60</sup> *Id.* at 606–07.

<sup>61</sup> *Id.*

<sup>62</sup> *See id.* at 601–02; *see also* *Gottschalk v. Benson*, 409 U.S. 63, 68 (1972); *Parker v. Flook*, 437 U.S. 584, 589 (1978); *Diamond v. Diehr*, 450 U.S. 175, 185 (1981).

<sup>63</sup> *Bilski*, 561 U.S. at 611–12. It is interesting that the actual business method embodied in the *Bilski* claims was discounted by the Supreme Court as not being novel. *Id.* It is unclear if *Bilski* would have reached a different result if the claims were viewed as not being directed to a “long prevalent” practice.

ary to settle monetary obligations between parties to a financial transaction requiring transfer of funds, so as to eliminate risk that the funds might not be available for settlement.<sup>64</sup>

The following claim (Claim 33 of U.S. Patent No. 5,970,479) was agreed by the parties to be representative of all the asserted method claims:

33. A method of exchanging obligations as between parties, each party holding a credit record and a debit record with an exchange institution, the credit records and debit records for exchange of predetermined obligations, the method comprising the steps of:

(a) creating a shadow credit record and a shadow debit record for each stakeholder party to be held independently by a supervisory institution from the exchange institutions;

(b) obtaining from each exchange institution a start-of-day balance for each shadow credit record and shadow debit record;

(c) for every transaction resulting in an exchange obligation, the supervisory institution adjusting each respective party's shadow credit record or shadow debit record, allowing only these transactions that do not result in the value of the shadow debit record being less than the value of the shadow credit record at any time, each said adjustment taking place in chronological order, and

(d) at the end-of-day, the supervisory institution instructing on[e] of the exchange institutions to exchange credits or debits to the credit record and debit record of the respective parties in accordance with the adjustments of the said permitted transactions, the credits and debits being irrevocable, time invariant obligations placed on the exchange institutions.<sup>65</sup>

Representative system and media claims are provided in the footnote below.<sup>66</sup>

Reflective of the continuing confusion in this area of patent law, the procedural history of *Alice* before reaching Supreme Court review was very

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<sup>64</sup> *Alice*, 134 S. Ct. 2347, 2352 (2014).

<sup>65</sup> *Id.* at 2352 n.2.

<sup>66</sup> An exemplary system claim is:

A data processing system to enable the exchange of an obligation between parties, the system comprising:

a data storage unit having stored therein information about a shadow credit record and shadow debit record for a party, independent from a credit record and debit record maintained by an exchange institution; and

a computer, coupled to said data storage unit, that is configured to

(a) receive a transaction;

(b) electronically adjust said shadow credit record and/or said shadow debit record in order to effect an exchange obligation arising from said transaction, allowing only those transactions that do not result in a value of said shadow debit record being less than a value of said shadow credit record; and

(c) generate an instruction to said exchange institution at the end of a period of time to adjust said credit record and/or said debit record in accordance with the adjustment

convoluted. The district court had granted summary judgment in favor of defendant CLS Bank on the basis that all of the asserted claims were abstract ideas and therefore not patent eligible under § 101.<sup>67</sup> However, a divided three-judge panel of the Federal Circuit reversed and upheld the patent eligibility of these claims, arguing that it was not “manifestly evident” that the asserted claims were directed to an abstract idea.<sup>68</sup>

After a rehearing en banc, the Federal Circuit reversed its panel decision, and affirmed the original judgment of the district court in a one-paragraph opinion.<sup>69</sup> However, mirroring the divergent views that led to this short affirmation, this one paragraph en banc opinion was followed by six separate opinions totaling more than 100 pages, in which various Federal Circuit

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of said shadow credit record and/or said shadow debit record, wherein said instruction being an irrevocable, time invariant obligation placed on said exchange institution.

U.S. Patent No. 7,149,720 col. 65 l. 1 (filed Dec. 31, 2002).

A representative software media claim is:

39. A computer program product comprising a computer readable storage medium having computer readable program code embodied in the medium for use by a party to exchange an obligation between a first party and a second party, the computer program product comprising:

program code for causing a computer to send a transaction from said first party relating to an exchange obligation arising from a currency exchange transaction between said first party and said second party; and

program code for causing a computer to allow viewing of information relating to processing, by a supervisory institution, of said exchange obligation,

wherein said processing includes

(1) maintaining information about a first account for the first party, independent from a second account maintained by a first exchange institution, and information about a third account for the second party, independent from a fourth account maintained by a second exchange institution;

(2) electronically adjusting said first account and said third account, in order to effect an exchange obligation arising from said transaction between said first party and said second party, after ensuring that said first party and/or said second party have adequate value in said first account and/or said third account, respectively; and

(3) generating an instruction to said first exchange institution and/or said second exchange institution to adjust said second account and/or said fourth account in accordance with the adjustment of said first account and/or said third account, wherein said instruction being an irrevocable, time invariant obligation placed on said first exchange institution and/or said second exchange institution.

