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**PATENT PROTECTION OF COMPUTER HARDWARE  
AND SOFTWARE**

**Brian J. McNamara<sup>†</sup>**

<b>I. INTRODUCTION.....</b>	<b>138</b>
<b>II. PATENTING COMPUTER HARDWARE AND SOFTWARE .....</b>	<b>139</b>
A. STATUTORY SUBJECT MATTER—SUPREME COURT CASES .....	140
B. EVOLUTION IN THE FEDERAL CIRCUIT.....	142
C. THE <i>BILSKI</i> CASES .....	152
D. DECISIONS AFTER <i>BILSKI V. KAPPOS</i> .....	158
E. CURRENT USPTO PRACTICE .....	169
F. THE SUPREME COURT’S <i>KSR</i> DECISION AND OBVIOUSNESS .....	179
G. PRODUCT AND METHOD OF USE CLAIMS.....	184
H. “JOINT INFRINGEMENT”—MULTIPLE ACTORS REQUIRED.....	185
I. CLAIM DRAFTING FOR MULTIPLE JURISDICTIONS .....	193
J. EXTRATERRITORIAL ENFORCEMENT OF SOFTWARE CLAIMS .....	194
<b>III. CONCLUSION.....</b>	<b>197</b>

ABSTRACT

*The explosion of consumer and industrial devices incorporating software controlled processors and the recent spectacular growth of both wired and wireless networked systems have combined to make patenting computer hardware and software an essential element of many competitive strategies. Since the invention of the telegraph, however, courts have struggled to define patent eligible subject matter, while patentees have sought to protect more and more abstract*

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<sup>†</sup> Brian J. McNamara is an Administrative Patent Judge and a retired partner in

*inventions. Until recently, the Supreme Court had not spoken directly on the issue in almost thirty years. During that hiatus, the Court of Appeals for the Federal Circuit articulated a number of tests and guidelines with varying levels of success. This article traces the evolution of the analysis of patent eligible subject matter from the Supreme Court's guidance in the 1970s and 1980s, through the Federal Circuit's cases, to the most recent Supreme Court cases rejecting the Federal Circuit's approach in *Bilski* and *Mayo v. Prometheus*. Although it is too soon to see how lower courts will apply the Supreme Court's guidance in *Mayo v. Prometheus*, the article also reviews how courts have applied the Supreme Court's instructions concerning the level of abstraction in claimed subject matter following *Bilski*. The article also provides practical information concerning the approach taken by the U.S. Patent and Trademark Office post-*Bilski*.*

*This article also explores issues arising out of the distributed nature of networked systems. Traditionally, a single actor must perform all the steps of a process to be an infringer. As systems become more networked and more participants carry out different steps of a patented process, questions arise concerning whether different participants are acting under the control of a single entity in a manner that rises to the level of infringement. The article explores this issue, which is now under consideration by the Federal Circuit en banc. This article also explores the approaches courts have taken concerning the effect that geographic distribution of system resources outside the United States has on patent infringement.*

## I. INTRODUCTION

Modern computer systems are complex assemblies of systems and subsystems operating under software control.<sup>1</sup> The trend toward integrating hardware and software functions presents special challenges to those protecting the intellectual property in such systems. Creative applications of computer technology to networks in which different computers or actors perform separate portions of a task, and produce numeric results or implement methods of doing business, further complicate the intellectual property practitioner's task.

Intellectual property protection of computer hardware and software

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<sup>1</sup> NATIONAL ACADEMY OF ENGINEERING, THE IMPACT OF ACADEMIC RESEARCH ON INDUSTRIAL PERFORMANCE 33 (Nat'l Acads. Press 2003).

generally takes two forms—patents and copyrights.<sup>2</sup> The scope of the protection offered by each form has evolved along with technology. Neither patents nor copyrights protect abstract ideas.<sup>3</sup> Indeed, a recent patent case decided by the Supreme Court, *Bilski v. Kappos*,<sup>4</sup> suggests that courts will now focus on whether the patent claims defining the metes and bounds of an invention are so abstract as to be unpatentable as a matter of law.<sup>5</sup> Courts have wrestled for years with the concept of what is “abstract,” and there is no clear test or definition. This article explores some of the major issues facing those drafting and enforcing patent claims drawn to various aspects of computer hardware and software. It addresses patent eligible subject matter, “joint” or “divided” infringement, claims to networked systems, and obviousness as applied to such systems since the Supreme Court’s *KSR* decision.<sup>6</sup>

## II. PATENTING COMPUTER HARDWARE AND SOFTWARE

Whether a claim recites patent eligible subject matter under 35 U.S.C. § 101 is only a threshold test—a claimed invention must also be novel (§ 102), non-obvious (§ 103) and fully and particularly described (§ 112).<sup>7</sup> Computer system patent claims typically include apparatus claims drawn to computer hardware *and* method claims drawn to processes controlled by software.<sup>8</sup> Although there is nothing that categorically precludes a business method claim from being treated as a process under 35 U.S.C. § 101, business method claims raise special problems in terms of vagueness and suspect validity. Claims that attempt to patent abstract ideas are not patentable processes under 35 U.S.C. § 101.<sup>9</sup>

Patent claims drawn to computer networks may include claims drawn to the structure of a network itself and the methods that the network uses to complete various tasks at various levels of functionality. However, as networks facilitate performing tasks across different jurisdictions with multiple actors, another challenge facing American patent practitioners is drafting claims that are infringed by a

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<sup>2</sup> ALAN STORY, INTELLECTUAL PROPERTY AND SOFTWARE 9 (ICTSD and UNCTAD 2004).

<sup>3</sup> *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).

<sup>4</sup> 130 S. Ct. 3218 (2010).

<sup>5</sup> *Id.* at 3229-30.

<sup>6</sup> *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007).

<sup>7</sup> *Id.* at 3225.

<sup>8</sup> Christopher E. Everett, *Software Terminology: How to Describe a Software Invention in a United States Patent Application*, 29 NOVA L. REV. 693, 701, 708 (2005).

<sup>9</sup> *Id.* at 3229-30.

single actor in the United States. Recently, the U.S. Court of Appeals for the Federal Circuit announced that it will address en banc the following issue: “If separate entities each perform separate steps of a method claim, under what circumstances would that claim be directly infringed and to what extent would each of the parties be liable?”<sup>10</sup>

#### A. Statutory Subject Matter—Supreme Court Cases

Generally, “anything under the sun that is made by man” is patentable.<sup>11</sup> This broad statement by the Supreme Court in 1980 also recognizes that subject matter not made by man is not patentable. The Supreme Court has articulated only three exceptions to the Patent Act’s broad patent-eligibility principles: laws of nature, physical phenomena, and abstract ideas.<sup>12</sup> Until 2010, the Supreme Court had not spoken on 35 U.S.C. § 101 statutory subject matter issues concerning patents on automated systems in nearly thirty years, leaving the lower courts to rely on a trilogy of cases decided in the decade between 1972 and 1981.<sup>13</sup>

In 1972, in *Gottschalk v. Benson*, the Court ruled that an algorithm (in this case an algorithm to convert binary coded decimal numerals into pure binary code) by itself is not patentable as a process, because it is merely an abstract idea.<sup>14</sup>

In 1978, in *Parker v. Flook*, the Court conceded that a process is not unpatentable simply because it contains a law of nature or a mathematical algorithm, but held the claimed subject matter not statutory, because it applied a newly discovered mathematical relationship (which is not statutory subject matter) to a well-known process.<sup>15</sup> Even though the patent claims in *Flook* did not preempt the

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<sup>10</sup> Akamai Techs., Inc. v. Limelight Networks, Inc., 419 F. App’x 989 (Fed. Cir. 2011).

<sup>11</sup> *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).

<sup>12</sup> *Id.*

<sup>13</sup> *Bilski v. Kappos*, 130 S. Ct. 3218, 3229-30 (2010).

<sup>14</sup> *Gottschalk v. Benson*, 409 U.S. 63, 67-68 (1972); *see id.* at 71-72 (holding claims to a method of converting binary coded decimals into pure decimal numbers with a general purpose computer ineligible for patent protection, notwithstanding claims with digital electronic structure limitations (signals and re-entrant shift register), because the practical effect would be to preempt the formula and impermissibly award a patent for a discovery in mathematics that had no application except in connection with a digital computer).

<sup>15</sup> *Parker v. Flook*, 437 U.S. 584, 590, 591 (1978); *see id.* at 594 (holding claims drawn to method of updating numerical alarm limits found ineligible for patent protection, notwithstanding post-solution activity and the fact that the claims did not wholly preempt the mathematic function involved, because the invention merely claimed a newly discovered mathematical formula coupled to a computer applied to a well-known process of updating alarm limits in a chemical application).

use of the formula outside the petrochemical and oil refining industries, the Court rejected the “notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process.”<sup>16</sup>

In 1981, in *Diamond v. Diehr*, the Court again noted that laws of nature, natural phenomena and abstract ideas are not patentable, and explained that its ruling in *Flook* meant that the prohibition against patenting abstract ideas “cannot be circumvented by attempting to limit the use of the formula to a particular technological environment” or adding “insignificant post-solution activity.”<sup>17</sup> However, the Court distinguished between a law of nature and its application stating “an application of a law of nature or a mathematical formula to a known structure or process may well be deserving of patent protection.”<sup>18</sup> Considering the invention as a whole, instead of dissecting the claims into old and new elements, the *Diehr* Court held that claims drawn to a previously unknown industrial process for molding rubber products could constitute patentable subject matter under 35 U.S.C. § 101, adding that “a claim drawn to subject matter that is statutory does not become non-statutory simply because it uses a mathematical formula, computer program or digital computer.”<sup>19</sup> “When a process for curing rubber is devised which incorporates in it a more efficient solution of the equation, that process is at the very least not barred at the threshold by § 101.”<sup>20</sup> In distinguishing *Flook*, the Court noted:

[I]n *Flook* that the patent application did not purport to explain how the variables used in the formula were to be selected, nor did the application contain any disclosure relating to chemical processes at work or the means of setting off an alarm or adjusting the alarm unit . . . . All the application provided was a formula for computing an updated alarm limit.<sup>21</sup>

Over the next thirty years, lower courts wrestled with rules, tests and formulations to facilitate the analysis of emerging technologies in a manner consistent with the Supreme Court’s guidance in this trilogy

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<sup>16</sup> *Id.* at 590.

<sup>17</sup> *Diamond v. Diehr*, 450 U.S. 175, 191 (1981); *see id.* at 185 (holding claimed process for operating rubber molding press, which included mathematical formula, eligible for patent protection because claim drawn to entire rubber curing process).

<sup>18</sup> *Diamond*, 450 U.S. at 187.

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

<sup>20</sup> *Id.* at 188.

<sup>21</sup> *Id.* at 192 n.14.

of cases. In 2010, the Supreme Court returned to the issue of patentable subject matter in *Bilski v. Kappos*.<sup>22</sup> The Court reminded practitioners of its fundamental approach in this long-standing trilogy. The Court ruled that the Federal Circuit's "machine-or-transformation" test, while useful in some circumstances, is not the sole criteria for determining the existence of patentable subject matter.<sup>23</sup> Indeed, the Court went even further, stating, "nothing in today's opinion should be read as endorsing interpretations of § 101 that the Court of Appeals for the Federal Circuit has used in the past."<sup>24</sup> Nevertheless, the Court went on to hold that in "disapproving an exclusive machine-or-transformation test, we by no means foreclose the Federal Circuit's development of other limiting criteria that further the purposes of the Patent Act purposes and are not inconsistent with its text."<sup>25</sup> For this reason, the approaches taken by the Federal Circuit over the years remain important to patent practitioners. The material that follows outlines the evolution of judicial reasoning until the *Bilski* decision and some of the approaches implemented since the Supreme Court decided *Bilski*.

## **B. Evolution in the Federal Circuit**

Application of the above principles in 35 U.S.C. § 101 has spawned extensive patent litigation. This litigation has resulted in the substantial evolution of U.S. patent law since the late 1980s. A few of the relevant cases are discussed below.

### *1. Arrhythmia Research Technology, Inc. v. Corazonix Corp.*<sup>26</sup>

In this 1992 case, the Federal Circuit found that the claimed transformation of electrocardiograph signals from a patient's heartbeat by a machine through a series of mathematical calculations was patentable subject matter, because it constituted a practical application of an abstract idea (mathematical formula) and produced a useful, concrete, or tangible thing—an indication of the condition of the patient's heart.<sup>27</sup>

### *2. In re Alappat.*<sup>28</sup>

This case concerned an anti-aliasing technique to display smooth

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<sup>22</sup> 130 S. Ct. 3218 (2010).

<sup>23</sup> *Id.* at 3226.

<sup>24</sup> *Id.* at 3231.

<sup>25</sup> *Id.* at 3222-23.

<sup>26</sup> 958 F. 2d 1053 (Fed. Cir. 1992).

<sup>27</sup> *See id.* at 1060-61.

<sup>28</sup> 33 F.3d 1526 (Fed. Cir. 1994).

waveforms on a digital oscilloscope. Alappat's technique modulated the intensity of pixels illuminated along vectors connecting successive pairs of points in a bit map representing a sampled waveform.<sup>29</sup> Alappat used a mathematical expression to calculate the intensity of the modulation for each pixel as a function of the pixel's distance from the trajectory of each vector.<sup>30</sup> By more brightly illuminating those pixels whose center point lay directly on the vector trajectory and decreasing pixel illumination as the pixel's distance from the vector trajectory increased, the oscilloscope displayed a smooth waveform.<sup>31</sup> Alappat claimed a rasterizer for converting vector list data representing sample magnitudes of an input waveform into anti-aliased pixel illumination intensity data.<sup>32</sup> Alappat claimed the invention in "means plus function" language reciting: (a) means for determining vertical distance between the endpoints of each of the vectors in the data list, (b) means for determining the elevation of a row of pixels spanned by the vector, (c) means for normalizing the vertical distance and elevation, and (d) means for outputting illumination intensity data as a predetermined function of the normalized vertical distance and elevation.<sup>33</sup> The court reversed the conclusion of the U.S. Patent and Trademark Office (USPTO) that Alappat's claim was essentially a series of steps, which combined to form a mathematical algorithm for computing pixel information.<sup>34</sup> Citing *In re Donaldson*, the Federal Circuit ruled that the "means" in Alappat's claims could not be interpreted to read on each and every means for performing the recited functions and that the Examiner erred by treating these limitations as equivalent to process steps.<sup>35</sup> The court also concluded that Alappat claimed a machine, which is one of the four statutory categories of patentable subject matter.<sup>36</sup> The court further rejected the USPTO's position that Alappat's claim was unpatentable under a "mathematical algorithm" exception.<sup>37</sup> Finding Alappat's claim statutory, the court

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<sup>29</sup> *Id.* at 1537.

<sup>30</sup> *Id.*

<sup>31</sup> *Id.*

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

<sup>33</sup> *Id.* at 1538-39.

<sup>34</sup> *Id.* at 1544.

<sup>35</sup> *Id.* at 1540 (citing *In re Donaldson*, 16 F.3d 1189, 1193 (Fed. Cir. 1994) (holding that that U.S. Patent and Trademark Office must interpret "means plus function" or "step plus function" claims to cover the corresponding structure, material or acts described in the specification or equivalents thereof)).

<sup>36</sup> *Id.* at 1541-42. "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 therefore, subject to the conditions and requirements of this title." 35 U.S.C. § 101 (2006).

<sup>37</sup> 33 F.3d at 1542.

stated that it is not necessary to determine whether the claim contains mathematical subject matter, which standing alone would not be patentable, since it directs its inquiry to whether the claim as a whole is statutory subject matter.<sup>38</sup> In a footnote, the court mentioned that dissecting a claim to identify whether part of the claim recites mathematical subject matter, such as performed under the now outdated Freeman-Walter-Abele test, is not necessarily an improper analysis.<sup>39</sup>

3. *In re Schrader*.<sup>40</sup>

Schrader claimed a method of bidding on a plurality of items in which received bids are entered into a record and a combination of winning bids is determined by assembling a “completion” from all the entered bids.<sup>41</sup> A “completion” is the particular combination of bids, which would complete a sale of all of the items being offered at the highest offered total price.<sup>42</sup> The items are then sold in accordance with the “completion.”<sup>43</sup> On the basis that “assembling a completion” was a process for solving a given type of mathematical problem, the court determined that the claims recited an algorithm, notwithstanding the absence of a mathematical equation in the claim.<sup>44</sup> The court rejected Schrader’s argument that even if a mathematical algorithm were present, there was a physical transformation of data, which rendered the claims statutory. According to the court, there was nothing physical about the bids *per se* and the grouping or regrouping of bids cannot constitute a physical change, effect, or result.<sup>45</sup> The court also noted that the terms “bid data,” “completion data,” or “display data” were not mentioned in the claim.<sup>46</sup> The court pointed out that the only physical effect or result required by the claims is the entering of bids in a “record,” a step that can be accomplished simply by writing the bids on a piece of paper or a chalkboard.<sup>47</sup> Citing *In re*

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<sup>38</sup> *Id.* at 1542, 54 (Archer, C.J., concurring) (citing *In re Grams*, 888 F.2d 835, 839 (Fed. Cir. 1989) (holding that Section 101 analysis depends on the claims as a whole and the circumstances of each case)).

<sup>39</sup> *Id.* at 1543 n.21 (noting the test was whether a claim recites an algorithm and whether the algorithm is applied in any manner to physical elements or process steps). *In re Freeman*, 573 F.2d 1237 (C.C.P.A. 1978); *In re Walter*, 618 F.2d 758 (C.C.P.A. 1980); *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982).