U.S. Patent No. 7,725,375 col. 68 l. 39 (filed June 27, 2005).

<sup>67</sup> See *Alice*, 134 S. Ct. at 2353.

<sup>68</sup> *Id.*

<sup>69</sup> *Id.*

judges concurred or dissented in whole or in part, or provided additional comments, each offering different rationales for their positions.<sup>70</sup>

Faced with these divergent viewpoints, the Supreme Court once again accepted the opportunity to add to its § 101 jurisprudence, undoubtedly recognizing that the “abstract idea” exception was being confronted time and again by the U.S. Patent and Trademark Office and the courts below, as more and more business method/software patents were being filed, granted, and litigated.

In *Alice*, the Supreme Court found that all of the asserted claims were abstract ideas, regardless of their form, and therefore not patent eligible.<sup>71</sup> It reiterated that the policy concern driving the exclusion from patentability of abstract ideas is one of preemption, since monopolization of the basic tools of creativity would impede innovation rather than promote it.<sup>72</sup> Since only novel and useful applications of an abstract idea are patent eligible, the Supreme Court reasoned that a claim embodying an abstract idea must be integrated with something “significantly more” to become a patent-eligible invention.<sup>73</sup>

In so holding, the Supreme Court relied heavily on its 2012 decision in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*,<sup>74</sup> which involved the separate, but related, “laws of nature” exception to § 101.<sup>75</sup> In *Mayo*, the Supreme Court stated that, when analyzing § 101 patent eligibility questions concerning the “laws of nature” exception, consideration had to be given to the elements of a claim, both individually and “as an ordered combination,” to determine whether those elements transformed the claim into a patent-eligible invention that was based on a law of nature, rather than an ineligible claim that requires one to apply the law of nature in a generic way, with nothing more.<sup>76</sup> In *Mayo*, the Supreme Court characterized its prior *Benson*, *Flook*, and *Diehr* precedent as *insisting* that “a process that focuses upon the use of a natural law also contain other elements or a combination of elements, sometimes referred to as an ‘inventive concept,’ sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the natural law itself.”<sup>77</sup>

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<sup>70</sup> See *CLS Bank Int’l v. Alice Corp.*, 717 F.3d 1269, 1273–336 (Fed. Cir. 2013) (en banc) (per curiam), *aff’d sub nom.* *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014).

<sup>71</sup> See *Alice*, 134 S. Ct. at 2352.

<sup>72</sup> See *id.* at 2358.

<sup>73</sup> See *id.* at 2355, 2360.

<sup>74</sup> 132 S. Ct. 1289 (2012).

<sup>75</sup> See *id.* at 1293.

<sup>76</sup> See *id.* at 1297–98.

<sup>77</sup> *Id.* at 1294.

Adopting substantially the same reasoning as in *Mayo*, the Supreme Court two years later in *Alice* explained that a claim that recites an abstract idea must include additional limitations directed to an “inventive concept” to ensure that it does not monopolize the abstract idea.<sup>78</sup> As in *Benson*, the *Alice* Court explained that limiting the claims by including generic computer elements was not sufficient to supply the necessary “inventive concept,” because such claims only stated the abstract idea and simply required that a conventional computer be used to “apply it.”<sup>79</sup>

*Mayo* and *Alice* articulated the same two-step test for claims whose patent-eligibility may be suspect under § 101: (1) First, determine whether the claims at issue are directed to one of the three judicial exceptions to § 101 (laws of nature, natural phenomena or abstract ideas); (2) If so, then the claim limitations must be further considered (both individually and as an ordered combination) to determine if they also recite an “inventive concept” that sufficiently ensures that the claim is limited to more than just the ineligible concept (e.g., an abstract idea).<sup>80</sup>

Unfortunately, *Alice* stopped short of explaining how to practically apply step one because the Supreme Court provided no guidance as to how one determines if a claim is directed to an abstract idea. It simply stated that the claims at issue in *Alice* were not only abstract, but also covered fundamental pre-existing practices:

We conclude that they are: These claims are drawn to the abstract idea of intermediated settlement . . . . It follows from our prior cases, and *Bilski* in particular, that the claims at issue here are directed to an abstract idea. On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk. Like the risk hedging in *Bilski*, the concept of intermediated settlement is ‘a fundamental economic practice long prevalent in our system of commerce.’ Thus, intermediated settlement, like hedging, is an “abstract idea” beyond the scope of §101.<sup>81</sup>

Having summarily concluded that the patent claims at issue were directed to abstract ideas (step (1)), the *Alice* Court went on to find that the claims did not provide any improvement to the functioning of computers, or any

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<sup>78</sup> It is interesting to note that the Supreme Court had applied substantially the same test many years earlier in its 1978 *Flook* decision. Compare *Parker v. Flook*, 437 U.S. 584, 594 (1978), with *Alice*, 134 S. Ct. at 2357.

<sup>79</sup> See *Alice*, 134 S. Ct. at 2358–59; cf. *Bilski v. Kappos*, 561 U.S. 593, 612 (2010) (finding that the business method at issue for settling accounts was fundamental and very old); see also *Gottschalk v. Benson*, 409 U.S. 63, 71–72 (1972).

<sup>80</sup> *Alice*, 134 S. Ct. at 2355 (citing *Mayo Collaborative Servs. v. Prometheus Lab., Inc.*, 132 S. Ct. 1289, 1297 (2012)).

<sup>81</sup> *Id.* at 3255–56.

improvement to “any other technology or technical field.”<sup>82</sup> The Court stated that the *Alice* claims did nothing more than “simply instruct the practitioner to implement the abstract idea of intermediated settlement on a generic computer.”<sup>83</sup> Thus, the *Alice* claims, regardless of whether they were directed to methods, system or computer program media, were all found to lack the additional “inventive concept” needed to transform an abstract idea into a patent-eligible invention under § 101.

## V. Observations on *Alice* and Post-*Alice* Case Law

One thing is clear—“the more things change, the more they stay the same!”<sup>84</sup> The two step test for § 101 patentability set forth in *Mayo* and *Alice* is not substantially different from the test set forth by the Supreme Court almost four decades earlier in *Flook*:

[O]nce that algorithm is assumed to be within the prior art, the application, considered as a whole, contains no patentable invention. Even though a phenomenon of nature or mathematical formula may be well known, an inventive application of the principle may be patented. Conversely, the discovery of such a phenomenon cannot support a patent *unless there is some other inventive concept in its application.*<sup>85</sup>

However, despite all of the Supreme Court decisions on the issue of § 101 patentability over the past 40+ years, there is still insufficient guidance from the courts as to when a claim only covers an abstract idea, and what needs to be added to provide sufficient inventive concept to avoid § 101 patentability concerns.

### A. Bright Line Rule?

Although the Supreme Court generally does not like to provide “bright line” rules, it appears to have adopted a “bright line” exclusion from patent eligibility of any claim that only covers steps for implementing an algorithm on a conventional computer. This bright line exclusion seems to apply regardless of how narrowly applicable that algorithm may be. The Supreme Court has opted for this type of bright line rule because it can be more easily administered by courts and judges who are not comfortable dealing with scientific or technological issues.

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<sup>82</sup> *Id.* at 2359.

<sup>83</sup> *Id.* at 2351.

<sup>84</sup> “plus ça change, plus c’est la même chose,” quote attributable to Jean-Baptiste Alphonse Karr, a 19<sup>th</sup> century French journalist and critic. *Jean-Baptiste Alphonse Karr: Quotes*, GOODREADS, [https://www.goodreads.com/author/quotes/5821239.Jean\\_Baptiste\\_Alphonse\\_Karr](https://www.goodreads.com/author/quotes/5821239.Jean_Baptiste_Alphonse_Karr) (last visited May 11, 2015).

<sup>85</sup> *Parker v. Flook*, 437 U.S. 584, 594 (1978) (emphasis added).

In particular, in *Mayo*, which dealt with the related “laws of nature” exception to § 101, the Supreme Court acknowledged that:

In any event, our cases have not distinguished among different laws of nature according to whether or not the principles they embody are sufficiently narrow. *See, e.g.*, *Flook*, 437 U. S. 584, 98 S.Ct. 2522, 57 L.Ed.2d 451 (holding narrow mathematical formula unpatentable). And this is understandable. Courts and judges are not institutionally well suited to making the kinds of judgments needed to distinguish among different laws of nature. And so the cases have endorsed a bright-line prohibition against patenting laws of nature, mathematical formulas and the like, which serves as a somewhat more easily administered proxy for the underlying “building-block” concern.<sup>86</sup>

Whether or not the Supreme Court will develop a more nuanced approach over time remains to be seen.

### **B. Technological Arts Requirement?**

Some, including Federal Circuit Judge Mayer, have argued that the Supreme Court’s *Alice* decision has effectively set out a “technological arts” requirement to § 101 patentability.<sup>87</sup> However, the Supreme Court has not expressly stated that the additional “inventive concept” has to be in the “technological arts,” even though it has had multiple opportunities to do so. Indeed, it has never articulated what even constitutes a “technological art.”<sup>88</sup> Furthermore, it has clearly rejected the Federal Circuit’s position that the “machine-or-transformation” test should be used to determine what is or is not an abstract idea.<sup>89</sup>

### **C. Inventive Concept**

Despite the Supreme Court’s recent decisions, it is still unclear whether claims directed to, for example, innovative advances in computer software (rather than hardware), can provide the “inventive concept” needed to move such claims into the realm of patent-eligible subject matter. Because software applications, whether inventive or not, must always be implemented by computer hardware,<sup>90</sup> there is no principled reason to distinguish patent eligibility based on the difference between “abstract” software and tangible “hardware,” or between the implementation of innovative software using

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<sup>86</sup> 132 S. Ct. 1289, 1303 (2012).

<sup>87</sup> *E.g.*, *I/P Engine, Inc., v. AOL Inc.*, 576 F. App’x 982, 992 (Fed. Cir. Aug. 15, 2014) (Mayer, J., concurring).

<sup>88</sup> The author recalls that it was not that long ago that the U.S. Patent and Trademark Office did not permit people with computer science degrees to practice before it, on the basis that computer science majors did not meet the technical proficiency requirements for admission to the Patent Bar.

<sup>89</sup> *See Bilski v. Kappos*, 561 U.S. 593, 608–10 (2010).

<sup>90</sup> *See Abraham Kasdan, Patenting Business Methods and Software in the US*, PRAC. LAW, INTELL. PROP. & TECH., Dec. 9, 2012, at 1, 3.

conventional or unconventional hardware, when the inventive concept resides in the software itself.

Can “inventive concepts” be found in new software technologies that improve on the operation of computers (i.e. searching speed), even if they can be implemented on existing conventional computers? Can inventive software concepts be used to define patent eligible claims that do not run afoul of the “abstract ideas” exception? Based on comments by some courts, the answer is likely yes.

For example, it is interesting in this regard to consider recent comments made by Judge Bryson of the Federal Circuit in *Loyalty Conversion Systems Corp. v. American Airlines, Inc.*<sup>91</sup> In this Eastern District of Texas case involving a business method patent, Judge Bryson was sitting by designation and issued a memorandum opinion finding the claims at issue to be invalid abstract ideas based on *Bilski* and *Alice*, in which he commented on the future patent eligibility of business methods under § 101.<sup>92</sup> Judge Bryson opined that:

[S]ome patents that can be regarded as “business method” patents employ highly complex and inventive algorithms or have technological aspects to them, such as improvements in computer technology that make particular business functions more effective. Those patents are not invalid simply because the algorithms or technologies are directed to a business purpose.<sup>93</sup>

Referring to patents on methods for encrypting business transactions over the Internet, which involve complex algorithms, Judge Bryson noted that during oral argument of the *Alice* case, both sides had agreed that if claims were directed to advances in encryption technology, they should withstand § 101 challenges.<sup>94</sup> Judge Bryson also referenced his opinion in *TQP Development, Inc. v. Intuit Inc.*,<sup>95</sup> in which he had denied a motion seeking to invalidate claims directed to data encryption under § 101, even though they raised an “abstractness” issue, because they were limited to a specific method of changing encryption keys that was an “inventive concept.”<sup>96</sup>

#### **D. Post-*Alice* Cases**

Since last summer’s *Alice* decision, there have been many decisions from the district courts and the Federal Circuit involving patent challenges based on the abstract idea exception to § 101. Overwhelmingly, those decisions have

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<sup>91</sup> No. 2:13-CV-655, 2014 WL 4354130 (E.D. Tex. Sept. 2, 2014) (regarding an order concerning claim construction).

<sup>92</sup> See *id.* at \*14.

<sup>93</sup> *Id.* at \*13.