<sup>39</sup> 22 F.3d 290 (Fed. Cir. 1994).

<sup>41</sup> *Id.* at 291.

<sup>42</sup> *Id.*

<sup>43</sup> *Id.*

<sup>44</sup> *Id.* at 293.

<sup>45</sup> *Id.* at 293-94.

<sup>46</sup> *Id.* at 294.

<sup>47</sup> *Id.*

*Grams*,<sup>48</sup> the court noted that for purposes of 35 U.S.C. § 101, such activity is indistinguishable from data gathering steps, which are insufficient to impart patentability to a claim involving the solution of a mathematical algorithm.<sup>49</sup>

4. *In re Lowry*.<sup>50</sup>

Lowry disclosed an “Attribute data model” that represents data in terms of attributes and relationships between attributes.<sup>51</sup> Lowry’s claims recited a memory for storing data for access by an application program comprising various attribute data objects.<sup>52</sup> An attribute data object is a sequence of bits containing information used by the application program and information regarding the attribute data object’s relationship to other attribute data objects.<sup>53</sup> The Board of Patent Appeals and Interferences (BPAI) had reversed the Examiner’s § 101 rejection finding instead that claims directed to a memory were directed to an article of manufacture. However, the BPAI gave no patentable weight to the claimed data structure, analogizing it to unpatentable printed matter.

On appeal, the court noted that Lowry did not attempt to claim information content or the attributive data model in the abstract, but rather specific structural elements, which impart a physical organization on the information stored in the memory.<sup>54</sup> The court found that Lowry’s data structures were physical entities that provide increased efficiency in computer operation and were not analogous to printed matter.<sup>55</sup> The following year, the USPTO dropped its opposition to another applicant’s appeal concerning claims drawn to certain computer programs embodied in a tangible medium, such as a floppy disk.<sup>56</sup> As a result, claims drawn to “stored indicia” on a computer readable medium became known as “Beauregard claims.” The reference to § 101 in the USPTO’s withdrawal and the fact that

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<sup>48</sup> *In re Grams*, 888 F.2d 835, 840-41 (Fed. Cir. 1989) (holding clinical testing steps are not eligible subject matter).

<sup>49</sup> *In re Schrader*, 22 F.3d 290, 294.

<sup>50</sup> 32 F.3d 1579 (Fed. Cir. 1994).

<sup>51</sup> *Id.* at 1580.

<sup>52</sup> *Id.* at 1581.

<sup>53</sup> *Id.* at 1580-81.

<sup>54</sup> *Id.* at 1583.

<sup>55</sup> *Id.* at 1584.

<sup>56</sup> *In re Beauregard*, 53 F.3d 1583, 1584 (Fed. Cir. 1995) (“The Commissioner states that computer programs embodied in a tangible medium, such as floppy diskettes, are patentable subject matter under 35 U.S.C. § 101 and must be examined under 35 U.S.C. §§ 102 and 103 . . . and agrees with Beauregard that the printed matter exception is not applicable.”).

the *Beauregard* case was not adjudicated by the courts may have led to a misperception that one could avoid ineligible subject matter issues by claiming a program recorded on computer readable media because that would be a patentable eligible “manufacture” under § 101.<sup>57</sup>

5. *In re Warmerdam*.<sup>58</sup>

Warmerdam refined collision avoidance systems using a hierarchy of successively more refined bursting bubbles placed along the medial axis of objects to determine a collision avoidance path.<sup>59</sup> The court found method claims drawn to the steps of locating the medial axis and creating the bubble hierarchy not patentable subject matter.<sup>60</sup> The court reasoned that Warmerdam claimed nothing more than the manipulation of basic mathematical constructs, notwithstanding any implications in the claim of measuring the contour of an object.<sup>61</sup> However, the court found claim 5, addressing a machine having a memory which contains data representing a bubble hierarchy as generated by the method of any of claims 1 through, to be statutory subject matter and definite.<sup>62</sup> The court reasoned that the claim recites a machine and there was no showing that one skilled in the art would have any difficulty in determining whether a machine having a memory storing a bubble hierarchy is within the scope of the claim.<sup>63</sup>

6. *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*<sup>64</sup>

In 1998, the Federal Circuit’s *State Street Bank* decision ushered in a new era of patent practice under 35 U.S.C. § 101. The court ruled that a data processing system for managing a financial services configuration of a portfolio claimed in “means plus function language” and producing a numerical result was statutory subject matter.<sup>65</sup> The court held that “the transformation of data representing discrete dollar amounts by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation” because the “final share price momentarily fixed for recording and reporting purposes”

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<sup>57</sup> See cases cited and discussion *infra* Parts II.D.4, II.D.6.

<sup>58</sup> 33 F.3d 1354 (Fed. Cir. 1994).

<sup>59</sup> *Id.* at 1356-57.

<sup>60</sup> *Id.* at 1360.

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

<sup>62</sup> *Id.* at 1361.

<sup>63</sup> *Id.*

<sup>64</sup> 149 F.3d 1368 (Fed. Cir. 1998).

<sup>65</sup> *Id.* at 1372.

was a “useful, concrete and tangible result.”<sup>66</sup> Noting that the Freeman-Walter-Abele test from the Court of Customs and Patent Appeals (CCPA) was of little value after the Supreme Court’s decisions in *Diehr* and *Chakrabarty*,<sup>67</sup> the Federal Circuit focused its inquiry not on which of the four categories of subject matter the claim recites, “but rather on the essential characteristics of the subject matter, in particular, its usefulness.”<sup>68</sup> The fact that the claim was directed to a machine that produces a useful, concrete and tangible result renders the claim statutory, even if that result is expressed in numbers, such as price, profit, percentage, cost or loss.<sup>69</sup> The court took the opportunity to dispel the notion that business methods are inherently unpatentable. Stating “we take this opportunity to lay this ill conceived exception to rest,” the court noted that “business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or method.”<sup>70</sup>

#### 7. *AT&T Corp. v. Excel Communications, Inc.*<sup>71</sup>

In this case, the court found patentable subject matter in a claimed method of indicating a call recipient’s primary interexchange carrier (long distance telephone carrier) as a data field in a message.<sup>72</sup> The claim recited generating a message and including in the message an indicator, whose value is a function of whether the interchange carrier of the terminating subscriber is a subscriber of a predetermined interexchange carrier.<sup>73</sup> The court noted that the judicial proscription against patenting a mathematical algorithm is narrowly limited to algorithms in the abstract.<sup>74</sup> The claimed process was statutory because its use of Boolean algebra produced a useful result without preempting others from using the mathematical principle.<sup>75</sup> Noting that the court’s analysis in *Schrader* and *Grams* were unhelpful because they did not examine the usefulness of the result,<sup>76</sup> the court explained that patent claims need not involve a physical

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<sup>66</sup> *Id.* at 1373.

<sup>67</sup> *Id.* at 1374.

<sup>68</sup> *Id.* at 1375.

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

<sup>70</sup> *Id.*

<sup>71</sup> 172 F.3d 1352 (Fed. Cir. 1999).

<sup>72</sup> *Id.* at 1361.

<sup>73</sup> *Id.* at 1354.

<sup>74</sup> *Id.* at 1356.

<sup>75</sup> *Id.* at 1356.

<sup>76</sup> *Id.* at 1360.

transformation or conversion of the subject matter to be statutory.<sup>77</sup> The court further noted that no inquiry into structure is necessary in the case of process claims.<sup>78</sup>

8. *In re Nuijten*.<sup>79</sup>

On September 20, 2007, the Court of Appeals for the Federal Circuit issued two panel decisions significant to the issue of statutory subject matter under 35 U.S.C. § 101.<sup>80</sup> One of the court's decisions, *In re Nuijten*, addressed "physical but transitory forms of signal transmission such as radio broadcasts, electrical signals through a wire, and light pulses through a fiber-optic cable, so long as those transmissions convey information encoded in the manner disclosed and claimed by Nuijten."<sup>81</sup> The majority stated "[w]e hold that such transitory embodiments are *not* directed to statutory subject matter."<sup>82</sup>

When content publishers "watermark" a signal, such as an audio file, to prevent or control copying, the watermarking process introduces distortion.<sup>83</sup> Nuijten's improved watermarking method modified the watermarked signal with additional data to compensate for such distortion.<sup>84</sup> The USPTO allowed claims drawn to recite "[a] method of embedding supplemental data into a signal," "[a]n arrangement for embedding supplemental data in a signal" including various structural elements, and "[a] storage medium having stored thereon a signal with embedded supplemental data."<sup>85</sup> Thus, the court noted, "Nuijten has been allowed claims to the process he invented, a device that performs that process, and a storage medium holding the resulting signals."<sup>86</sup>

The issue before the Federal Circuit panel was whether Nuijten's claim 14, drawn to the signals themselves, constituted statutory subject matter.<sup>87</sup> Claim 14 read as follows:

A signal with embedded supplemental data, the signal being encoded in accordance with a given encoding process and selected samples of the signal representing supplemental data, and at least one of the samples

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<sup>77</sup> *Id.* at 1358-59.

<sup>78</sup> *Id.* at 1359.

<sup>79</sup> 500 F.3d 1346 (Fed. Cir. 2007).

<sup>80</sup> *See id.*; *In re Comiskey*, 499 F.3d 1365 (Fed. Cir. 2007).

<sup>81</sup> 500 F.3d. at 1353.

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

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

<sup>84</sup> *Id.*

<sup>85</sup> *Id.* at 1351.

<sup>86</sup> *Id.*

<sup>87</sup> *Id.*

preceding the selected samples is different from the sample corresponding to the given encoding process.<sup>88</sup>

The USPTO contended that claim 14 could include mere data without any physical embodiment, while Nuijten contended that the term “signal” must have sufficient physical substance to be discerned and recognized by a recipient.<sup>89</sup> Although the court agreed with Nuijten that the claims were limited to require some physical carrier of information, it did not specify what carrier is to be used or specify any physical medium.<sup>90</sup> Therefore, the court concluded that the “[t]he only limitations in claim 14 address the signal’s informational content.”<sup>91</sup>

The Federal Circuit reviews claim validity under 35 U.S.C. § 101 as a question of law de novo.<sup>92</sup> The court found that the claims on appeal cover transitory electrical and electromagnetic signals propagating through some medium, such as wires, air or a vacuum, and are not encompassed by any of the four statutory categories enumerated in the patent statute; process, machine, manufacture or composition of matter.<sup>93</sup> Noting that the Supreme Court has consistently required the term “process” to require action, the court rejected Nuijten’s argument that his claims to a signal, even if they recite acts, are patentable. “The presence of acts recited in the claim does not transform a claim covering a thing—the signal itself—into one covering the process by which that thing was made.”<sup>94</sup> Turning to a “machine” under the patent statute, the court noted that the Supreme Court’s definition of a machine was “a concrete thing, consisting of parts, or of certain devices and combination of devices.”<sup>95</sup> The court then concluded that while a transitory signal made of electrical or electromagnetic variances is physical and real, it is not a “machine” as that term is used in 35 U.S.C. § 101 because it is not made of parts or devices in any mechanical sense.<sup>96</sup>

Acknowledging the fact that the claimed signals are “man-made, in the sense of having been encoded, generated and transmitted by artificial means,” the panel’s majority nevertheless found that the claimed signals did not qualify for patent protection under the statute

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<sup>88</sup> *Id.*

<sup>89</sup> *Id.*

<sup>90</sup> *Id.*

<sup>91</sup> *Id.* at 1353.

<sup>92</sup> *Id.* at 1352 (citing *AT&T Corp. v. Excel Commc’ns, Inc.*, 172 F.3d at 1352, 1355 (Fed. Cir. 1999)).

<sup>93</sup> *Id.*

<sup>94</sup> *Id.* at 1355.

<sup>95</sup> *Id.* (citing *Burr v. Duryee*, 68 U.S. 531, 570 (1863)).

<sup>96</sup> *Id.* at 1355-56.

as “manufactures.”<sup>97</sup> Reviewing Supreme Court cases addressing articles of manufacture, the Federal Circuit panel majority concluded that a transient electric or electromagnetic transmission does not fit within the Supreme Court’s definition, which focuses on tangible articles or commodities.<sup>98</sup> Finally, the court concluded that a signal comprising a fluctuation in electric potential or electromagnetic fields is not a chemical union, nor a gas, fluid, powder or solid and is therefore not a composition of matter.<sup>99</sup>

Judge Linn, in a dissenting opinion, agreed that Nuijten’s signals were not “machine,” “process,” or “composition of matter” under the statute, but parted ways with the majority opinion as to “manufacture.”<sup>100</sup> In his dissent, Judge Linn noted that the definition of “manufacture” is not limited to tangible or non-transitory inventions and questioned the accuracy of the majority’s characterization of Nuijten’s signal as “fleeting.”<sup>101</sup> Judge Linn found support for a broad definition of “manufacture” in the Supreme Court’s *Chakrabarty* decision, which extended patent protection to “anything under the sun that is made by man.”<sup>102</sup> In his dissent, Judge Linn concluded that the claimed signal is an application of technology to provide some useful transformation in the real world and is not directed to an abstract mathematical or scientific principle that fails to qualify as new.<sup>103</sup>

Judge Linn reasoned that the invention is useful—the information it conveys is wholly distinct from the invention itself—the signal is an information carrier, not an attempt to claim the information itself.<sup>104</sup> Finally, Judge Linn noted the Supreme Court’s allowance of a claim to Samuel Morse’s use of telegraphy to convey Morse code, “the system of signs, consisting of dots and spaces,” allowed a claim directed to a signal—a particular way of encoding information so that it can be conveyed.<sup>105</sup> Judge Linn would have found Nuijten’s signal claims patentable as conveying two streams of data.<sup>106</sup>

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<sup>97</sup> *Id.* at 1356.

<sup>98</sup> *Id.*

<sup>99</sup> *Id.* at 1357.

<sup>100</sup> *Id.* at 1359 (Linn, J., concurring in part and dissenting in part).

<sup>101</sup> *Id.* at 1359-60.

<sup>102</sup> *Id.* at 1362 (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (internal citations omitted)).

<sup>103</sup> *Id.* at 1367-68.

<sup>104</sup> *Id.* at 1368.

<sup>105</sup> *Id.* at 1368-69 (citing *O’Reilly v. Morse*, 56 U.S. 62, 86 (1853). Allowed claims drawn to a recording or printing telegraph and claims drawn to a system of signs consisting of dots, spaces and horizontal lines, but found invalid a claim drawn to the use of the motive power of electric or galvanic current, however developed, for making or printing intelligible characters at a distance).

<sup>106</sup> *Id.* at 1369.

9. *In re Comiskey*.<sup>107</sup>

Also on September 20, 2007, a different panel of Federal Circuit judges addressed business method claims in *In re Comiskey*.<sup>108</sup> The panel held that claims drawn to a “method for mandatory arbitration resolution” which do not require the use of a machine “do not describe a process of manufacture or a process for the alteration of a composition of matter.”<sup>109</sup> Stating that such claims “seek to patent the use of human intelligence in and of itself,”<sup>110</sup> the court found them unpatentable.

In independent claims 1 and 32, Comiskey claimed a business method for mandatory arbitration resolution.<sup>111</sup> The claimed steps included enrolling a document and its author in the system, incorporating arbitration language into the enrolled document requiring that a contested issue be presented for binding arbitration, requiring a complainant to submit a request for arbitration, conducting arbitration resolution, providing support to the arbitration and determining an award.<sup>112</sup> It was undisputed that the steps of these claims could be performed without any mechanical device, such as a computer.<sup>113</sup> Recalling its decision in *State Street Bank*, which rejected the proposition that a method of doing business is not subject to patent protection, the court noted that such claims should not be categorized as methods of doing business, but should be treated like any other process claims.<sup>114</sup> Citing the Supreme Court’s decision in *Parker v. Flook*, the court emphasized that not every process is patentable because abstract ideas are not patentable.<sup>115</sup>

The court explained:

1. An abstract concept without a claimed practical application is not patentable.<sup>116</sup>
2. Claims reciting abstract ideas or algorithms with practical application are patentable only in a process which is “either . . . tied to a particular apparatus or . . . operated to change materials to a ‘different state or

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<sup>107</sup> 499 F. 3d 1365 (Fed. Cir. 2007).

<sup>108</sup> *Id.*

<sup>109</sup> *Id.* at 1379.

<sup>110</sup> *Id.*

<sup>111</sup> *Id.* at 1368-69.

<sup>112</sup> *Id.*

<sup>113</sup> *Id.* at 1369.

<sup>114</sup> *Id.* at 1374.

<sup>115</sup> *Id.* at 1375-76 (citing *Parker v. Flook*, 437 U.S. 584, 589 (1978)).

<sup>116</sup> *Id.* at 1376.

thing.”<sup>117</sup>

3. “[M]ental processes—or processes of human thinking—standing alone are not patentable even if they have practical application.”<sup>118</sup>

In this case, the mere recitation of a practical application as a form of post solution activity does not render an abstract idea patentable.<sup>119</sup> “[T]his court and our predecessor court have refused to find processes patentable when they merely claimed a mental process standing alone and untied to another category of statutory subject matter even when a practical application was claimed.”<sup>120</sup>

Recognizing that Comiskey’s claims 1 and 32 “claim the mental process of resolving a legal dispute between two parties by the decision of a human arbitrator,”<sup>121</sup> the court concluded that the claims were non-statutory subject matter directed to mental processes for resolving a dispute.<sup>122</sup> Claims drawn to the use of human intelligence in and of itself are not patentable.<sup>123</sup> The court noted that claims 17 and 46, which recite the use of “modules” and other “means,” do recite statutory subject matter.<sup>124</sup> The court explained that “[w]hen an unpatentable mental process is combined with a machine, the combination may produce patentable subject matter, as the Supreme Court decision in *Diehr* and our own decisions in *State Street Bank* and *AT&T* have confirmed.”<sup>125</sup> The court went on to distinguish non-patentable data collection and post solution activity, stating “[w]hile the mere use of that machine to collect data necessary for application of the mental process may not make the claim patentable subject matter, these claims in combining the use of machines with a mental process, claim patentable subject matter.”<sup>126</sup>

### C. The *Bilski* Cases

#### 1. *In re Bilski*.<sup>127</sup>

On October 30, 2008, the Court of Appeals for the Federal Circuit

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<sup>117</sup> *Id.* at 1376 (citation omitted).

<sup>118</sup> *Id.* at 1377.

<sup>119</sup> *Id.* at 1378-79 (citing *Flook*, 437 U.S. at 590).

<sup>120</sup> *Id.* at 1378 (citing *In re Schrader* 22 F. 3d 290, 293-94 (Fed. Cir. 1994).

<sup>121</sup> *Id.* at 1379.

<sup>122</sup> *Id.*

<sup>123</sup> *Id.*

<sup>124</sup> *Id.*

<sup>125</sup> *Id.*

<sup>126</sup> *Id.* at 1380 (citation omitted).

<sup>127</sup> 545 F. 3d 943 (Fed. Cir. 2008).

issued an important and controversial decision affirming the rejection of claims drawn to a method of hedging risk in commodities trading. In that decision, the Federal Circuit, echoing its ruling in *Comisky*, announced a “machine or transformation” test for determining the presence of patentable subject matter under 35 U.S.C. § 101.<sup>128</sup> On June 28, 2010, the Supreme Court overruled the Federal Circuit’s test as the sole test for patentable subject matter.<sup>129</sup> An understanding of the *Bilski* case is important because the Supreme Court noted that its “precedents establish that the machine or transformation test is a useful and important clue, an investigative tool, for determining whether some claimed inventions are processes under § 101,”<sup>130</sup> and because the Federal Circuit and lower courts continue to cite the “machine or transformation” test as part of the statutory subject matter analysis.<sup>131</sup>

In *Bilski*, claim 1 broadly recited the steps of (i) initiating a series of transactions between commodity consumers and providers at a fixed rate based on historical averages, (ii) identifying market participants having a counter-risk position to the consumers and (iii) initiating a series of transactions between the commodity provider and the market participants at a second fixed rate that balances the risk positions of the series of consumer transactions.<sup>132</sup> Using this method, an intermediary “provider” sells a commodity, such as coal, to a consumer at a first fixed price, thereby isolating the consumer from sudden demand driven price increases.<sup>133</sup> The provider also purchases the same commodity from the market participant at a second fixed price, thus isolating the market participant from sudden price drops.<sup>134</sup> The provider hedges its risk because in cases where demand skyrockets and prices rise, the provider’s disadvantage resulting from the lower than market fixed price it receives from the consumer of the commodity is offset by the fact that provider bought the same commodity at a lower than market fixed price from the market participant (or vice versa if demand crashes).<sup>135</sup> The Examiner rejected the claims, which are not restricted to operation on a computer, as not limited to a specific apparatus, not directed to the technological arts, and as merely manipulating an abstract idea

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<sup>128</sup> *Id.*

<sup>129</sup> *Bilski v. Kappos*, 130 S. Ct. 3218, 3227 (2010).

<sup>130</sup> *Id.*

<sup>131</sup> *See Research Corp. Techs., Inc. v. Microsoft Corp.*, 627 F.2d 859, 868 (Fed. Cir. 2010).

<sup>132</sup> *In re Bilski*, 545 F.3d at 949.

<sup>133</sup> *Id.* at 949-50.

<sup>134</sup> *Id.* at 950.

<sup>135</sup> *Id.*

(solving a mathematical problem).<sup>136</sup> The Board of Patent Appeals and Interferences overruled the Examiner, stating that the law does not support a “technological arts” test or a “specific apparatus” test.<sup>137</sup> Rejecting the Examiner’s specific apparatus test, the Board noted that mixing two chemicals is a statutory transformation, even in the absence of a claimed apparatus.<sup>138</sup> However, the Board rejected the claims on the basis that the financial, non-physical transformation claimed was not patentable subject matter, the claims preempted performing the steps either by a human or a machine, and the claims did not produce a useful, concrete, tangible result.<sup>139</sup>

On appeal, the Federal Circuit articulated the question at issue as “whether Applicants’ claim recites a fundamental principle and, if so, whether it would preempt substantially all uses of that fundamental principle.”<sup>140</sup> Recognizing that process claims of the 21<sup>st</sup> century are seldom limited to the highly specific, plainly corporeal industrial manufacturing processes of *Diehr* or the pure abstractions of *Benson*, the court reconciled the Supreme Court cases into a “definitive test” for a process claim.<sup>141</sup> The court held, “A claimed process is surely patent eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.”<sup>142</sup> The court noted that under this “machine or transformation” test, the use of a specific machine or the transformation of an article must impose meaningful limits on the claim’s scope and that the involvement of the machine or transformation in the claimed process must not be merely insignificant extra-solution activity.<sup>143</sup>

Because the claims at issue in *Bilski* did not limit the process to any specific machine or apparatus, the Federal Circuit left the contours of this aspect of the test to future cases.<sup>144</sup> Turning to the transformation prong of the test, the Federal Circuit opinion stated that the transformation must be central to the purpose of the claimed process and emphasized that patentability turns on whether a process transforms an article into a different state or thing.<sup>145</sup> Recognizing the nature of electronic signals, electronically manipulated data and even

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<sup>136</sup> *Id.* at 950.

<sup>137</sup> *Id.*

<sup>138</sup> *Id.*

<sup>139</sup> *Id.*

<sup>140</sup> *Id.* at 954.

<sup>141</sup> *Id.*

<sup>142</sup> *Id.*

<sup>143</sup> *Id.* at 961-962.

<sup>144</sup> *Id.* at 962.

<sup>145</sup> *Id.* at 962.

more abstract relationships associated with business methods, the court discussed processes that qualify as a patent eligible transformation.<sup>146</sup> For example, the electronic transformation of data into a visual depiction of the structure of human organs, without any transformation of the underlying physical objects, was sufficient for patentability of the process.<sup>147</sup> There is no danger of preemption as long as the claimed process is limited to a practical application of a fundamental principle to transform specific data, and the claim is limited to a visual depiction that represents specific physical objects or substances.<sup>148</sup> Purported transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions cannot meet the test. This is because they are not physical objects or substances; therefore, they are not representative of physical objects or substances.<sup>149</sup> Hence, the Federal Circuit found *Bilski*'s claims to be unpatentable.<sup>150</sup>

The Federal Circuit declined to adopt the "technological arts" test<sup>151</sup> and took the opportunity to clarify some of its earlier cases, as well. The court noted that the analysis under *State Street Bank* for a "useful, concrete and tangible result" might indicate whether a claim is drawn to a fundamental principle or a practical application of such a principle, but is not sufficient to determine patent eligibility.<sup>152</sup> The Federal Circuit also confirmed that there is no "business method exception" to patentable subject matter and business methods are patentable under the same criteria applicable to any other process or method.<sup>153</sup> The court specifically declined to adopt a broad exclusion of software or any other category of subject matter from patentability.<sup>154</sup> The Federal Circuit also noted that its decision in *Comiskey* should not be read to bar any claim reciting a mental process that lacks significant physical steps.<sup>155</sup> A claim that purportedly lacks any "physical steps," but is still tied to a machine or achieves an

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<sup>146</sup> *Id.* at 958-59.

<sup>147</sup> *See id.* at 959 (citing *In re Abele*, but rejecting as under-inclusive of patentable subject matter (per *In re Grams*), the Freeman-Walter-Abele two step test of (1) determining whether the claim recites an algorithm, and then (2) determining whether the algorithm is applied in any manner to physical elements or process steps).

<sup>148</sup> *Id.* at 963.

<sup>149</sup> *Id.*

<sup>150</sup> *Id.* at 966.

<sup>151</sup> *Id.* at 963.

<sup>152</sup> *Id.*

<sup>153</sup> *Id.*

<sup>154</sup> *Id.* at 961 n.24.

<sup>155</sup> *Id.* at 960.

eligible transformation, passes muster under §101.<sup>156</sup> However, a claim that recites physical steps but neither recites a particular machine or apparatus, nor transforms any article into a different state or thing is not drawn to eligible subject matter.<sup>157</sup> Finally, under the Federal Circuit's test, a claimed process wherein all of the process steps may be performed in the human mind is obviously not tied to any machine and does not transform any article into a different state or thing and would not be patentable under §101.<sup>158</sup>

2. *Bilski v. Kappos*.<sup>159</sup>

The Supreme Court ruled on the *Bilski* case on June 28, 2010. The Court found that that Bilski's method claims recited an unpatentable abstract idea, but rejected the Federal Circuit's "machine or transformation" test as the sole basis for determining the patent eligibility of a process.<sup>160</sup> Much of the Court's decision turned on its approach to the term "process" in the Patent Act. The Court stated that courts should not read into the patent laws limitations and conditions that the legislature has not expressed. Instead, the Court noted that the Patent Act excepts from patentable subject matter only laws of nature, physical phenomena and abstract ideas, adding that its prior attempts to explain these exceptions does not give courts carte blanche to impose other limitations inconsistent with the statute's purpose and design.<sup>161</sup> The Court then concluded that adopting the Federal Circuit's "machine or transformation" test, as the sole test for what constitutes a "process" under the Patent Act (as opposed to just a useful and important clue), would violate statutory interpretation principles.<sup>162</sup> The Court indicated that it was unaware of any ordinary contemporary, common meaning of "process, art or method" that would require these terms to be tied to a machine or transform an article; concluding that, while the "machine or transformation" test may well provide a sufficient basis for evaluating processes similar to those in the Industrial Age, there are reasons to doubt whether the test should be the sole criterion for determining the patentability of inventions in the Information Age.<sup>163</sup> Referencing amici briefs and Judge Rader's dissent in the Federal Circuit, the Supreme Court noted

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<sup>156</sup> *Id.*

<sup>157</sup> *Id.* at 961.

<sup>158</sup> *Id.* at 961 n.26.

<sup>159</sup> 130 S. Ct. 3218 (2010).

<sup>160</sup> *Id.* at 3226-27.

<sup>161</sup> *Id.* at 3226.

<sup>162</sup> *Id.*

<sup>163</sup> *Id.* at 3226-27.

that confining courts to the questions posed by the “machine or transformation” test would create uncertainty as to the patentability of software, advanced diagnostic medical techniques and inventions based on linear programming, data compression and the manipulation of digital signals.<sup>164</sup>

Relying on similar statutory interpretation principles, the Court specifically affirmed the patent eligibility of claims to business methods in the United States.<sup>165</sup> Referring to defenses to patent infringement based on earlier invention in 35 U.S.C. § 273, which define “method” as “a method of doing or conducting business” in 35 U.S.C. § 273(a)(3), the Court specifically determined that “a business method is simply one kind of ‘method’ that is, at least in some circumstances, eligible for patenting under § 101.”<sup>166</sup>

Applying these principles to the claims at issue in *Bilski*, the Court noted that hedging is a fundamental and prevalent economic practice.<sup>167</sup> The Court concluded that the concept of hedging recited in claim 1 and reduced to a mathematical formula in claim 4 is an unpatentable abstract idea, like the algorithms at issue in *Benson* and *Flook*.<sup>168</sup> Allowing such claims would preempt use of this approach and effectively grant a monopoly over an abstract idea. Stating that the remaining claims recited broad examples of how hedging could be used in commodities and energy markets, the Court concluded that they were unpatentable under *Flook*, which held that limiting an abstract idea to one field or adding token postsolution components does not make the concept patentable.<sup>169</sup>

The Supreme Court’s focus on the language of the statute and reliance on its thirty-year-old decisions in *Benson*, *Flook* and *Diehr* suggest a back-to-basics approach, which eschews complex tests in favor of fundamental statutory interpretation. The practical realities of such an approach in the Information Age remain to be seen. Several cases have recently been decided in the wake of the Court’s *Bilski* decision.

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<sup>164</sup> *Id.* at 3227-28.

<sup>165</sup> *Id.* at 3227-29.

<sup>166</sup> *Id.* at 3228.

<sup>167</sup> *Id.* at 3231.

<sup>168</sup> *Id.*

<sup>169</sup> *Id.*

## D. Decisions After *Bilski v. Kappos*

### 1. *Ultramercial, LLC v. Hulu, LLC*.<sup>170</sup>

On August 13, 2010, the District Court for the Central District of California wrestled with the patent eligibility of claims drawn to a method of allowing users to view Internet material free of charge in exchange for viewing advertisements.<sup>171</sup> Recognizing the “machine or transformation” test was merely a guideline and no longer a litmus test of patent eligibility, the district court determined that the claims were drawn neither to a machine nor a transformation, but instead to the abstract idea that one can use advertisement as an exchange for money.<sup>172</sup> In finding that the claims lacked patentable subject matter, the district court cited *Cybersource Corp. v. Retail Designs, Inc.* from the Northern District of California to find that the Internet is an abstraction, not a machine.<sup>173</sup> In addition, the court cited *Benson* for the proposition that one cannot circumvent the patentability test by limiting the claim to a computer.<sup>174</sup> Although the district court’s decision was later reversed,<sup>175</sup> the district court’s analysis nevertheless demonstrates how courts are struggling to determine patent-eligibility in the wake of *Bilski* without a clearly articulated test.

On September 15, 2011, the Federal Circuit reversed.<sup>176</sup> The court noted that the claimed method was a “process” under the statute and focused its inquiry on the abstractness of the claimed subject matter.<sup>177</sup> Although the Federal Circuit agreed that the idea of using advertising as a form of currency is abstract, it concluded that the claimed multistep process was drawn to a particular revenue collection and media distribution method requiring a controlled interaction with a consumer via an Internet website, rather than a mathematical algorithm, purely mental steps or any similarly abstract concept.<sup>178</sup>

The court noted that the subject matter of the invention as a whole involved an extensive computer interface and that certain steps (e.g., providing media products for sale on the Internet and restricting general public access to those media products) required specific

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<sup>170</sup> No. CV 09-06918, 2010 WL 3360098 (C.D. Cal. Aug. 13, 2010), *rev’d*, *Ultramercial, LLC v. Hulu, LLC*, 657 F.3d 1323 (Fed. Cir. 2011).

<sup>171</sup> *Id.* at \*1.

<sup>172</sup> *Id.* at \*3, \*6.

<sup>173</sup> *Id.* at \*4 (citing *Cybersource Corp. v. Retail Decisions, Inc.*, 620 F. Supp. 2d 1068 (N.D. Cal. 2009)).

<sup>174</sup> *Id.* at \*4 (citing *Gottschalk v. Benson*, 409 U.S. 63, 64 (1972)).

<sup>175</sup> *Ultramercial, LLC v. Hulu, LLC*, 657 F.3d 1323 (Fed. Cir. 2011).

<sup>176</sup> *Id.*

<sup>177</sup> *Id.* at 1328.

<sup>178</sup> *Id.* at 1329-30.

application to the Internet and a cyber-market environment and involved complex software programming.<sup>179</sup> Without defining the level of programming complexity required for patent eligibility, or holding that using an Internet website is necessary or sufficient to satisfy § 101, the court found the claims to be patent eligible, in part because of these factors. The court cited *In re Alappat* for the proposition that a general purpose computer becomes a special purpose machine once it is programmed to perform particular functions.<sup>180</sup> In addition, the court found that such a “new machine” could be claimed in terms of the programming that facilitates a unique function without being abstract.

Through this approach, the court appeared to consider these particular claims as reciting an improvement in digital computer technology.<sup>181</sup> Concluding that the failure of the claimed method to specify a particular media delivery mechanism did not render the claim impermissibly abstract, the court noted that the disclosure need not detail the particular instrumentalities for each step, assuming that the patent disclosure satisfies the written description and enablement conditions of § 112.<sup>182</sup>

## 2. *Chamberlain Group, Inc. v. Lear Corp.*<sup>183</sup>

In a claim construction (*Markman*<sup>184</sup>) ruling on November 24, 2010, the district court found patent eligible subject matter in claims drawn to a particular form of transmitter, which included a microcontroller used for generating and sending a secure signal for the purpose of opening and closing a door.<sup>185</sup> The district court did not end its inquiry with its determination that the claims were drawn to a machine, instead commenting that it considered the scope of § 101 to be the same whether the claims were drawn to a process or a machine.<sup>186</sup> The district court declined to apply the “machine or

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<sup>179</sup> *Id.* at 1328.

<sup>180</sup> *Id.* at 1328-29 (citing *In re Alappat*, 33 F.3d 1526, 1583 (Fed. Cir. 1994) (J. Rader, concurring) (noting, “In this field, a software process is often interchangeable with a hardware circuit.”)).

<sup>181</sup> *Id.*

<sup>182</sup> *Id.* at 1329.

<sup>183</sup> 756 F.Supp.2d 938 (N.D. Ill. 2010).

<sup>184</sup> A *Markman* hearing is a preliminary hearing at which the court receives evidence and argument concerning the construction to be given to terms in a patent claim at issue. BLACK’S LAW DICTIONARY (9th ed. 2009), available at Westlaw BLACKS.