<sup>94</sup> *Id.* at \*14 n.7 (judgment on the pleadings).

<sup>95</sup> No. 2:12-CV-180-WCB, 2014 WL 651935 (E.D. Tex. Feb. 19, 2014).

<sup>96</sup> *Id.*, at \*13 n.7.

found the challenged patent claims to be invalid. While most of the challenged patents thus far have involved business method claims, there were some that pertained to various software technologies.<sup>97</sup> Many of these post-*Alice* decisions have not evaluated the risk of preemption in their analyses, even though the underlying rationale articulated by the Supreme Court for the abstract idea exclusion has been to avoid granting patent monopolies that would preempt the public from using the fundamental building blocks of invention.

For example, it is instructive to consider the Federal Circuit's final disposition of *Ultramercial, Inc. v. Hulu, LLC*.<sup>98</sup> The claims at issue in *Ultramercial* covered a method for letting consumers view copyrighted videos on the Internet, but only after they "click" on an advertisement.<sup>99</sup>

*Ultramercial*, like many § 101 cases, had a very convoluted procedural history. When the Federal Circuit first reviewed *Ultramercial* in 2011, it reversed

<sup>97</sup> See, e.g., *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715 (Fed. Cir. 2014).

<sup>98</sup> 772 F.3d 709, 722–23 (Fed. Cir. 2014).

<sup>99</sup> See *id.* at 712. Claim 1 of the patent asserted by *Ultramercial* recites the following:

A method for distribution of products over the Internet via a facilitator, said method comprising the steps of:

a first step of receiving, from a content provider, media products that are covered by intellectual property rights protection and are available for purchase, wherein each said media product being comprised of at least one of text data, music data, and video data;

a second step of selecting a sponsor message to be associated with the media product, said sponsor message being selected from a plurality of sponsor messages, said second step including accessing an activity log to verify that the total number of times which the sponsor message has been previously presented is less than the number of transaction cycles contracted by the sponsor of the sponsor message;

a third step of providing the media product for sale at an Internet website;

a fourth step of restricting general public access to said media product;

a fifth step of offering to a consumer access to the media product without charge to the consumer on the precondition that the consumer views the sponsor message;

a sixth step of receiving from the consumer a request to view the sponsor message, wherein the consumer submits said request in response to being offered access to the media product;

a seventh step of, in response to receiving the request from the consumer, facilitating the display of a sponsor message to the consumer;

an eighth step of, if the sponsor message is not an interactive message, allowing said consumer access to said media product after said step of facilitating the display of said sponsor message;

a ninth step of, if the sponsor message is an interactive message, presenting at least one query to the consumer and allowing said consumer access to said media product after receiving a response to said at least one query;

the district court and found the claims to be patent eligible under § 101.<sup>100</sup> On appeal of this decision to the Supreme Court after its 2012 *Mayo* decision, the Supreme Court vacated the Federal Circuit's decision and remanded for further consideration in view of *Mayo*.<sup>101</sup> On remand, the Federal Circuit again upheld the patent eligibility of the *Ultramercial* claims in 2013.<sup>102</sup> After this decision, the Supreme Court again granted certiorari. It vacated the Federal Circuit's 2013 decision, but again remanded for further consideration in view of *Alice*.<sup>103</sup>

Given this procedural history of successive remands, one could reasonably surmise that the Supreme Court was expecting the Federal Circuit to invalidate the *Ultramercial* claims as being directed to abstract ideas, which it finally did the third time around.<sup>104</sup>

*Ultramercial* had argued that its claims did not cover ideas that are so fundamental as to invoke the preemption concerns that lie at the heart of the abstract ideas exception, but rather covered previously unknown methods of advertising and content distribution.<sup>105</sup> In finding the claims not patent eligible based on “the added benefit of the Supreme Court’s reasoning in *Alice*[.]”<sup>106</sup> the Federal Circuit first stated that “[w]e do not agree with *Ultramercial* that the addition of merely novel or non-routine components to the claimed idea necessarily turns an abstraction into something concrete.”<sup>107</sup> While these statements seemed to acknowledge that *Ultramercial*'s claims may have included novel or non-routine components, the Federal Circuit still went on to address the second step of the *Alice* framework, and concluded that the claims only implemented an abstract idea with routine, conventional steps, making them not eligible for patent protection.<sup>108</sup>

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a tenth step of recording the transaction event to the activity log, said tenth step including updating the total number of times the sponsor message has been presented; and an eleventh step of receiving payment from the sponsor of the sponsor message displayed.