<sup>185</sup> *Chamberlain*, 756 F.Supp.2d at 967.

<sup>186</sup> *Id.* at 966 (citing *AT&T Corp. v. Excel Commc’ns, Inc.* 172 F.3d 1352, 1357-58 (Fed. Cir. 1999)).

transformation” test in view of the Supreme Court’s comment that the “machine or transformation” test was useful, but not the sole test, for determining the eligibility of claims drawn to a process—although the claims under consideration were instead drawn to a machine.<sup>187</sup> The district court concluded that the claims recited patent eligible subject matter because the mathematical algorithms underlying the asserted claims were directed at a physical product to be used for a specific purpose,<sup>188</sup> and preemption of the formula was not an issue in this case.<sup>189</sup>

3. *Research Corporation Technologies v. Microsoft Corp.*<sup>190</sup>

On December 10, 2010, the Federal Circuit reversed the district court’s decision in *Research Corporation Technologies*, finding patent eligible subject matter in claims drawn to (i) a method of half-toning grey scale and color images utilizing a pixel-by-pixel comparison of the image to a blue noise mask;<sup>191</sup> (ii) similar apparatus claims;<sup>192</sup> (iii) a machine comprising a computer readable storage device which stores a dither matrix for use in half-toning image information and a comparator responsive to the storage device in which dot profiles produced by thresholding have a spectrum substantially characteristic of a blue noise power spectrum;<sup>193</sup> and (iv) a computer readable memory device comprising a threshold half-toning mask designed to produce all substantially pleasing dot profiles when thresholded at a number of levels.<sup>194</sup> Following the Supreme Court’s *Bilski* guidance, the court focused on only three exceptions to patentable subject matter and recognized that laws of nature and physical phenomena were not an issue in the case. Instead, the court focused on “abstractness” of the subject claims.<sup>195</sup> Noting the comments in Justice Stevens’s *Bilski* concurrence, stating that the Supreme Court has never provided a satisfying account of what constitutes an unpatentable abstract idea, the Federal Circuit chose not to define “abstract” beyond recognizing that this disqualifying characteristic should exhibit itself so manifestly as to override the broad statutory categories of eligible subject matter.<sup>196</sup> The Federal Circuit further noted, “[I]nventions with

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<sup>187</sup> *Id.* at 967.

<sup>188</sup> *Id.* at 969-70.

<sup>189</sup> *Id.*

<sup>190</sup> 627 F. 3d 859 (Fed. Cir. 2010).

<sup>191</sup> *Id.*

<sup>192</sup> *Id.* at 872-73.

<sup>193</sup> *Id.* at 866.

<sup>194</sup> *Id.*

<sup>195</sup> *Id.* at 868.

<sup>196</sup> *Id.*

specific application or improvements to technologies in the marketplace are not likely to be so abstract that they override the statutory language and framework of the Patent Act.”<sup>197</sup> Although the patentees sought protection for a process of half-toning in computer applications, which incorporated algorithms and formulas that control half-toning, the Federal Circuit concluded that the claims were not even close to the level of abstraction that would override statutory categories.

The Federal Circuit also noted that a claim that is not so manifestly abstract as to override § 101 may nevertheless be unpatentable under § 112 if the patent lacks sufficient concrete disclosure to warrant a patent.<sup>198</sup> This is the case if the written description is so conceptual that a person of ordinary skill could not replicate the invention *or* if the written description does not provide enough particularity and clarity to inform skilled artisans of the bounds of the claims.<sup>199</sup>

4. *Bancorp Services, LLC v. Sun Life Assurance Co. of Canada.*<sup>200</sup>

On February 14, 2011, the District Court in the Eastern District of Missouri granted Sun Life’s motion for summary judgment, finding that claims drawn to a method of managing a life insurance policy and a life insurance policy management system did not recite patent eligible subject matter.<sup>201</sup> The court treated system claims, which recited a “policy generator for generating a life insurance policy,” “a fee calculator for generating fees,” and similar terms, as process claims.<sup>202</sup> Applying the “machine or transformation” test the court found that the specified machines were no more than objects on which the method operates<sup>203</sup> and that, although a computer readable medium can be considered a manufacture or machine under § 101, merely reciting data or instructions on a stored machine readable medium does not make a claim statutory under § 101.<sup>204</sup> The district court also found that fetching and processing data are not patentable processes and that the claims failed to recite transforming raw data into anything other than more data and do not recite a transformation into a representation of any physical objects as in *In re Abele*.<sup>205</sup> Addressing

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<sup>197</sup> *Id.* at 869.

<sup>198</sup> *Id.*

<sup>199</sup> *Id.*

<sup>200</sup> 771 F. Supp. 2d 1054 (E.D. Mo. 2011).

<sup>201</sup> *Id.* at 1067.

<sup>202</sup> *Id.* at 1057.

<sup>203</sup> *Id.* at 1064.

<sup>204</sup> *Id.* at 1065.

<sup>205</sup> *Id.* at 1066.

Bancorp's arguments that the Federal Circuit's opinion in *Research Corp.* stands for the proposition that inclusion of hardware elements renders a claim patentable, the district court noted that in *Research Corp.* the process involved improving a visual display in hardware that is integral to the patent.<sup>206</sup> In contrast, the hardware Bancorp relied upon falls within the category of insignificant post-solution activity.<sup>207</sup> Rather than improve the function of the computer, Bancorp's claims use computers to improve administration of separate life insurance policies.<sup>208</sup> Even if they address a need, Bancorp's claims are unpatentable under *Bilski*, *Benson*, and *Flook*.<sup>209</sup>

5. *CLS Bank International v. Alice Corp. Pty. Ltd.*<sup>210</sup>

On March 9, 2011, the District of Columbia District Court ruled that claims directed to a method for exchanging obligations between parties through an intermediary to reduce counter-party risk, as well as claims drawn to the system and a computer program product, failed to recite patent eligible subject matter under § 101.<sup>211</sup> Applying the "machine or transformation" test to the method claims, the district court noted that the single fact that the claims were implemented on a computer does not mean the methods are tied to a particular machine—even though a general purpose computer that has been specifically programmed to perform the steps of a method may no longer be considered a general purpose computer, but instead, a particular machine.<sup>212</sup> Exploring the question of what constitutes a *particular* machine, the district court looked to whether the machine or apparatus imposes meaningful limits on the process itself.<sup>213</sup> Citing the Federal Circuit's pre-*Bilski* decision in *SiRF Technology, Inc. v. International Trade Commission*,<sup>214</sup> the district court stated "a machine meaningfully limits the method when the machine is essential to the operation of the claimed methods."<sup>215</sup> Unlike *SiRF* where the methods to improve a GPS receiver's calculation of position could not be

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<sup>206</sup> *Id.* at 1067.

<sup>207</sup> *Id.*

<sup>208</sup> *Id.*

<sup>209</sup> *Id.*

<sup>210</sup> 768 F. Supp. 2d. 221 (D.D.C. 2011).

<sup>211</sup> *Id.*

<sup>212</sup> *Id.* at 237.

<sup>213</sup> *Id.* at 238.

<sup>214</sup> See *SiRF Tech., Inc. v. Int'l. Trade Comm'n.*, 601 F. 3d 1319, 1333 (Fed. Cir. 2010) (holding that claimed methods for teaching a GPS receiver an improved method to calculate its position were tied to a particular machine, because the methods could not be performed without the machine itself).

<sup>215</sup> *CLS Bank Int'l*, 768 F. Supp. 2d at 239.

performed without the machine itself, the claims asserted by Alice gave no indication that the computers or other devices required to implement the methods are specifically programmed, or that the claims required computers at all.<sup>216</sup> For this reason, the method claims were not patent eligible subject matter under the “machine or transformation” test.<sup>217</sup> The district court went on to conclude that the claimed methods were directed to the abstract idea of employing an intermediary to facilitate simultaneous exchange of obligations in order to minimize risk.<sup>218</sup> This abstract idea, if patented, would preempt the use of an electronic intermediary to guarantee exchanges across an incredible swath of the economic sector.<sup>219</sup> The district court concluded that such claims were not patent eligible subject matter under the Supreme Court’s *Bilski* decision.<sup>220</sup> Turning to the computer system and product claims, the district court concluded that these claims, while drawn to a machine, merely represent an incarnation of the abstract idea on a computer without any further meaningful limitation, and also failed to recite patent eligible subject matter.<sup>221</sup>

6. *Cybersource Corp. v. Retail Decisions, Inc.*<sup>222</sup>

On August 16, 2011, the Federal Circuit affirmed a district court’s finding that claims drawn to a method of verifying the validity of a credit card transaction, as well as “Beauregard” apparatus claims<sup>223</sup> that detect fraudulent transactions by causing one or more processors to carry out similar steps, were not eligible subject matter.<sup>224</sup> Method claim 3 reads, “(i) obtaining information about other transactions that have utilized an Internet address that is identified with the credit card transaction; (ii) constructing a map of credit card numbers based upon the other transactions and; (iii) utilizing the map of credit card numbers to determine if the credit card transaction is valid.”<sup>225</sup> Applying the “machine or transformation” test, the Federal Circuit

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<sup>216</sup> *Id.*

<sup>217</sup> *Id.* at 242.

<sup>218</sup> *Id.* at 243-44.

<sup>219</sup> *Id.* at 246 (noting that the dependent claims, rather than limiting the invention, illustrated how broadly the invention might sweep its monopoly across commerce).

<sup>220</sup> *Id.* at 255.

<sup>221</sup> *Id.* at 252.

<sup>222</sup> 654 F.3d 1366 (Fed. Cir. 2011).

<sup>223</sup> “A Beauregard claim — named after *In re* Beauregard — is a claim to a computer readable medium (e.g., a disk, hard drive, or other data storage device) containing program instructions for a computer to perform a particular process.” *Id.* at 1373 (citation omitted).

<sup>224</sup> *Id.* at 1367 (objection of US Patent and Trademark office withdrawn).

<sup>225</sup> *Id.* at 1370.

noted that the collection and organization of credit card data was insufficient to meet the transformation prong and the plain language of claim 3 did not require a machine.<sup>226</sup> The court also concluded that the claimed process recited “an unpatentable mental process—a subcategory of unpatentable abstract ideas.”<sup>227</sup> The court’s analysis noted that claim 3 was not limited in scope to any particular algorithm and would extend to any method of detecting credit fraud based on relating past transactions to an Internet address, including methods performed entirely by the human mind.<sup>228</sup>

Turning to the plaintiff’s argument that the computer readable medium claim was eligible subject matter because it was drawn to a “manufacture,” the court looked “to the underlying invention for patent-eligibility” and concluded that Cybersource had not met its burden to demonstrate that the claim is truly drawn to a specific computer readable medium, rather than to the underlying method of credit card detection.<sup>229</sup> Noting that the incidental use of a computer readable medium did not impose a meaningful limit on the claim’s scope or perform a significant part in permitting the claimed method to be performed, the court concluded that the basic character of a process claim is not changed by claiming only its performance on a computer or by claiming the process embodied in program instructions on a computer readable medium.<sup>230</sup> The court distinguished Cybersource’s claims from those found to meet the eligibility standard in other cases. Specifically, the court cited to *SiRF Technology, Inc. v. International Trade Commission*, which found that the methods at issue for calculating the position of a GPS receiver could not be performed without the use of a GPS receiver,<sup>231</sup> and *Research Corp. Technologies v. Microsoft Corp.*, which found that the claimed methods for rendering a halftone image by manipulating pixels and a two dimensional mask array and outputting a computer data structure could not be performed entirely in a human’s mind and were eligible subject matter.<sup>232</sup>

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<sup>226</sup> *Id.*

<sup>227</sup> *Id.* at 1371.

<sup>228</sup> *Id.* at 1372.

<sup>229</sup> *Id.* at 1374-75.

<sup>230</sup> *Id.* at 1375.

<sup>231</sup> *SiRF Tech., Inc. v. Int’l Trade Comm’n.*, 601 F.3d 1319, 1332 (Fed. Cir. 2010).

<sup>232</sup> *Research Corp. Techs. v. Microsoft Corp.*, 627 F. 3d 859, 868 (Fed. Cir. 2010).

7. *Dealertrack, Inc. v. Huber*.<sup>233</sup>

Dealertrack sought to expedite car loan applications by eliminating the need for a dealer to fill out multiple bank specific car loan applications for a customer, fax them to different banks, and wait for the bank personnel to enter the faxed data before responding with a loan decision.<sup>234</sup> Dealertrack's automated system allowed a car dealer to fill out a single loan application for a customer and control the order and timing in which the application was sent to the selected banks.<sup>235</sup> The method claims of one of the Dealertrack's patents (the '427 patent) recited a computer aided method of managing a credit application whose steps included (A) receiving application data from a remote application and display device, (B) selectively forwarding the application to a remote funding source terminal device, and (C) forwarding funding decision data from the remote funding terminal devices to the remote application and display devices.<sup>236</sup> The claims also recited alternative steps for selectively forwarding the application simultaneously or sequentially until a positive decision is reached or all funding sources are exhausted.<sup>237</sup>

Applying the machine prong of the "machine or transformation" test, the district court found the claims were not patent eligible under § 101, because the implicated computer was nothing more than a general purpose computer programmed in some unspecified manner—therefore, not a "particular machine" (Dealertrack did not contend the claims effected a transformation).<sup>238</sup> On appeal after the Supreme Court's *Bilski* decision, the Federal Circuit reviewed the question of patent eligible subject matter de novo as a question of law.<sup>239</sup> Recognizing that Dealertrack's claimed method recited processing information through a clearinghouse in much the same way as that claimed in *Bilski*, the Federal Circuit concluded that the steps did not "impose meaningful limits on the claim's scope."<sup>240</sup> The "computer aided" language in the preamble, even if read as a substantive limitation, does not render the claim patent eligible because the claim is silent as to how the computer has any significance to performing the method.

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<sup>233</sup> *Dealertrack, Inc. v. Huber*, --F. 3d --, 2012 WL 164439 (C.A. Fed (Cal.)).

<sup>234</sup> *Id.* at 1.

<sup>235</sup> *Id.*

<sup>236</sup> *Id.* at 14.

<sup>237</sup> *Id.* at 14-15.

<sup>238</sup> *Id.* at 15.

<sup>239</sup> *Id.* at 16 (citing *SiRF Tech., Inc. v. Int'l. Trade Comm.*, 601 F.3d 1319, 1331 (Fed. Cir. 2010)).

<sup>240</sup> *Id.* (quoting *In re Bilski*, 545 F.3d 943, 961-62 (Fed. Cir. 2008)).

Thus, the court noted, “the computer does not play a significant part in permitting the claimed method to be performed,” and the “undefined phrase ‘computer aided’ is no less abstract than the idea of a clearinghouse itself.”<sup>241</sup> The court found Dealertrack’s “computer aided” claim, omitting any level of involvement or detail, to be distinguished from the claims in *Ultramercial*, which recite a practical application with concrete steps requiring an extensive computer interface.<sup>242</sup> The court gave no weight to algorithms disclosed in the specification but not recited in the claims, noting that Dealertrack had not appealed the district court’s claim construction, which did not limit the claims to any particular algorithm.<sup>243</sup> Finally, the court rejected Dealertrack’s arguments that the claims were limited to the car loan application process as precisely the type of field of use limitation held to be insufficient by the Supreme Court in *Bilski*.<sup>244</sup>

8. *Fort Properties, Inc. v. American Master Lease LLC*.<sup>245</sup>

Seeking to exploit a provision in the tax code that allow an owner of property to exchange one property for another of like kind without incurring tax liability under certain conditions,<sup>246</sup> American Master Lease (AML) developed an investment tool in which real estate is aggregated into a portfolio and divided into interests called deedshares for sale to investors, in a manner similar to the sale of stocks.<sup>247</sup> The deedshares could be reaggregated after a predetermined time interval.<sup>248</sup> A district court invalidated AML’s claimed method of creating such a real estate investment instrument, which did not require the use of a computer.<sup>249</sup> The Federal Circuit affirmed,

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<sup>241</sup> *Id.* at 17 (quoting *Cybersource*, 654 F.3d at 1357).

<sup>242</sup> *Id.* at 15-17.

<sup>243</sup> *Id.* at 17. On a claim construction matter concerning another patent in the same case (the ‘841 patent), the court found that to avoid indefiniteness resulting from pure functional claiming, the structure associated with a “processing means . . . for executing a computer program which implements and controls credit application processing and routing” must include the algorithms disclosed in the specification which are necessary to performance of the recited functions. *Id.* at 13. The court also found that, in determining infringement of a means plus function claim where the specification discloses more than one algorithm, an equivalent structure for performing the function must be found in the accused device for at least one, but not necessarily all, of the algorithms disclosed. *Id.*

<sup>244</sup> *Id.* at 17-18.

<sup>245</sup> *Fort Props., Inc. v. American Master Lease LLC*, --F. 3d--, 2012 WL 603969 (C.A. Fed. (Cal.)).

<sup>246</sup> 26 U.S.C. § 1031 (2006).

<sup>247</sup> *Fort Props., Inc.*, --F. 3d--, 2012 WL 603969 at 1.

<sup>248</sup> *Id.*

<sup>249</sup> *Id.* at 2.

rejecting AML's argument that the process was patentable and not an abstract idea because the series of steps occurs in the real world and involves real property and physical deeds signifying real property ownership.<sup>250</sup> Instead, the Federal Circuit found that the patent disclosed an abstract concept, i.e., an investment tool to enable the tax-free exchange of property.<sup>251</sup>

Sustaining the district court's finding of invalidity concerning other claims that did include a computer to generate the plurality of deedshares, the Federal Circuit cited *CyberSource* for the proposition that "the basic character of a process claim drawn to an abstract idea is not changed by claiming only its performance on computers, or by claiming the process embodied on instructions on a computer readable medium."<sup>252</sup> The court distinguished the recitation of a computer in the claims in *Ultramercial* as being drawn to an invention which itself involved advances in computer technology, rather than mere post-solution activity.<sup>253</sup>

9. *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*<sup>254</sup>

On March 20, 2012, the Supreme Court again addressed the patentability of process claims under 35 U.S.C. § 101, reversing two Federal Circuit decisions and finding that the claims did not recite patent eligible subject matter.<sup>255</sup> *Prometheus* does not involve computer technology. However, the Court's opinion offers guidance about how the steps of a process claim affect patentability when the claim involves a law of nature, natural phenomena or abstract idea, which itself is unpatentable even if newly discovered. *Prometheus* was the exclusive licensee of patents that claimed a method of

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<sup>250</sup> *Id.* at 5.

<sup>251</sup> *Id.*

<sup>252</sup> *Id.* at 6 (quoting *CyberSource*, 654 F.3d at 1375).

<sup>253</sup> *Id.* (citing *Ultramercial, LLC v. Hulu, LLC*, 675 F. 3d at 1328).

<sup>254</sup> *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, -- U.S.--, 132 S.Ct. 1289 (2012).

<sup>255</sup> *Id.* Prior to the Supreme Court's decision in *Bilski v. Kappos*, the Federal Circuit, applying the "machine or transformation" test, found that the claims involved the transformation of the human body or blood taken from the body and reversed the district court's determination that the claims were not patentable subject matter because they effectively claimed a natural law. *See Prometheus Laboratories, Inc. v. Mayo Collaborative Serv.*, 581 F.3d 1336, 1345-47 (Fed. Cir. 2009). The Supreme Court granted cert., but after ruling in *Bilski v. Kappos* that the machine or transformation test was not determinative, the Court remanded the case to the Federal Circuit, which reaffirmed its earlier conclusion that the body is transformed by administering the drug, and the blood is transformed by analyzing it to determine metabolite levels. *See* 628 F.3d 1347, 1355-57 (Fed. Cir. 2010).

optimizing therapeutic efficacy for treatment of an immune-mediated gastrointestinal disorder.<sup>256</sup> The method in an exemplary claim included the steps of “administering” a drug providing a metabolite to a subject having the disorder and “determining” the level of the metabolite in the subject having the disorder, wherein a level of metabolite below a certain level indicates the need to increase the amount of the drug subsequently administered to the subject, and a level of metabolite above a certain level indicates a need to decrease the amount of the drug subsequently administered to the subject.<sup>257</sup> As an initial matter, the Court found the relationship itself to be a law of nature, thus not patentable subject matter.<sup>258</sup>

The Court then directed its inquiry to whether the “claims add enough to their statements of the correlations to allow the processes they describe to qualify as patent-eligible processes that *apply* natural laws,”<sup>259</sup> noting that a process involving a law of nature is not patentable unless the process has additional features that provide practical assurance that the process is more than a drafting effort designed to monopolize a law of nature itself.<sup>260</sup> According to the Court, one must do more than simply instruct a user to use the principle; one must explain how the principle can be implemented in an inventive way.<sup>261</sup> This led the Court to consider whether the steps involve more than a conventional application of the principle.

In ruling against patentability based on the “administering” and “determining” steps, the Court cited precedent all the way back to its decision in the Morse telegraph case, which invalidated a claim drawn to the use of motive power of electric or galvanic current for making or printing intelligible characters,<sup>262</sup> to “further support [] the view that simply appending conventional steps, specified at a high level of generality, to laws of nature, natural phenomena, and abstract ideas cannot make those laws, phenomena, and ideas patentable.”<sup>263</sup> However, the Court specifically stated that it was not deciding whether

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<sup>256</sup> Mayo Collaborative Servs. v. Prometheus Labs., Inc., -- U.S.--, 132 S.Ct. 1289, 1295-96 (2012).

<sup>257</sup> *Id.*

<sup>258</sup> *Id.* at 1296-97.

<sup>259</sup> *Id.* at 1297.

<sup>260</sup> *Id.*

<sup>261</sup> *Id.* at 1300 (citing the English case Neilson v. Harford, Webster’s Patent Cases 295, 371(1841), in which the patentee, recognizing the natural principle that introducing hot air into a furnace promotes ignition better than introducing cold air, included in his claim the unconventional step of interposing an externally heated receptacle between the blower and the furnace).

<sup>262</sup> O’Reilly v. Morse, 15 U.S. 62 (1853).

<sup>263</sup> Mayo Collaborative Servs. v. Prometheus Labs., Inc., 132 S.Ct at 1300.

claims with less conventional steps would be invalid.<sup>264</sup> Recognizing that the § 101 patent eligibility and § 102 novelty inquiries might at times overlap, the Court declined to shift the inquiry entirely to novelty as too uncertain, as that would require treating the newly discovered principle as if it were prior art, something not provided for in the current statute, and could render all inventions unpatentable, since underlying principles, once known, make their implementation obvious.<sup>265</sup> Reversing the Federal Circuit's application of the "machine or transformation" test, the Court noted that the test does not trump the law of nature exclusion for patent eligible subject matter.<sup>266</sup>

In addition, the "administering" step is irrelevant to transforming the human body because it simply helps to pick out the group of individuals likely interested in applying the law of nature (treating physicians); the "determining" step could be satisfied without transforming the blood should science develop a different system for determining metabolite levels without such a transformation.<sup>267</sup>

## E. Current USPTO Practice

### 1. Statutory Subject Matter Examination Guidelines

On July 27, 2010, the USPTO published in the Federal Register "Interim Guidance for Determining Subject Matter Eligibility for Process Claims in View of *Bilski v. Kappos*" (July 2010 *Interim Bilski Guidance*)<sup>268</sup> for use by USPTO personnel in determining subject matter eligibility under 35 U.S.C. § 101. A memo of the same date to the Patent Examining Corps stated that this *Interim Bilski Guidance* is a "supplement to the previously issued Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 U.S.C. § 101 dated August 24, 2009 (August 2009 *Interim Instructions*)"<sup>269</sup>

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<sup>264</sup> *Id.* at 1302.

<sup>265</sup> *Id.* at 1304.

<sup>266</sup> *Id.* at 1303.

<sup>267</sup> *Id.*

<sup>268</sup> See Interim Guidance for Determining Subject Matter Eligibility for Process Claims in View of *Bilski v. Kappos*, 75 Fed. Reg. 43,922 (July 27, 2010) [hereinafter July 2010 Interim Bilski Guidance], available at [http://www.uspto.gov/patents/law/exam/bilski\\_guidance\\_27jul2010.pdf](http://www.uspto.gov/patents/law/exam/bilski_guidance_27jul2010.pdf). See also, Memorandum from Andrew Hirshfeld, Associate Director for Patent Examination Policy to Patent Examining Corps, Supreme Court Decision in *Mayo Collaborative Servs. v. Prometheus Labs., Inc.* (March 21, 2012), [http://www.uspto.gov/patents/law/exam/mayo\\_prelim\\_guidance.pdf](http://www.uspto.gov/patents/law/exam/mayo_prelim_guidance.pdf) — Instructing examiners to continue to apply the July 2010 Interim Bilski Guidance following the *Mayo* decision.

<sup>269</sup> See Memorandum from Andrew H. Hirshfeld, Acting Deputy Comm'r for Patent Examination Policy to TC Dirs., Interim Examination Instructions for

and that the August 2009 *Interim Instructions* are to be consulted for determining patent eligibility under 35 U.S.C. § 101 of machine, composition and manufacture claims. It is important to note that the August 2009 *Interim Instructions* “supersede previous guidance on subject matter eligibility that conflicts with the Instructions, including MPEP 2106(IV), 2106.01 and 2106.02.”<sup>270</sup> Thus, while these MPEP sections are still operative, the extent to which they actually apply is modified by the August 2009 *Interim Instructions*. The USPTO now addresses method claims in accordance with the July 2010 *Interim Bilski Guidance*. As expected, there is considerable overlap in the approaches taken in each of these sources.

*a. The July 2010 Interim Bilski Guidance*

The July 2010 *Interim Bilski Guidance* identifies a non-exhaustive list of factors Examiners are to consider in determining whether a method claim is directed to an abstract idea and therefore is not eligible for patenting.<sup>271</sup> The factors are considered when analyzing the claim as a whole. Although the analysis need not be taken further than necessary to conclude that a claim contains patent eligible subject matter, where patent eligibility is not easily determined, Examiners are directed to consider every relevant factor.<sup>272</sup> No one factor alone is conclusive, the weight each factor receives varies based on the facts of the application and other factors may be more pertinent depending upon the technology of the claim.<sup>273</sup> Generally, factors favoring patent eligibility satisfy the criteria of the Federal Circuit’s “machine or transformation” test or provide evidence that an abstract idea is being practically applied.<sup>274</sup> Factors that weigh against patent eligibility neither satisfy the “machine or transformation” test nor provide evidence that an abstract idea has been practically applied.<sup>275</sup> Recognizing that abstract ideas were not patentable even before the *Bilski* decision, the focus of the July 2010 *Interim Bilski Guidance* is to assist Examiners in determining whether a claimed method that fails the “machine or transformation” test is still patent eligible (i.e., is not an abstract idea) or whether a claimed method which does pass the “machine or transformation” test is patent ineligible (i.e., it is an

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Evaluating Subject Matter Eligibility Under 35 U.S.C. § 101 (August 24, 2009), available at [http://www.uspto.gov/patents/law/comments/2009-08-25\\_interim\\_101\\_instructions.pdf](http://www.uspto.gov/patents/law/comments/2009-08-25_interim_101_instructions.pdf).

<sup>270</sup> *Id.*

<sup>271</sup> July 2010 Interim Bilski Guidance, at 43,923.

<sup>272</sup> *Id.* at 43,927.

<sup>273</sup> *Id.*

<sup>274</sup> *Id.*

<sup>275</sup> *Id.*

abstract idea).<sup>276</sup>

The July 2010 *Interim Bilski Guidance* announces four factors an Examiner should consider in determining patent eligibility.<sup>277</sup>

(1). The first factor is whether the method involves or is executed by a particular machine or apparatus.<sup>278</sup> If so, the claims are less likely to be drawn to an abstract idea. Where a machine or apparatus is recited, the July 2010 *Interim Bilski Guidance* further directs the Examiner to consider the particularity or generality of the machine or apparatus, since the incorporation of a particular machine, as opposed to a machine in general, weighs toward patentability.<sup>279</sup> The July 2010 *Interim Bilski Guidance* also directs the Examiner to consider whether the machine or apparatus implements the steps of the method, because the integral use of the machine to perform the method weighs toward patentability, whereas patent eligibility is not indicated when the machine is merely an object on which the method operates.<sup>280</sup> Another consideration applicable to the first factor concerns the machine's involvement in extra-solution activity or the field of use, since use of a machine that contributes only nominally or insignificantly to the execution of the claimed method (e.g., a data gathering step or a field of use limitation) weighs against patent eligibility.<sup>281</sup> Thus, in analyzing whether the method involves or is executed by a machine, under the July 2010 *Interim Bilski Guidance* the Examiner should consider the extent to which (or how) the machine limits execution of the claimed method steps.

(2). The second factor identified in the July 2010 *Interim Bilski Guidance* is whether performance of the method results in or otherwise involves a transformation of a particular article.<sup>282</sup> Where such a transformation exists, the claims are more likely to recite patent eligible subject matter. In applying this factor, the July 2010 *Interim Bilski Guidance* notes that a more particular transformation weighs toward patent eligible subject matter.<sup>283</sup> Similarly, the degree to which a transformation applies to a particular article is to be considered, because a transformation applied to a generically recited article weighs against patent eligibility.<sup>284</sup> The July 2010 *Interim Bilski Guidance* also directs the Examiner to consider the nature of the transformation,

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<sup>276</sup> *Id.* at 43,925.

<sup>277</sup> *Id.* at 43,925-26.

<sup>278</sup> *Id.* at 43,925.

<sup>279</sup> *Id.*

<sup>280</sup> *Id.*

<sup>281</sup> *Id.*

<sup>282</sup> *Id.*

<sup>283</sup> *Id.*

<sup>284</sup> *Id.*

since the more extensive the transformation (such as a change in the use or function of the article), the more likely the claim is to recite patent eligible subject matter.<sup>285</sup> Another aspect of the analysis of this factor is the nature of the article transformed.<sup>286</sup> For example, transformation of an object weighs toward patent eligibility, while transformation of a concept or contractual obligation weighs against patent eligibility. The July 2010 *Interim Bilski Guidance* also directs the Examiner to consider the extent to which the transformation imposes meaningful limits on the execution of the claimed method steps.<sup>287</sup> A transformation that only contributes nominally or insignificantly to the execution of the method weighs against patent eligible subject matter.

(3). The third factor of the July 2010 *Interim Bilski Guidance* directs the Examiner to consider whether the performance of the method involves an application of a law of nature, even in the absence of a particular machine, apparatus, or transformation, since the claims are less likely to be drawn to an abstract idea where such an application exists.<sup>288</sup> This factor weighs against an application that applies across many fields of endeavor, such as where a claim recites an effect of a law of nature or claims every mode of accomplishing that effect. This factor also weighs against a claimed method solely involving subjective determinations, such as a way of thinking about or reacting to a law of nature. Finally, as with the other factors, this factor weighs against a claim where the law of nature applies only nominally or insignificantly to the execution of the claimed method and fails to meaningfully limit execution of the claimed method.

(4). The July 2010 *Interim Bilski Guidance* also directs the Examiner to consider whether a general concept, such as a principle, theory, plan or scheme, is involved in executing the steps of the method, since the presence of such a concept in a claim suggests that the claim could be drawn to an abstract idea.<sup>289</sup> Among the considerations weighing against patent eligibility in analyzing this factor are (i) whether the claim would effectively grant a monopoly on the concept, (ii) whether the claim is so abstract it would cover both known and unknown uses of the concept and be performed through any existing or future devised machinery, or even without any apparatus, and (iii) the extent to which the claim would cover all possible solutions to any particular problem, such that it describes the

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<sup>285</sup> *Id.*

<sup>286</sup> *Id.*

<sup>287</sup> *Id.*

<sup>288</sup> *Id.*

<sup>289</sup> *Id.*

problem rather than offers a particular solution.<sup>290</sup> Another factor in the analysis is the extent to which the concept is disembodied or instantiated in some tangible way.<sup>291</sup> Instantiation weighs in favor of eligibility, although limiting a claim to a field of use or adding token post-solution components does not contribute to patent eligibility.<sup>292</sup> In addition, steps that are observable and verifiable rather than subjective or imperceptible are more likely to include patent eligible subject matter.<sup>293</sup> The July 2010 *Interim Bilski Guidance* identifies some general concepts which are not likely to involve patent eligible subject matter such as: basic economic practices (hedging, marketing, financial transactions), basic legal theories (contracts, dispute resolution, fields of law), mathematical concepts (algorithms, spatial relationships geometry), mental activity (forming a judgment, observation, evaluation), interpersonal relationships (conversing, dating), teaching concepts (memorization, repetition), human behavior (exercising, wearing clothing, following rules or instructions), and instructing how business should be conducted.<sup>294</sup>

In addition to the formal notice in the Federal Register, the USPTO also issued a “Quick Reference Sheet” to the Examiners.

*b. The August 2009 Interim Examination Instructions*

The July 2010 *Interim Bilski Guidance* also directs Examiners to apply the USPTO’s August 2009 Interim Examination Instructions For Evaluating Subject Matter Eligibility Under 35 U.S.C. § 101 (August 2009 *Interim Instructions*) in non-method claims. These guidelines first instruct the Examiners to apply the “utility” guidelines in MPEP § 2107 to evaluate whether the claims and supporting disclosure have an asserted and well established utility that is specific, substantial and credible, commensurate with the broadest interpretation of the claimed invention in light of the specification as interpreted by an ordinarily skilled artisan.<sup>295</sup>

Turning to subject matter eligibility, the August 2009 *Interim Instructions* now applicable to non-method claims, instruct Examiners to conduct a two-step analysis:<sup>296</sup>

*Step 1:* Is the claimed invention directed to one of the four

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<sup>290</sup> *Id.* at 43,925-26.

<sup>291</sup> *Id.* at 43,926.

<sup>292</sup> *Id.*

<sup>293</sup> *Id.*

<sup>294</sup> *Id.*

<sup>295</sup> Memorandum from Andrew H. Hirshfeld, *supra* note 269.

<sup>296</sup> *Id.* at 1.

statutory categories<sup>297</sup>, i.e.

(i) process—an act or series of steps tied to a particular machine or to transform a particular article – process or method claims are now analyzed under the July 2010 *Interim Bilski Guidance*,

(ii) machine—a concrete thing consisting of parts, devices or a combination of devices,

(iii) manufacture—an article produced from raw material or prepared materials by giving to these materials new forms, qualities, properties of combinations,

(iv) composition of matter—all compositions of two or more substances and all composite articles ; and

*Step 2:* Is the claim wholly directed to subject matter encompassing a judicially recognized exception such as abstract ideas, mental process, laws of nature and natural phenomena, or other judicially recognized non-statutory categories such as physical phenomena, scientific principles, systems that depend on human intelligence alone, disembodied concepts, and disembodied mathematical algorithms and formulas?<sup>298</sup> Or is the claim directed to a particular application of a judicial exception, which may be statutory? Some examples of claims that are not directed to statutory categories include:

- (i) transitory forms of signal transmission,
- (ii) naturally occurring phenomena,
- (iii) a human per se,
- (iv) a legal contractual agreement between two parties,
- (v) a game defined by a set of rules,
- (vi) a computer program per se, and
- (vii) a company.<sup>299</sup>

The August 2009 *Interim Instructions* note that a claim drawn to both statutory and non-statutory subject matter, under the broadest reasonable interpretation of the claim in view of the specification, includes non-statutory subject matter and therefore should be rejected as non-statutory under 35 U.S.C. § 101.<sup>300</sup> However, if a judicial exception is recited in a claim, it must be determined if the judicially excepted subject matter has been practically applied in a product.