*Id.*

<sup>100</sup> *Ultramercial, LLC v. Hulu, LLC*, 657 F.3d 1323, 1330 (Fed. Cir. 2011).

<sup>101</sup> *Ultramercial, LLC v. Hulu, LLC*, 657 F.3d 1323 (Fed. Cir. 2011), *vacated sub nom. WildTangent, Inc. v. Ultramercial, LLC*, 132 S. Ct. 2431 (2012) (mem.).

<sup>102</sup> *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 1335, 1354 (Fed. Cir. 2013), *vacated sub nom. WildTangent, Inc. v. Ultramercial, LLC*, 134 S. Ct. 2870 (2014) (mem.).

<sup>103</sup> *WildTangent, Inc. v. Ultramercial, LLC*, 134 S. Ct. 2870 (2014) (mem.).

<sup>104</sup> *Ultramercial*, 772 F.3d at 711–12. *Ultramercial*'s petition for en banc review by the Federal Circuit of the latest panel decision was recently denied without comment. *Ultramercial*, 772 F.3d 709 *reh'g en banc denied* (Feb. 27, 2015).

<sup>105</sup> *See id.* at 714.

<sup>106</sup> *Id.* at 713.

<sup>107</sup> *Id.* at 715.

<sup>108</sup> *Id.* at 714–15.

While the validity of Ultramercial's claims was ultimately not upheld, the Federal Circuit followed the same open-ended approach taken by the Supreme Court, cautioning that "we do not purport to state that all claims in all software-based patents will necessarily be directed to an abstract idea. Future cases may turn out differently."<sup>109</sup>

While most post-Alice decisions involving abstract idea challenges have found the challenged patents to be invalid, the Federal Circuit decision in *DDR Holdings, LLC v. Hotels.com, L.P. (DDR)*.<sup>110</sup> stands out as the only Federal Circuit decision thus far that upheld a software patent claim in the face of a § 101 challenge.

In *DDR*, the patent at issue addressed the problem of retaining visitors to a merchant's website, even after the visitor clicked on a link to another site. In the prior art, the visitor would be transported to the website associated with the link, losing all content of the original site.<sup>111</sup> In accordance with the claimed invention, this problem was solved by having the link direct the visitor to an outsource provider who generates a hybrid webpage that still retained the visual "look and feel" of the original site, while at the same time providing information from the linked site.<sup>112</sup>

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<sup>109</sup> *Id.* at 715.

<sup>110</sup> 773 F.3d 1245 (Fed. Cir. 2014).

<sup>111</sup> *See id.* at 1257.

<sup>112</sup> *See id.* at 1258. Representative Claim 19 recited the following:

A system useful in an outsource provider serving web pages offering commercial opportunities, the system comprising:

(a) a computer store containing data, for each of a plurality of first web pages, defining a plurality of visually perceptible elements, which visually perceptible elements correspond to the plurality of first web pages;

(i) wherein each of the first web pages belongs to one of a plurality of web page owners;

(ii) wherein each of the first web pages displays at least one active link associated with a commerce object associated with a buying opportunity of a selected one of a plurality of merchants; and

(iii) wherein the selected merchant, the outsource provider, and the owner of the first web page displaying the associated link are each third parties with respect to one other;

(b) a computer server at the outsource provider, which computer server is coupled to the computer store and programmed to:

(i) receive from the web browser of a computer user a signal indicating activation of one of the links displayed by one of the first web pages;

(ii) automatically identify as the source page the one of the first web pages on which the link has been activated;

In an opinion written by Judge Chen, the Federal Circuit first acknowledged that there was no clear line separating patent-eligible inventions from patent-ineligible abstract concepts, and that distinguishing between the two could be difficult. The Court noted that the claims did not recite a mathematical algorithm or a fundamental or longstanding economic or commercial practice.<sup>113</sup>

In finding the claims patent eligible, the Court stated that the claimed solution to the problem being addressed was “necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks.”<sup>114</sup> The Court distinguished the claims from those in *Ultramercial*, (which it characterized as broadly claiming use of the internet to perform an abstract business practice) on the basis that they “specify how interactions with the Internet are manipulated to yield a desired result,”<sup>115</sup> and concluded that they recited an invention that was not merely conventional use of the Internet.<sup>116</sup> The Court also concluded that the claims did not preempt the basic idea, but rather recited a specific way to automate creation of a hybrid website that incorporated aspects from different web pages to solve a commercial problem.<sup>117</sup>

In a vigorous dissent, Judge Mayer, a long-standing proponent of a “technological arts” standard for patent eligibility, took the position that the DDR patent claims did not set out an inventive concept, but only applied an otherwise well-known concept to the Internet.<sup>118</sup> Arguing that *Alice* articulated a technological arts test for patentability, Judge Mayer found that the solution offered by the DDR claims did not involve any new computer technology.<sup>119</sup> Because the DDR solution was entrepreneurial in nature rather than based in technology, Judge Mayer opined in his dissent that *Alice* precluded affording patent protection to such claims.