Eligible machines, manufactures, and compositions of matter are non-naturally occurring products typically formed of practical elements or parts that embody a particular or specific tangible practical

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<sup>297</sup> *Id.* at 1-2.

<sup>298</sup> *Id.* at 2.

<sup>299</sup> *Id.*

<sup>300</sup> *Id.*

application of the invention.<sup>301</sup> An idea that is applied to a structure is no longer abstract and a law of nature or natural phenomena that is practically applied to a structure is limited to that particular application of the concept. Once a practical application has been established, preemption must be evaluated to determine whether the claim impermissibly covers substantially all practical applications of the judicially excepted subject matter. If so, the claim is not patent eligible. If the claim covers only the practical application of the judicially excepted subject matter, it is patent eligible. Descriptive material should be evaluated to determine if the material has a functional relationship to the underlying structure in order to determine whether it creates a patentable distinction over the prior art or is merely non-functional descriptive material that creates no patentable distinction. As an example, the August 2009 *Interim Instructions* describes printed matter on an object or mere data, such as music, stored in a memory as not patentable subject matter.<sup>302</sup> On the other hand, a printed circuit board or computer programmed with executable instructions as a base structure combined with functional material that could create a patentable distinction over the prior art may be eligible subject matter.<sup>303</sup>

The August 2009 *Interim Instructions* further instruct Examiners to: (1) determine the meaning of the claim as a whole using the “broadest reasonable interpretation” standard, (2) determine if the claim falls in one of the statutory categories of invention, and (3) “determine if the claim as a whole is directed to a particular practical application of a judicial exception . . . or a judicial exception in its entirety.”<sup>304</sup> When no judicially excepted subject matter is present in a claim, and the claim is within one of the statutory categories, it is patent eligible.<sup>305</sup> If a judicially recognized exception is present, the Examiner must “determine if the claim recites structural limitations to qualify as a practical application of the judicial exception.”<sup>306</sup> If the claim fails to recite a tangible embodiment, it is not patent eligible.<sup>307</sup> If the claim does recite a tangible embodiment, the Examiner then considers whether the claim covers “substantially all practical uses of the judicial exception” (preemption).<sup>308</sup> If the claim is limited to a

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<sup>301</sup> *Id.* at 3.

<sup>302</sup> *Id.* at 4.

<sup>303</sup> *Id.*

<sup>304</sup> *Id.* at 6-7.

<sup>305</sup> *Id.* at 7.

<sup>306</sup> *Id.*

<sup>307</sup> *Id.*

<sup>308</sup> *Id.*

particular practical application, it is directed to statutory subject matter and is eligible.<sup>309</sup> If substantially all uses of the judicial exception are covered, the claim is directed to non-statutory subject matter and the Examiner is expected to reject it.<sup>310</sup>

*c. The Manual of Patent Examining Procedure (MPEP)*

An understanding of the MPEP in view of the July 2010 *Interim Bilski Guidance* and the August 2009 *Interim Instructions* gives practitioners insight into how Examiners will evaluate claims. Practitioners should note, however, that the guidelines and the MPEP are just that—guidelines. Neither the July 2010 *Interim Bilski Guidelines*, nor the August 2009 *Interim Instructions*, nor the MPEP, has the force of law and, where appropriate, practitioners should consider creative approaches to drafting claims outside these guidelines in order to obtain appropriate patent protection consistent with current jurisprudence.

As the MPEP indicates, the first step an Examiner takes is determining what the applicant has invented.<sup>311</sup> According to the MPEP, the Examiner seeks to exclude from patent protection, claims that are drawn from ideas, laws of nature, and natural phenomena, or claims that preempt such categories.<sup>312</sup> The MPEP instructs the Examiner to first determine whether the claims fall within one of the statutory categories in 35 U.S.C. § 101, i.e., process, machine, manufacture, or composition of matter.<sup>313</sup> Where an invention is a combination of devices that appear to be directed to a machine and one or more steps performed by the machine, the claim is considered an apparatus claim including functional limitations.<sup>314</sup> Because the burden is on the USPTO to set forth a prima facie case of unpatentability,<sup>315</sup> the Examiner must provide an explanation as to why he or she considers it more likely than not that the claim falls outside the statutory categories in order to shift the burden of asserting patentability to the applicant.<sup>316</sup>

Assuming there is adequate written description in the specification, the claims can be amended to recite subject matter within one of the

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<sup>309</sup> *Id.*

<sup>310</sup> *Id.*

<sup>311</sup> U.S. PATENT & TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 2106(II) (8th ed. Rev. 8, July 2010) [hereinafter MPEP (8th ed. Rev. 8, July 2010)].

<sup>312</sup> *Id.* at § 2106(IV)(A).

<sup>313</sup> *Id.* at § 2106(IV)(B).

<sup>314</sup> *Id.*

<sup>315</sup> *Id.*

<sup>316</sup> *Id.*

statutory categories.

Where the claim falls within one of the statutory categories enumerated in 35 U.S.C. § 101, the MPEP directs the Examiner to determine if the claim falls within one of the judicial exceptions to patentability—laws of nature, natural phenomena, and abstract ideas.<sup>317</sup> The MPEP recognizes that while claims drawn solely to such features are unpatentable, practical applications of such features, e.g., methods and products employing abstract ideas, natural phenomena, and laws of nature, may well be patentable.<sup>318</sup>

The MPEP analysis of such practical applications proceeds along two paths. First, if the claimed invention transforms an article or physical object to a different state or thing, the claim is statutory under 35 U.S.C. § 101 and the Examiner moves on to other inquiries concerning patentability, such as inquiries concerning the adequacy of the description under 35 U.S.C. § 112 and/or prior art inquiries under 35 U.S.C. §§ 102, 103.<sup>319</sup> Note, however, that a transformation is no longer sufficient to conclude that the claim recites patent eligible subject matter.<sup>320</sup>

Utility is also required. “The USPTO’s official interpretation of the utility requirement provides that the utility of an invention has to be (i) specific, (ii) substantial and (iii) credible.”<sup>321</sup> Because the focus is on the claim, “statements in the specification describing a practical application may not be sufficient to satisfy the requirements” under 35 U.S.C. § 101.<sup>322</sup> In addition, under the guidelines, “a claim that can be read so broadly as to include statutory and nonstatutory subject matter must be amended to limit the claim to a practical application.”<sup>323</sup>

Consistent with the July 2010 *Interim Bilski Guidance* and the August 2009 *Interim Instructions*, the MPEP next instructs the Examiner to evaluate whether the claim preempts a judicial exception under 35 U.S.C. § 101.<sup>324</sup> Recall that the Examiner first determines if the claim covers a judicial exception or practical application of a judicial exception, and then evaluates whether the claimed invention is a practical application of a judicial exception. Here, the Examiner considers a somewhat different issue, i.e. preemption. Citing the Supreme Court, the MPEP notes, “[o]ne may not patent a process that

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<sup>317</sup> *Id.* at § 2106(IV)(C).

<sup>318</sup> *Id.* at § 2106(IV)(C)(1).

<sup>319</sup> *Id.* at § 2106(IV)(C)(2)(1), (V)(B), (VI), (VII).

<sup>320</sup> *Id.* at § 2106(IV)(C)(2)(1), (2).

<sup>321</sup> *Id.* at § 2106(IV)(C)(2)(2)(a).

<sup>322</sup> *Id.*

<sup>323</sup> *Id.*

<sup>324</sup> *Id.* at § 2106(IV)(C)(3).

comprises every ‘substantial practical application’ of an abstract idea, because such a patent ‘in practical effect would be a patent on the [abstract idea] itself.’”<sup>325</sup> Should the Examiner conclude that the claim preempts a 35 U.S.C. § 101 exception, the Examiner must “identify the abstraction, law of nature, or natural phenomenon and explain why the claim covers every substantial application thereof.”<sup>326</sup>

## 2. *Computer Programs and Data Structures*

MPEP § 2106.01 distinguishes “functional descriptive material,” such as “data structures and computer programs which impart functionality when employed as a computer component,” from “non-functional descriptive material,” such as music, literary works, or other arrangements of data.<sup>327</sup> Computer program listings per se and data structures not claimed as embodied in computer readable media are not statutory under 35 U.S.C. § 101 because they are not physical things and are not capable of being executed to cause functional change in a computer.<sup>328</sup> However, a computer readable medium encoded with a data structure can define structural and functional interrelationships between the data structure and the computer hardware and software components, which permit realization of the data structure’s functionality.<sup>329</sup> A computer readable medium encoded with a computer program can achieve a similar result. Thus, both functionally descriptive material encoded as data structures on computer readable media and computer programs encoded on computer readable media may be statutory subject matter.<sup>330</sup> When a computer program is recited in conjunction with a physical structure, such as a memory, the Examiner treats that claim as a product claim.<sup>331</sup>

Descriptive material such as music and photographs, which have no functional interrelationship with a computer, is not a process, machine, manufacture, or composition of matter and, by itself, is non-statutory.<sup>332</sup> Such non-functional descriptive material may be combined with functional descriptive material on a computer readable medium to provide the necessary functional and structural interrelationship to satisfy the requirements of 35 USC § 101.<sup>333</sup>

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<sup>325</sup> *Id.* (referencing *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972)).

<sup>326</sup> *Id.* at § 2106(IV)(C)(3).

<sup>327</sup> *Id.* at § 2106.01.

<sup>328</sup> MPEP (8th ed. Rev. 8, July 2010) § 2106.01(I).

<sup>329</sup> *Id.*

<sup>330</sup> *Id.*

<sup>331</sup> *Id.*

<sup>332</sup> *Id.* at § 2106.01(II).

<sup>333</sup> *Id.*

This portion of the MPEP should be read in context with July 2010 *Interim Bilski Guidance* and the August 2009 *Interim Instructions* which emphasize structural limitations such that an idea tangibly applied to a structure is no longer abstract. As the August 2009 *Interim Instructions* notes, “a claim to a non-transitory, tangible computer readable storage medium *per se* that possesses structural limitations under the broadest reasonable interpretation standard . . . would be patent eligible subject matter.”<sup>334</sup>

Having evaluated whether the claim recites statutory subject matter under 35 USC §101, the Examiner evaluates the patentability of the claim under the remaining principles of the patent statute, such as compliance with the description requirements of 35 USC §112 and recitation of subject matter that is patentable over the prior art under 35 USC §§ 102 and 103.

## F. The Supreme Court’s *KSR* Decision and Obviousness

On April 30, 2007 the United States Supreme Court handed down an important decision on the scope of obviousness under 35 U.S.C. § 103.<sup>335</sup> Although the case concerned the placement of an electronic control, (i.e., a throttle control) on a vehicle control pedal, language in the decision could have an affect on the scope afforded claims drawn to computer implemented inventions, such as automated systems and business method patents.<sup>336</sup>

### 1. *KSR*’s Implications for Computer Hardware and Software Claims

Applying a “teaching, suggestion, motivation test” (TSM test) the Federal Circuit had reversed a district court’s finding that a claimed vehicle control pedal was obvious.<sup>337</sup> The Supreme Court, citing Federal Circuit case law<sup>338</sup> characterized the TSM test as one “under which a patent claim is only proved obvious if . . . the prior art . . . the nature of the problem, or the knowledge of a person having ordinary skill in the art” reveals some motivation or suggestion to combine the prior art teachings.<sup>339</sup> Acknowledging that the idea underlying the TSM test is not necessarily inconsistent with the expansive and flexible functional approach the Supreme Court has taken toward

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<sup>334</sup> Memorandum from Andrew H. Hirshfeld, *supra* note 269.

<sup>335</sup> See *KSR Int’l. Co. v. Teleflex, Inc.*, 550 U.S. 398, 398 (2007).

<sup>336</sup> *Id.* at 406.

<sup>337</sup> *Id.* at 413.

<sup>338</sup> *Al-Site Corp. v. VSI Int’l., Inc.*, 174 F.3d 1308, 1323-24 (Fed. Cir. 1999).

<sup>339</sup> *KSR Int’l Co.*, 550 U.S. at 407.

obviousness,<sup>340</sup> the Court found the Federal Circuit's application of the TSM test as a rigid rule that limits the obviousness inquiry to be incompatible with its precedents.<sup>341</sup>

The Supreme Court agreed that a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.<sup>342</sup> However, the Court also stated that its precedents make clear that the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, because a court can take account of the inferences and creative steps a person of ordinary skill in the art would employ.<sup>343</sup> Often it will be necessary to look to interrelated teachings of multiple patents, the effects of demands known to the design community or known in the marketplace and the background knowledge possessed by a person having ordinary skill in the art to determine whether there was an apparent reason to combine the known elements in the fashion of the patent claims.<sup>344</sup>

Claims drawn to computer implementations of business practices are likely to receive scrutiny, given the Court's statement that the "combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results."<sup>345</sup> Another reason to expect scrutiny of claims drawn to computer implemented inventions, such as Internet implementations of business practices, is the Court's comment that "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability."<sup>346</sup> Noting that in many fields there is little discussion of obvious techniques or combinations, and that market demand, rather than scientific literature may drive design trends, the Court commented that granting patent protection to advances that would occur in the ordinary course without real innovation retards progress.<sup>347</sup> Expanding the obviousness inquiry from scientific literature to market forces seems likely to affect the analysis of whether claims drawn to business methods and Internet implementations are merely advances in the ordinary course.

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<sup>340</sup> *Id.* at 419.

<sup>341</sup> *Id.*

<sup>342</sup> *Id.* at 418.

<sup>343</sup> *Id.*

<sup>344</sup> *Id.*

<sup>345</sup> *Id.* at 416.

<sup>346</sup> *Id.* at 417.

<sup>347</sup> *Id.* at 419.

The Court also noted that in some cases a patent claim may be proved obvious by showing the combination of elements was obvious to try.<sup>348</sup> The Court noted that a “person of ordinary skill is also a person of ordinary creativity.”<sup>349</sup> Where a design need or market pressure to solve a problem exists and there are a finite number of identified, predictable solutions, an ordinarily skilled person has good reason to pursue the known options within his grasp.<sup>350</sup> Because achieving the anticipated success is not the result of innovation, but of ordinary skill and common sense, the fact that the combination was obvious to try might show it was obvious under § 103.<sup>351</sup>

In view of the Court’s comments, the patentability of computer-implemented inventions may depend upon demonstrating innovation beyond merely migrating well-known techniques to an automated system or business practices to the Internet. Computer implemented inventions are likely to face scrutiny as to whether they constitute real innovation producing unexpected results or, instead, are mere advances in the ordinary course.

## 2. *Obviousness After KSR*

### *a. Leapfrog Enterprises, Inc. v. Fisher-Price, Inc.*

On May 9, 2007, in its first obviousness ruling after *KSR*, the Federal Circuit sustained a district court’s finding that a claim drawn to an interactive learning device with a processor, a memory and a reader, was obvious over the combination of a prior art electro-mechanical learning device and another device using a processor and a memory.<sup>352</sup> Neither prior art device contained the claimed reader, which identified the book inserted into the claimed device.<sup>353</sup> In its decision, the court noted that accommodating a prior art mechanical device to modern electronics would have been reasonably obvious to one of ordinary skill in designing children’s learning devices and that applying modern techniques to older mechanical devices has been commonplace for years.<sup>354</sup>

The prior art electro-mechanical device (Bevan) used a phonograph record and an electric motor actuated by depressing uniquely shaped puzzle pieces to cause a phonograph needle to move

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<sup>348</sup> *Id.* at 421.

<sup>349</sup> *Id.*

<sup>350</sup> *Id.*

<sup>351</sup> *Id.*

<sup>352</sup> *Leapfrog Enter., Inc. v. Fisher-Price, Inc.*, 485 F. 3d 1157 (Fed. Cir. 2007).

<sup>353</sup> *Id.* at 1162.

<sup>354</sup> *Id.* at 1161.

to a specific place on the record to play a sound corresponding to a letter.<sup>355</sup> The court found that Bevan's electromechanical device taught an apparatus that achieves the goals of the claimed invention, i.e., associating letters with their sounds and encouraging children to sound out words phonetically.<sup>356</sup>

The second piece of prior art ("SSR") was a learning toy, which produced the sound of a word's first letter and the remaining portion of the word, instead of each individual letter.<sup>357</sup> The SSR device had a speaker, a memory and a processor, which determined the identity of the book and the page from the locations of triangles and stars on the book's pages when depressed by the user.<sup>358</sup> The court concluded that SSR provided a road map to one of ordinary skill desiring to produce an electronic based phonics learning tool for children.<sup>359</sup> Thus, the court reasoned that the district court's conclusion that the one of ordinary skill could have utilized the electronics of SSR with the operational method taught by Bevan to allow a child to press each letter of a word to hear the corresponding sound was not clear error.<sup>360</sup>

Turning to the reader, the court determined that there was ample evidence in the record that readers were known in the art at the time of the invention and, citing *KSR*, noted that Leapfrog failed to present any evidence that including a reader in this type of device was uniquely challenging or difficult for one of ordinary skill.<sup>361</sup>

The court also found that notwithstanding the evidence of commercial success, praise and long-felt need, the strength of the prima facie obviousness showing was such that these secondary considerations could not overcome the district court's finding of obviousness.<sup>362</sup>

*b. Muniauction, Inc. v. Thomson Corp.*<sup>363</sup>

*Muniauction, Inc. v. Thomson Corp.* concerned a patent directed to electronic methods for conducting original issuer auctions of financial instruments. The Federal Circuit concluded that certain claims differed from the prior art only in their use of a prior art web browser.<sup>364</sup> Applying the reasoning in *KSR*, the court focused on

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<sup>355</sup> *Id.*

<sup>356</sup> *Id.*

<sup>357</sup> *Id.*

<sup>358</sup> *Id.*

<sup>359</sup> *Id.* at 1162.