It certainly seems that *Alice*, rather than articulating a clear standard for patent eligibility of abstract ideas, has raised more questions than it has an-

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(iii) in response to identification of the source page, automatically retrieve the stored data corresponding to the source page; and

(iv) using the data retrieved, automatically generate and transmit to the web browser a second web page that displays: (A) information associated with the commerce object associated with the link that has been activated, and (B) the plurality of visually perceptible elements visually corresponding to the source page.

*Id.* at 1249–50.

<sup>113</sup> *Id.* at 1256–1257.

<sup>114</sup> *Id.* at 1257.

<sup>115</sup> *Id.* at 1258.

<sup>116</sup> *Id.*

<sup>117</sup> *Id.* at 1259.

<sup>118</sup> *Id.* at 1264 (Mayer, J., dissenting).

<sup>119</sup> *Id.* at 1265.

swered. More definitive guidance from the Federal Circuit, and possibly yet again from the Supreme Court, is sorely needed to more clearly demarcate the line between claims that only cover patent ineligible abstract ideas and those that include sufficient inventive concepts to be patent eligible.

## Conclusions and Suggestions

Despite the remaining uncertainties in this area, some things are reasonably clear from the line of Supreme Court cases that culminated with *Alice*.

First, there is no categorical proscription under § 101 that prevents the patenting of software or business methods.<sup>120</sup> If the claims articulate an “inventive concept,” it should be possible to patent at least certain types of software and business method inventions in the U.S.

The “machine or transformation” test, while not an exclusive test, provides an important “clue” as to whether a claim is patent eligible under § 101. If a claim is limited to a particular machine or to a method that transforms something into a different state or thing, then the claim will likely be patent-eligible under § 101, even if it includes a mathematical formula or algorithm.<sup>121</sup>

On the other hand, claims that only recite a mathematical formula or algorithm will not be patent-eligible under § 101, since they fall under the “abstract ideas” exception, even if they are limited to a field of use.<sup>122</sup> Such claims must include more, i.e., an “inventive concept,” to be patent eligible.

The policy behind the “abstract ideas” exception to patent eligibility is based on concerns over preemption. The courts do not want to permit a patent monopoly that would preempt others from being able to use the “basic tools of scientific and technological work” or the “fundamental” principles of knowledge that are part and parcel of the creative process.<sup>123</sup> However, the

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<sup>120</sup> See *Bilski v. Kappos*, 561 U.S. 593, 606–07 (2010). While four justices in *Bilski* and three in *Alice* would have done away with business method patents, that is not the majority view. See *Alice*, 134 S. Ct. 2347, 2360 (2014) (Sotomayor, J., concurring); see *Bilski*, 561 U.S. at 613 (Stevens, J., concurring). In *Bilski*, Justices Stevens, Ginsburg, Breyer and Sotomayor detailed their collective reasoning as to why business methods, *per se*, are not patentable processes under § 101. See *id.* at 617–57 (Stevens, J., concurring). Justice Stevens retired from the Court one day after the *Bilski* decision, leaving only Justices Ginsburg, Breyer and Sotomayor to maintain that view in *Alice*. See *Alice*, 133 S. Ct. at 2360; Press Release, Supreme Court of the United States (Apr. 9, 2010) (announcing Justice Stevens’ intention to retire from the Court in June 2010), available at [http://www.supremecourt.gov/publicinfo/press/pressreleases/pr\\_04-09-10](http://www.supremecourt.gov/publicinfo/press/pressreleases/pr_04-09-10).

<sup>121</sup> See *supra* notes 91–96 and accompanying text.

<sup>122</sup> See *Bilski*, 561 U.S. at 611–12 (emphasizing that mathematical formulas and algorithms are not patentable under § 101).

<sup>123</sup> See *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972).

Supreme Court has not distinguished between those mathematical formulas and algorithms that truly are basic and fundamental abstract ideas (e.g.,  $E=mc^2$  or the axioms/theorems of geometry) and more limited mathematical formulas and algorithms that are simply downstream useful applications of such basic and fundamental truths. Therefore, to pass the § 101 patentability hurdle under current case law, claims to software algorithms and business methods have to include additional limitations that articulate an “inventive concept,” beyond simply requiring the processing of algorithms using generic computer components.

Furthermore, the form in which the claim is drafted (system, method or physical media) will not save the patentability of claims that only require implementing a mathematical formula or algorithm on a generic computer. Such claims, regardless of form, will still fall under the “abstract idea” exclusion to patentability, unless they include further limitations that articulate an inventive concept.<sup>124</sup>

To increase the chances that your patent claims will be able to avoid challenges under the abstract idea exception to § 101, patent applicants, prosecution counsel and litigation counsel should keep the following points in mind:

If a claim is only limited to an idea that is stated algorithmically as a series of functional steps and implemented on a conventional computer, then the claim will likely not pass a § 101 challenge.<sup>125</sup>

If the invention involves concepts that go beyond implementing an idea on a conventional computer, those concepts should be identified at the start of the patent preparation process. They should be included in the claims, and a detail description of these concepts and their implementation should be provided in the specification to ensure that there is sufficient support for the claims.

If the invention pertains to a new method of doing business, the specification should discuss the state of the art and explain how the claimed invention provides an advance in the relevant business field. In particular, the patent specification should describe the real world benefits of the claimed method over the prior art, and the claim should be specifically directed to those benefits.

If the invention improves on the functioning of a conventional computer, that should be explained and claimed. If the invention provides an improvement to some other technology or technical field, that should be explained and claimed. *Alice* suggests that such improvements may be sufficient to serve as the necessary “inventive concept.”<sup>126</sup>

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<sup>124</sup> See *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1303 (2012).

<sup>125</sup> See *id.* at 1299.

<sup>126</sup> See *supra* note 93 and accompanying text; see also, *2014 Interim Guidance on Subject Matter Eligibility*, U.S. PATENT AND TRADEMARK OFFICE, <http://www.uspto.gov/patent/laws->

If the invention involves use of novel computer code that is organized in a specific manner and/or that interacts in a non-conventional way, those features should be discussed in the specification and claimed, to distinguish the invention from one that only involves a purely conventional computer implementation. Such distinctions may serve as the required inventive concept to augment an otherwise abstract idea, and make it patent eligible.

Improvements provided by the invention over the prior art should be emphasized in the specification. For example, does the invention disclose software methods that enable better or faster video compression? Does the disclosed software provides better security against cyberattacks, or provide other improved functionality not realized in the prior art? Does the implementation require non-conventional hardware or processing? Is there something unique about the computer architecture that is used? Make sure those improvements are discussed in the specification and include the improvements in the claim language to provide the “inventive concept.”

When drafting a patent application, patent counsel should also consider what additional details should be included in the specification that could be used to support, either during prosecution or in subsequent litigation, that the claimed invention is substantially more than just a conventional computer implementation of an abstract idea. In other words, make sure that the specification will have sufficient support for whatever arguments you may foresee needing in the future to avoid a § 101 challenge.

Finally, it is already apparent that courts in the post-*Alice* era are not hesitating to invalidate the claims of many, previously issued business method and software patents on the basis that they only cover patent-ineligible abstract ideas.<sup>127</sup> Counsel should review issued patents that a client believes to be important to its business, and consider whether the claims of such issued patents may be vulnerable to a § 101 attack. If so, the patent specification should be carefully analyzed to determine if there is sufficient support to amend the claims to fortify their validity, by adding additional inventive concept(s) required by *Alice*. This can be accomplished, for example, by filing a narrowing reissue application in the U.S. Patent and Trademark Office.<sup>128</sup>

For many companies, obtaining patent protection on their software and business methods is an important aspect of their overall strategy for securing their intellectual property assets. In view of the Supreme Court’s *Alice* decision and the continuing uncertainty that clouds this area of patent law,

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and-regulations/examination-policy/2014-interim-guidance-subject-matter-eligibility-0 (last visited May 12, 2015) (showing guidance issued by the U.S. Patent and Trademark Office after the Supreme Court’s decision in *Alice*).

<sup>127</sup> See, e.g., *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709 (Fed. Cir. 2014).

<sup>128</sup> See 35 U.S.C. § 251 (2012).

obtaining patents on software and business methods will require very special consideration and handling.