<sup>360</sup> *Id.*

<sup>361</sup> *Id.*

<sup>362</sup> *Id.*

<sup>363</sup> *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318 (Fed. Cir. 2008).

<sup>364</sup> *Id.* at 1325-28.

whether the improvement is more than the predictable use of prior art elements according to their established functions and concluded that the claims were not valid.<sup>365</sup> Citing its reasoning in *Leapfrog*, the court concluded that the record in *Muniauction* demonstrated that adapting existing electronic processes to incorporate modern internet and web browser technology was commonplace at the time the patent application was filed.<sup>366</sup>

c. *Asyst Technologies v. Emtrak, Inc.*<sup>367</sup>

*Asyst Technologies v. Emtrak, Inc.* concerned a system for tracking articles passing through processing stations.<sup>368</sup> The patented invention's use of a multiplexer to communicate among the article processing stations was the primary distinction over the prior art systems, which used a bus to communicate among article processing stations.<sup>369</sup> The court cited *KSR* for the proposition that replacing the prior art bus with a multiplexer is little more than "the simple substitution of one known element for another" because the evidence showed that the choice between the two devices was a familiar one based on well-known considerations.<sup>370</sup>

d. *Perfect Web Technologies, Inc. v. Infousa, Inc.*<sup>371</sup>

*Perfect Web Technologies, Inc. v. Infousa, Inc.* concerned a system that compared successfully delivered e-mail messages against a predetermined desired quantity and repeated the steps of selecting and e-mailing customers until the desired number of successful deliveries had been achieved.<sup>372</sup> Since the other steps were found in the prior art, at issue was whether the repetition step was obvious to an e-mail marketer of ordinary skill. In this case, the court delved into what constitutes "common sense" under *KSR*.<sup>373</sup> The Federal Circuit noted that, although the obviousness analysis under *KSR* should "take account of the inferences and creative steps that a person of ordinary skill in the art would employ," the Supreme Court did not relax the requirement that "to facilitate review, this analysis should be made

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<sup>365</sup> *Id.*

<sup>366</sup> *Id.* at 1326-27.

<sup>367</sup> *Asyst Techs., Inc. v. Emtrak, Inc.*, 544 F.3d 1310 (Fed. Cir. 2008).

<sup>368</sup> *Id.* at 1312.

<sup>369</sup> *Id.* at 1314.

<sup>370</sup> *Id.* at 1315.

<sup>371</sup> *Perfect Web Techs., Inc. v. Infousa, Inc.*, 587 F.3d 1324 (Fed. Cir. 2009).

<sup>372</sup> *Id.* at 1326.

<sup>373</sup> *Id.* at 1328-31.

explicit.”<sup>374</sup> The Federal Circuit concluded that the district court properly based its “common sense” reasoning concerning repetition of the steps on record evidence.<sup>375</sup> The Federal Circuit noted the district court’s conclusion that until success in delivering the requisite number of e-mails is achieved there is little else the marketer could do but try again, as well as testimony that if initial delivery fell short of the desired number, the only options are to stop or to find more e-mail addresses.<sup>376</sup> The court also noted that simple logic suggests that sending messages to new addresses is more likely to produce successful deliveries than sending messages to addresses that have already failed and that there was no evidence of any unexpected results and that the predictable result of repetition is that more e-mail messages reach more recipients.<sup>377</sup> Citing *KSR*, the court noted that where trying a limited number of solutions leads to anticipated success, it is likely the product not of innovation, but of ordinary skill and common sense.<sup>378</sup>

### G. Product and Method of Use Claims

A single invention may support both product and process claims.<sup>379</sup> Apparatus claims recite the structure of the computer invention.<sup>380</sup> In contrast, method claims recite a series of steps for carrying out a process.<sup>381</sup> For example, a claim could recite a method of transmitting data comprising a programmed series of steps. Method claims can also recite a process for using an invention. Such a claim could recite a method of applying a signal to an external device comprising a series of steps. A computer invention can also claim a processor comprising stored indicia encoded to perform a series of steps. In this context, the claim is drawn to a computer product having functionally descriptive material stored thereon. As discussed above, such a claim can be statutory under 35 U.S.C. § 101. Such claims are also definite under 35 U.S.C. § 112 because they provide the public adequate notice of the scope of the claim.

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<sup>374</sup> *Id.* at 1330 (citing *KSR Int’l. Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007)).

<sup>375</sup> *Id.*

<sup>376</sup> *Id.* at 1330-31.

<sup>377</sup> *Id.* at 1331.

<sup>378</sup> *Id.* at 1331 (citing *KSR Int’l. Co. v. Teleflex, Inc.*, 550 U.S. 398, 421 (2007)).

<sup>379</sup> *See IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005).

<sup>380</sup> *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 809 (Fed. Cir. 2002).

<sup>381</sup> *Datamize, L.L.C. v. Plumtree Software, Inc.*, C 04-2777 VRW, 2007 WL 5720627 (N.D. Cal. Aug. 7, 2007).

In contrast, a claim drawn to structure and a method of using that structure is invalid under 35 U.S.C. §112 as indefinite. In *IPXL Holdings LLC v. Amazon.com, Inc.*, the Federal Circuit found invalid a dependent claim, which recited both a structure having an input means and a user using the input means to input certain data.<sup>382</sup> The court based its finding on the principle of inadequate notice, reasoning that one could not determine if infringement occurs when one makes the product or when one uses the product.<sup>383</sup>

#### H. “Joint Infringement”—Multiple Actors Required

Adequate patent protection requires the practitioner draft claims that are subject to infringement. Business method patents and networked implementations of automated systems present special claim drafting challenges. Under the “all elements rule” patent infringement does not occur unless all the elements of the claim are found in the infringing product or method, whether or not the infringing device or method includes additional subject matter.<sup>384</sup> Application of the “all elements rule” virtually requires that a single actor perform all the steps of a claimed method in order for infringement to exist. Although the Federal Circuit has suggested that joint infringement is possible, joint infringement would appear to apply only to actors performing steps of the claim in concert with each other.<sup>385</sup> A patent claim that requires multiple, independent actions not under the control of a single party would be not be infringed by any of the parties, because no one party satisfies the “all elements” rule. For example, a business method claim that requires a user to input information, a financial institution to process the information input by the user and a third party to receive the processed information and transfer funds would not be infringed by any of the parties because no one party carries out all the steps of the method. In the absence of direct infringement, there can be no contributory infringement, leaving the patentee with no means to enforce any patent rights.

##### 1. *BMC Resources Inc. v. Paymentech, L.P.*<sup>386</sup>

In *BMC*, the Federal Circuit brought to rest any confusion it may have caused by its earlier decision in *On Demand Machinery*. In *BMC*

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<sup>382</sup> *IPXL Holdings, L.L.C.*, 430 F.3d at 1384.

<sup>383</sup> *Id.*

<sup>384</sup> See *Fromson v. Advance Offset Plate, Inc.*, 720 F.2d 1565 (Fed. Cir. 1983).

<sup>385</sup> See *On Demand Mach. Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1344-45 (Fed. Cir. 2005).

<sup>386</sup> *BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373 (Fed. Cir. 2007).

the court addressed the issue of infringement where the actions of multiple parties are required to infringe a single claim. Stating that “liability for infringement requires a party to make, use, sell or offer to sell the patented invention, meaning the entire patented invention,”<sup>387</sup> the court confirmed the applicability of the “all elements rule.”<sup>388</sup> Applying principles of vicarious liability, the court noted that the law imposes liability for the acts of another in circumstances showing that the liable party controlled the conduct of the acting party, adding that in the context of patent infringement a defendant cannot avoid liability for direct infringement by having someone else carry out one or more of the claimed steps on its behalf.<sup>389</sup> Courts faced with a divided infringement theory have generally refused to find liability where one party did not control or direct each step of the patented process.<sup>390</sup>

Although *BMC* established the viability of the “all elements rule” and the principle that one cannot avoid liability by contracting out steps of a patented process, *BMC* did not establish the level of control generally required to establish liability. The Federal Circuit addressed the level of control necessary to establish liability for joint infringement in *Muniauction*.<sup>391</sup>

## 2. *Muniauction, Inc. v. Thomson Corp.*

In *Muniauction*, the court determined that the actions of a bidder and an auctioneer in an automated bidding system could not be combined to find direct infringement by the auctioneer.<sup>392</sup> It was undisputed that no single party performed every step of the method recited in certain claims that survived a validity challenge.<sup>393</sup> For example, the claims recited the bidder inputting information into the bidder’s computer system, while most of the remaining steps were performed by the auctioneer’s system. Citing *BMC*, the court noted that “where the actions of multiple parties combine to perform every step of a claimed method, the claim is directly infringed only if one party exercises ‘control or direction’ over the entire process such that every step is attributable to the controlling party, i.e. the ‘mastermind’” and that “‘arms-length cooperation’ will not give rise to direct infringement by any party.”<sup>394</sup> The court agreed with the *BMC*

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<sup>387</sup> *Id.* at 1380.

<sup>388</sup> *Id.* at 1381.

<sup>389</sup> *Id.* at 1379.

<sup>390</sup> *Id.* at 1380.

<sup>391</sup> *Muniauction, Inc., v. Thomson Corp.*, 532 F.3d 1318 (Fed. Cir. 2008).

<sup>392</sup> *Id.*

<sup>393</sup> *Id.* at 1328.

<sup>394</sup> *Id.* at 1329.

court's position that the "control or direction" standard is satisfied in situations where the law would traditionally hold the accused direct infringer vicariously liable for the acts committed by another party required to complete performance of a claimed method.<sup>395</sup> In the absence of evidence or a legal theory that the defendant, Thomson, was in any way vicariously liable for the acts of the bidders, the court found no infringement.<sup>396</sup> Thomson's controlling access to its system and instructing bidders on the system's use was not sufficient to incur liability for direct infringement.<sup>397</sup> Applying the vicarious liability standard, in *Emtel, Inc. v. Lipid Labs, Inc.*,<sup>398</sup> the court noted that a contracting party is not vicariously liable for the actions of an independent contractor unless that party controls the details of the independent contractor's work to such an extent that the contractor cannot perform the work as he chooses.<sup>399</sup> Applying this analysis, the court concluded that for liability to attach the mastermind must so control the third party that in its performance of the infringing steps the third party does so as the defendant's agent.<sup>400</sup> Making information available to the third party, prompting the third party, instructing the third party, or facilitating or arranging for the third party's involvement in the alleged infringement is not sufficient.<sup>401</sup>

### 3. *Keithley v. The Home Store.com, Inc.*<sup>402</sup>

In *Keithley*, a district court explored the "control or directs" issues of *Muniauction* in more detail. Referring to the briefs filed in *Muniauction*, the court noted that, even when combined, the following actions did not rise to the level of infringement where the bidders, rather than the defendant carry out the step of inputting the bids to their own computers: (1) requiring bidders to install and configure certain software and to use pre-assigned passwords, (2) connecting bidders to the a server maintained by the defendant, as well as allowing bidders to use the server to calculate and prepare bids for submission and allowing issuers and financial advisers to review the results of the bidding process; (3) providing detailed screen shots and written instructions to bidders about what to do throughout the auction process; and (4) exercising contractual control over the bidders by

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<sup>395</sup> *Id.* at 1330.

<sup>396</sup> *Id.*

<sup>397</sup> *Id.*

<sup>398</sup> *Emtel, Inc. v. Lipid Labs, Inc.*, 583 F. Supp. 2d 811 (S.D. Tex. 2008).

<sup>399</sup> *Id.* at 837.

<sup>400</sup> *Id.* at 839.

<sup>401</sup> *Id.*

<sup>402</sup> *Keithley v. The Home Store.com, Inc.*, 636 F. Supp. 2d 978 (N.D. Cal. 2008).

licensing the software, requiring that all bids be irrevocable and reserving the right to terminate or change the system at any time.<sup>403</sup>

4. *Akamai Technologies, Inc. v. Limelight Networks, Inc.*<sup>404</sup>

In *Akamai*, decided in December 2010, the Federal Circuit again addressed infringement when multiple parties perform different steps of a claimed method. Akamai disclosed a content delivery method, which improved upon prior art “mirroring” of entire websites on geographically dispersed computers.<sup>405</sup> Akamai disclosed a method in which a base document of a web site is delivered from a content provider’s computer.<sup>406</sup> However, individual embedded objects, which are links in the form of URLs (uniform resource locators) pointing to the location of actual objects to be used in the website, are stored on an object-by-object basis on a Content Delivery Network (“CDN”) of computers strategically placed at various geographic locations to maximize efficient delivery of information over the Internet.<sup>407</sup> Akamai’s claimed method included the step of “tagging” embedded objects so that the requests for the objects resolve to a domain other than the content provider’s domain.<sup>408</sup> Limelight’s contract with its content providers made each content provider responsible for identifying, via Limelight’s then current process, URLs for the customer’s content to be delivered by Limelight’s CDN.<sup>409</sup> Under that process, Limelight’s customers accomplished this “tagging” by changing the name of one or more page objects in the initial web page to point to Limelight’s servers or by changing the alias information in the customer’s DNS server so that the hostname addresses of the page objects resolve to Limelight’s servers. In either case, the customer and not Limelight performs the “tagging” step of Akamai’s claimed method, requiring Akamai to present a joint liability theory at trial.<sup>410</sup> Although the jury returned a verdict of infringement, the district court, relying upon the Federal Circuit’s *Muniauction* decision, granted the defendant’s JMOL motion of non-infringement and the Federal Circuit affirmed.<sup>411</sup>

In finding non-infringement, the Federal Circuit held that “as a

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<sup>403</sup> *Id.* at 984.

<sup>404</sup> *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 629 F. 2d 1311 (Fed. Cir. 2010).

<sup>405</sup> *Id.* at 1315-16.

<sup>406</sup> *Id.* at 1315.

<sup>407</sup> *Id.*

<sup>408</sup> *Id.* at 1316.

<sup>409</sup> *Id.* at 1317.

<sup>410</sup> *Id.*

<sup>411</sup> *Id.* at 1318.

matter of Federal Circuit law, there can only be joint infringement when there is an agency relationship between the parties who perform the method steps or when one party is contractually obligated to the other to perform the steps.”<sup>412</sup> The court noted that:

what is essential is not merely the exercise of control or the providing of instructions, but whether the relationship between the parties is such that the acts of one are attributable to the other . . . for an agency relationship to exist, and thus for infringement to be found, both parties must consent that the agent is acting on the principal’s behalf and subject to the principal’s control.<sup>413</sup>

The court recognized that an agency relationship need not be a purely fiduciary relationship, but further focused on the right to control the agent’s actions as an essential element of agency and explained, “there is no indication that an agency relationship arises when one party simply provides direction, no matter how explicit, to another party.”<sup>414</sup> Although Limelight’s contract required its customers to perform certain claim steps *if* they use Limelight’s service, the court noted that Limelight’s contract *did not obligate* customers to perform any of the method steps, since the customers choose what, if any, content they deliver through Limelight’s CDN.<sup>415</sup> The court found no infringement because Limelight did not perform the “tagging” step and its agreement merely provided its customers with the tools to allow them to exercise independent discretion and control over how and in what respect to implement the system. The court noted that claims in two other patents sharing the same specification did not implicate the joint infringement issue because of the way the asserted claims were drafted.<sup>416</sup>

5. *Centillion Data Systems, LLC v. Qwest Communications International, Inc.*

On January 20, 2011, in *Centillion*, the Federal Circuit addressed the question of what constitutes use of a system that includes elements in the possession of more than one actor.<sup>417</sup> The court held that “to

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<sup>412</sup> *Id.* at 1320.

<sup>413</sup> *Id.* at 1319.

<sup>414</sup> *Id.* at 1320-21.

<sup>415</sup> *Id.* at 1321.

<sup>416</sup> *Id.* at 1321-1322.

<sup>417</sup> *Centillion Data Sys, L.L.C. v. Qwest Commc’ns Int’l., Inc.*, 631 F.3d 1279 (Fed. Cir. 2011).

‘use’ a system for purposes of infringement, a party must put the invention into service, i.e., control the system as a whole and obtain direct benefit from it.”<sup>418</sup> The court agreed that direct infringement by “use” of a system claim requires a party to use each and every element of a claimed system, but, citing *NTP, Inc. v. Research In Motion, Ltd.*,<sup>419</sup> the court noted that physical control of the elements by the user does not matter, as long as the user makes the elements work for the patented purpose.<sup>420</sup> Applying these principles, the court found that both a user’s on-demand query and a user’s subscription to receive monthly reports constitute “use” of the system as a matter of law.<sup>421</sup> In each case, either on demand or at periodic intervals, the user requires the system to perform back-end processing, which would not otherwise be put into service. The user controls the system by causing it to perform certain processing and obtaining the benefit of the result.<sup>422</sup> Because Qwest’s customers “use” the system, even though they do not physically possess the system elements, the court remanded to the district court to determine whether Qwest could be inducing its customers to infringe.<sup>423</sup> The court further determined that Qwest itself did not “use” the system as a matter of law because Qwest never puts into service the users’ personal computer data processing means.<sup>424</sup> Qwest was also not vicariously liable for the actions of its customers because Qwest does not direct its customers to perform nor do Qwest’s customers act as Qwest’s agents.<sup>425</sup> Qwest provides software and technical assistance, but it is entirely the customer’s decision whether to install and operate the software in its personal computer.<sup>426</sup> Qwest also did not “make” the patented invention because it does not combine all of the claim elements, because Qwest does not provide the personal computer data processing means recited in the claims.<sup>427</sup>

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<sup>418</sup> *Id.* at 1284.

<sup>419</sup> *NTP, Inc. v. Research In Motion, Ltd.*, 418 F.3d 1282 (Fed. Cir. 2005).

<sup>420</sup> *Centillion Data Sys, L.L.C.*, 631 F.3d at 1284.

<sup>421</sup> *Id.* at 1285.

<sup>422</sup> *Id.*

<sup>423</sup> *Id.* at 1286.

<sup>424</sup> *Id.*

<sup>425</sup> *Id.* at 1287.

<sup>426</sup> *Id.*

<sup>427</sup> *Id.* at 1288.

6. *McKesson Technologies, Inc. v. Epic Systems Corp.*<sup>428</sup>

On April 12, 2011, in *McKesson*, the Federal Circuit again turned to the issue of method claims where the steps of the method are carried out by multiple parties. Epic licensed its MyChart software package to healthcare providers, who decided whether to offer MyChart to their patients.<sup>429</sup> If a patient uses MyChart, that patient “initiates a communication” to the provider by logging on to the healthcare provider’s web page.<sup>430</sup> Because McKesson’s claims recite “initiating a communication by one of a plurality of users to the provider . . .” and the patients are not Epic’s customers, it was undisputed that Epic’s customers do not directly perform the “initiating a communication” step.<sup>431</sup> McKesson appealed the district court’s grant of Epic’s renewed summary judgment motion after claim construction and the close of discovery.<sup>432</sup> The sole issue on appeal was whether the relationship between Epic’s customers (the MyChart providers) and the MyChart users is such that the performance of the “initiating a communication” step may be attributed to the MyChart providers.<sup>433</sup> The Federal Circuit panel rejected McKesson’s arguments that the doctor-patient relationship is sufficient to provide attribution. The court found that the doctor-patient relationship does not rise to the level of agency and does not impose on patients a contractual obligation such that the voluntary actions of patients can be said to represent the vicarious actions of their doctors.<sup>434</sup> The court also found that, because MyChart users choose whether or not to initiate communications with their providers and are under no obligation to do so, the users’ actions could not be attributed to Epic’s customers, the MyChart providers. In the absence of a single direct infringer, Epic could not be liable for indirect infringement.<sup>435</sup>

McKesson also argued a vicarious liability theory similar to vicarious copyright liability arising from a defendant’s decision to profit from infringement while declining to exercise a right to limit it, and a joint tortfeasor liability theory where the actions of two parties taken together cause harm to the plaintiff, even where the individual actions taken alone are not wrongful. The Federal Circuit panel

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<sup>428</sup> *McKesson Techs., Inc. v. Epic Sys. Corp.*, 2011 WL 1365548, 98 U.S.P.Q.2d 1281 (Fed. Cir. Apr. 12, 2011), *vacated*, 2011 WL 2173401 (Fed. Cir. May 26, 2011).

<sup>429</sup> *Id.* at 1282.

<sup>430</sup> *Id.*

<sup>431</sup> *Id.*

<sup>432</sup> *Id.* at 1283.

<sup>433</sup> *Id.*

<sup>434</sup> *Id.* at 1284.

<sup>435</sup> *Id.*

rejected both arguments noting that patent law is a creature of statute and concluding that the notion of indirect infringement already addresses the joint tortfeasor problem.<sup>436</sup> The panel reasoned that while an indirect infringer's actions alone do not harm the patentee, his actions along with those of another, cause a single harm to the plaintiff.<sup>437</sup> That "single harm" is direct patent infringement, a strict liability offense limited to those who practice each and every element of the claimed invention.<sup>438</sup> The panel further distinguished a patentee who specifically defines the bounds of his or her exclusive rights in a claim from a tort victim who has no ability to define the injurious conduct and, absent joint liability, would stand uncompensated.<sup>439</sup> Finally, the court rejected McKesson's arguments that liability could attach where one party performed most of the method and left it to another party to complete the method in the absence of contractual obligation or an agency relationship.<sup>440</sup>

7. *Akamai and McKesson en banc.*

In a concurring opinion in *McKesson*, Judge Bryson agreed that *McKesson* was decided consistent with *BMC* and *Akamai*, but questioned whether those decisions were correct and suggested that an en banc review of an appropriate case may be warranted. In a dissent, Judge Newman questioned whether the patent incentive has been eliminated from such interactive methods.<sup>441</sup> On April 20, 2011, a mere eight days after the *McKesson* panel decision, the Federal Circuit announced it had granted en banc review of the *Akamai* case to hear the following question: *If separate entities each perform separate steps of a method claim, under what circumstances would that claim be directly infringed and to what extent would each of the parties be liable?*<sup>442</sup> Argument occurred on November 18, 2011. At the same time the Federal Circuit heard arguments in *McKesson* on the following questions:

(1) If separate entities each perform separate steps of a method claim, under what circumstances, if any, would either entity or any third party be liable for inducing infringement or for contributory infringement? and (2) Does the nature of the relationship between the

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<sup>436</sup> *Id.*

<sup>437</sup> *Id.* at 1285.

<sup>438</sup> *Id.*

<sup>439</sup> *Id.*

<sup>440</sup> *Id.* at 1284.

<sup>441</sup> *Id.* at 1285.

<sup>442</sup> *Akamai Techs., Inc. v. Limelight Networks, Inc.*, Nos. 2009-1372, 2009-1380, 2009-1416, 2009-1417, 2011 WL 1518909, at \*1 (Fed. Cir. Apr. 20, 2011).

relevant actors – e.g., service provider/user; doctor/patient – affect the question of direct or indirect infringement liability?<sup>443</sup>

### I. Claim Drafting for Multiple Jurisdictions

In modern networked computer systems, the patented invention may not be one single device, but a system of multiple distinct components whose functions can be distributed over a variety of locations, including locations outside the United States. In *NTP, Inc. v. Research In Motion, Ltd.*,<sup>444</sup> defendant Research in Motion (“RIM”) sought to escape liability for infringement by its Blackberry product, arguing that it lacked the interface or interface switch limitations of NTP’s claims, because the relay component of the accused system was located in Canada.<sup>445</sup> In a complex ruling, which addressed infringement under several sections of the patent statute, the Federal Circuit reached different conclusions concerning infringement of NTP’s apparatus and method claims under 35 U.S.C. § 271(a). Recognizing that a method claim is not infringed unless all the steps of the process are utilized, the court held that RIM did not directly infringe NTP’s method claims under 35 U.S.C. §271(a), since all the steps of the method were not performed within the U.S.<sup>446</sup> However, the court found RIM liable for infringement of the apparatus claims, notwithstanding the Canadian situs of RIM’s relay server.<sup>447</sup> The court distinguished this case from the Supreme Court’s *Deepsouth* decision, which found no infringement where the defendant domestically produced all the components of the invention and exported them from the U.S. for assembly and use abroad.<sup>448</sup> The court noted that in *Deepsouth*, both the act of making and the resulting patented invention were wholly outside the United States.<sup>449</sup> Instead, the court found this case more like that of *Decca Ltd. v. United States*,<sup>450</sup> which analyzed use by the United States under 28 U.S.C. § 1498 of a navigation system with a station in Norway. From the point of view of the user, that court concluded that a navigator in the United States was using the Norwegian station and that such use occurs

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<sup>443</sup> *McKesson Techs., Inc. v. Epic Sys. Corp.*, No. 2010-1291, 2011 WL 2173401, at \*1 (Fed. Cir. May 26, 2011).

<sup>444</sup> *NTP, Inc. v. Research In Motion, Ltd.*, 418 F.3d 1282 (Fed. Cir. 2005).

<sup>445</sup> *Id.* at 1313-14.

<sup>446</sup> *Id.* at 1318.

<sup>447</sup> *Id.* at 1325-26.

<sup>448</sup> *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 527-28 (1972).

<sup>449</sup> *Id.* at 529.

<sup>450</sup> *Decca, Ltd. v. United States*, 544 F.2d 1070 (Ct. Cl. 1976).

wherever the signals are received and used in the manner claimed.<sup>451</sup> Noting that direct infringement under 35 U.S.C. § 271(a) was a necessary predicate for government liability under 28 U.S.C. § 1498 in *Decca*, the court applied a similar analysis in finding RIM liable.<sup>452</sup> Taking its cue from the Court of Claims' analysis of ownership, control and beneficial use in *Decca*, the Federal Circuit held that the use of a claimed system is the place at which the system as a whole is put into service, i.e., the place where control is exercised and beneficial use of the system obtained.<sup>453</sup> Thus, the court distinguished between use of the claimed method and use of the claimed system. While RIM escaped liability for infringement of the method claims, it was liable for infringement of the apparatus claims and, as a matter of law, the location of the RIM's relay server in Canada did not preclude infringement of the system claims.<sup>454</sup>

#### **J. Extraterritorial Enforcement of Software Claims**

In 1984, some years after the Supreme Court's decision in *Deepsouth*,<sup>455</sup> Congress enacted 35 U.S.C. § 271(f) to close the loophole in U.S. patent law which allowed parties who manufactured unassembled components of patented products in the U.S. to ship those components outside the U.S. for assembly and escape infringement liability. Under 35 U.S.C. § 271(f)(1):

whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such a manner as to actively induce the combination of such components outside the United States in a manner that would infringe the patent if such combination occurred within the United States shall be liable as an infringer.<sup>456</sup>

Additionally, under 35 U.S.C. § 271(f)(2):

whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or

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<sup>451</sup> *NTP, Inc. v. Research In Motion, Ltd.*, 418 F.3d 1282, 1316 (Fed. Cir. 2005) (citing *Decca*, 544 F.2d at 1083).

<sup>452</sup> *Id.*

<sup>453</sup> *Id.* at 1317 (citing *Decca*, 544 F.2d at 1083).

<sup>454</sup> *Id.*

<sup>455</sup> *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972).

<sup>456</sup> 35 U.S.C. § 271(f)(1) (2006).

especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.<sup>457</sup>

The application of these provisions to software installed in computers outside the United States was the subject of two cases involving Microsoft in 2005, *Eolas Technologies Inc. et. al v. Microsoft*<sup>458</sup> and *AT&T Corp. v. Microsoft Corporation*.<sup>459</sup> *AT&T v. Microsoft* was reversed by the Supreme Court in *Microsoft Corporation v. AT&T Corp.*<sup>460</sup> In *Eolas v. Microsoft*, the Federal Circuit concluded that the statutory language of 35 U.S.C. § 271(f) extends to every form of invention, not just machines or physical structures, and that every component of every form of invention, including a method step which forms a component of a process invention, deserves protection under section 271(f).<sup>461</sup> Reasoning that software code on a “golden master disk is a ‘component’ of the computer program invention,” the court concluded that liability could attach for copies of software made outside the U.S. from “golden master” disks exported from the U.S.<sup>462</sup>

In *AT&T v. Microsoft*, the Federal Circuit rejected Microsoft’s argument that a foreign replicated copy of software made from a U.S. originated master version is “manufactured” abroad by encoding a storage medium with the software and is not supplied in or from the U.S.<sup>463</sup> Examining the way software is typically supplied, the court noted that copying is part and parcel of software distribution and rejected Microsoft’s contention that liability should only attach to each disk that is incorporated into a foreign assembled computer.<sup>464</sup> The court further rejected the proposition that electronically transmitted software must be treated differently from software shipped on disks under 35 U.S.C. § 271(f), concluding that “whether software is sent

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<sup>457</sup> 35 U.S.C. § 271(f)(2) (2006).

<sup>458</sup> *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir. 2005).

<sup>459</sup> *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366 (Fed. Cir. 2005).

<sup>460</sup> *Microsoft Corp. v. AT&T Corp.*, 550 U.S. 427 (2007).

<sup>461</sup> *Eolas Technologies, Inc.*, 399 F.3d at 1339.

<sup>462</sup> *Id.* at 1339, 1341.

<sup>463</sup> *AT&T Corp.*, 414 F.3d at 1369.

<sup>464</sup> *Id.* at 1370.

abroad via electronic transmission or shipped abroad on a ‘golden master’ disk is a distinction without a difference for purposes of § 271(f) liability.<sup>465</sup>

On April 30, 2007, the U.S. Supreme Court reversed the Federal Circuit’s decision in *AT&T v. Microsoft*, finding instead that Microsoft was not liable under 35 U.S.C. § 271(f) as currently written.<sup>466</sup> The Supreme Court concluded that because Microsoft does not export from the United States the copies of Windows installed on the foreign made computers in question, Microsoft does not “supply . . . from the United States” “components” of those computers.<sup>467</sup>

Attempting to construe the terms of §271(f) in accordance with their ordinary meaning, the Court first discussed when, and in what form, software becomes a “component” under §271(f).<sup>468</sup> The Court found that abstract software, not on a medium, is an idea without physical embodiment and does not match §271(f)’s categorization: “components” amendable to “combination”.<sup>469</sup> The Court concluded that software code alone, detached from an activating medium, is “uncombinable” for purposes of the statute and is not a component of a patented device.<sup>470</sup> The Court explained, “a copy of Windows, not Windows in the abstract, qualifies as a “component” under §271(f).”<sup>471</sup> Of course, Microsoft exported only a master, not the copies that were installed on the foreign made computers.

The Court next turned its attention to whether Microsoft had supplied from the United States components of the computers involved. Noting that the copies of Windows installed on the computers in question did not exist until they were generated by third parties outside the United States, the Court concluded that “the copies of Windows actually installed on the foreign computers were not themselves supplied from the United States.”<sup>472</sup> Thus, the Court determined that Microsoft’s shipment of Windows software code either on a “golden master” or by electronic means, which foreign manufacturers use to generate copies to install on foreign made computers, is not shipment of a component under §271(f).<sup>473</sup>

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<sup>465</sup> *Id.* at 1371.

<sup>466</sup> *Microsoft Corp. v. AT&T Corp.*, 550 U.S. 427, 437 (2007).

<sup>467</sup> *Id.* at 442.

<sup>468</sup> *Id.* at 449.

<sup>469</sup> *Id.*

<sup>470</sup> *Id.*

<sup>471</sup> *Id.* at 451-52.

<sup>472</sup> *Id.* at 453.

<sup>473</sup> *Id.* The Court majority did not rule on Microsoft’s footnote contention that even a disk shipped from the U.S. used to install Windows directly on a foreign manufactured computer would not create liability under §271(f).

The Court further explained that any doubt about whether Microsoft's conduct falls outside the scope of §271(f) would be resolved by the presumption against extraterritoriality.<sup>474</sup> AT&T argued that the presumption against extraterritoriality does not apply to §271(f) because the statute applies only to acts in the U.S., i.e., supplying a patented invention's components *from* the United States.<sup>475</sup> The Court countered that AT&T's reading of the statute would have extraterritorial effects, converting a single act of supply from the United States into a springboard for liability each time a copy of the software was made abroad and combined with computer hardware abroad.<sup>476</sup>

The Court also rejected AT&T's contention that reading §271(f) to cover only those copies of software actually dispatched from the U.S. created a "loophole" for software makers. The Court concluded that any §271(f) "loophole" is properly left for Congress to consider and close if it finds such action warranted.<sup>477</sup>

### III. CONCLUSION

Techniques for obtaining patent protection of inventions in computer hardware and software continue to evolve nearly as fast as the technology. Courts are becoming more active in patent matters as intellectual property values increase, and the scope and reach of patent protection is likely to change over time. Such changes are likely to reward those who take creative approaches to obtaining patent protection.

Much ink has been used over the years trying to define what constitutes patent-eligible subject matter. When striking down the "machine or transformation" test as the sole patent eligibility test, the Supreme Court's comment that the test may be suitable for the Industrial Age but unsuitable for upcoming technologies telegraphed its discomfort with a rigid, inflexible approach. Recognizing that technologies not yet even conceived of will test our ability to define and protect patentable subject matter, the Court gave little guidance other than to avoid claims which are too abstract and preempt others from applying basic ideas to other physical structures. At least one panel of the Federal Circuit, without providing specific detail, ruled subject matter eligible based on its conclusion that a particular set of claims is not "manifestly abstract." The approaches taken in these

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<sup>474</sup> *Id.* at 454.

<sup>475</sup> *Id.* at 455.

<sup>476</sup> *Id.* at 456.

<sup>477</sup> *Id.* at 457.

decisions suggest that uncertainty in claiming patent-eligible subject matter will continue, at least at the outer edges of defining protectable subject matter. As systems become networked, technology moves to “The Cloud” and more entities participate in carrying out specific functions, the question of “divided” or “joint” infringement has become more pressing. In the presence of such uncertainty, patentees will likely seek to protect their claims in multiple ways using multiple sets of the claims and multiple approaches to achieve the broadest possible coverage.