

# UIC REVIEW OF INTELLECTUAL PROPERTY LAW



## FEDERAL CIRCUIT'S JURISPRUDENCE OF THE PATENT-ELIGIBILITY ANALYSIS: TOWARD A BRIGHT-LINE RULE

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### ABSTRACT

The Supreme Court has stated that a claim is patent-ineligible if it is directed to any of three patent-ineligible subject matters and does not include an inventive concept that transforms it into a patent-eligible claim. Although some commentators have questioned that the standard is too abstract, this paper attempts to show that the Federal Circuit has developed workable approaches to apply the patent-eligibility analysis. That is, by showing any specific features in a claim which improve functionality, a plaintiff may assert that a disputed claim is not directed to a patent-ineligible subject matter because the claim offers an advance over the prior art. In addition, a plaintiff has to illustrate how the alleged inventive concept is not “well-understood, routine, conventional.”

Keywords: Patent-eligibility, 35 U.S.C. § 101, *Alice Corp. Pty. v. CLS Bank Int'l*, abstract idea



*Cite as* Ping-Hsun Chen, *Federal Circuit's Jurisprudence of the Patent-Eligibility Analysis: Toward a Bright-Line Rule*, 21 UIC REV. INTELL. PROP. L. 16 (2021).

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## FEDERAL CIRCUIT’S JURISPRUDENCE OF THE PATENT-ELIGIBILITY ANALYSIS: TOWARD A BRIGHT-LINE RULE

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### I. INTRODUCTION

Under 35 U.S.C. § 101, processes, machines, manufactures, and compositions of matter are “four independent categories of inventions or discoveries that are eligible for [patent] protection.”<sup>1</sup> But, the Supreme Court has recognized three patent-ineligible subject matters: laws of nature, physical phenomena, and abstract ideas.<sup>2</sup>

In 2014, the Supreme Court in *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*<sup>3</sup> inherited the eligibility analysis used in *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*<sup>4</sup> and finalized a two-step approach to patent-eligibility.<sup>5</sup> The *Alice* standard applies to claims related to laws of nature, natural phenomena, and abstract ideas.<sup>6</sup>

Under *Alice*, the first step is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts.”<sup>7</sup> If so, then the second step is to “consider the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.”<sup>8</sup> Specifically, the second step searches for “an inventive

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<sup>1</sup> *Bilski v. Kappos*, 561 U.S. 593, 601 (2010); see also 35 U.S.C. § 101 (2021) (“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”).

<sup>2</sup> See *Bilski*, 561 U.S. at 601 (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980)).

<sup>3</sup> *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208 (2014).

<sup>4</sup> *Mayo Collaborative Servs. v. Prometheus Lab’ys, Inc.*, 566 U.S. 66 (2012).

<sup>5</sup> See Ping-Hsun Chen, *Patent-Eligibility Standard for Network Architecture Patents Under the Federal Circuit’s Jurisprudence*, 36 SANTA CLARA HIGH TECH. L.J. 1, 5–6 (2019) (illustrating the *Alice* standard for determining patent-eligibility of a patent claim) [hereinafter, Chen, *Patent-Eligibility Standard*]; see also *Alice Corp. Pty.*, 573 U.S. at 217; *CardioNet, LLC v. InfoBionic, Inc.*, 955 F.3d 1358, 1366 (Fed. Cir. 2020); Elaine H. Nguyen, *Scalpels Over Sledgehammers: Saving Diagnostic Patents Through Judicial Intervention Rather Than Legislative Override*, 70 DUKE L.J. 1631, 1643–44 (2021) (introducing the *Alice* standard); Paul R. Gugliuzza, *Law, Fact, and Patent Validity*, 106 IOWA L. REV. 607, 622 (2021) (explaining the *Alice* standard). Nowadays when applying the § 101 analysis, district courts may still make a mistake “at the foundational stage” by “characterize[ing] the claims without mention of what, for at least some (perhaps all) of the claims at issue, the claim language and specifications make clear are important parts of what the patents assert are the advances in the art.” *Realtime Data LLC v. Reduxio Sys., Inc.*, 831 F. App’x 492, 499 (Fed. Cir. 2020) (J. Taranto, concurring).

<sup>6</sup> See *Alice Corp. Pty. Ltd.*, 573 U.S. at 217 (“In [*Mayo*], we set forth a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.”); see also Minki Kwon, *Waiting for Godot: A Proposal for the Supreme Court to Revisit Post-Mayo Patent Eligibility Question*, 48 AIPLA Q.J. 489, 507–08 (2020) (describing the *Alice* standard (*Mayo/Alice* test)).

<sup>7</sup> *Alice Corp. Pty. Ltd.*, 573 U.S. at 217.

<sup>8</sup> *Id.*

concept—*i.e.*, an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.”<sup>9</sup>

The *Alice* court has cautioned that a claim directed to a patent-ineligible subject matter “must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [ineligible subject matter].”<sup>10</sup> Thus, to pass step two, a claim must “more than simply stat[e] the [ineligible subject matter] while adding the words ‘apply it.’”<sup>11</sup> Likewise, a claim fails the step-two analysis if it “[s]imply append[s] conventional steps, specified at a high level of generality.”<sup>12</sup>

In addition, the *Alice* court has noted that “[t]he introduction of a computer into the claims does not alter the [step-two] analysis.”<sup>13</sup> Under *Alice*, “limiting the use of an [ineligible subject matter] to a particular technological environment” is “not enough for patent eligibility.”<sup>14</sup> One example is “recitation of a computer [which] amounts to a mere instruction to ‘implemen[t]’ an abstract idea ‘on . . . a computer.’”<sup>15</sup> The same analysis applies to “system claims [which] recite a handful of generic computer components configured to implement [an abstract] idea.”<sup>16</sup>

When the Federal Circuit started to apply the *Alice* standard, Professor Annal D. Vyas criticized that “courts lack a workable framework to determine whether an idea is abstract” and cannot cohesively assess what constitutes an inventive concept.<sup>17</sup> Criticism on the *Alice* standard has been growing because, as Michael Xun Liu observed, “the two-step process for evaluating patent eligibility fails to provide sufficient clarity for lower courts, the PTO, and practitioners.”<sup>18</sup> Consequently, calling

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<sup>9</sup> *Id.* at 217–18 (alterations in original, emphasis in original, and internal quotation marks omitted).

<sup>10</sup> *Alice Corp. Pty. Ltd.*, 573 U.S. at 221 (first alteration being in original); *see also Mayo Collaborative Servs.*, 566 U.S. at 77 (“If a law of nature is not patentable, then neither is a process reciting a law of nature, unless that process has additional features that provide practical assurance that the process is more than a drafting effort designed to monopolize the law of nature itself.”).

<sup>11</sup> *Alice Corp. Pty. Ltd.*, 573 U.S. at 221; *see also Mayo Collaborative Servs.*, 566 U.S. at 72 (“Still, as the Court has also made clear, to transform an unpatentable law of nature into a patent-eligible *application* of such a law, one must do more than simply state the law of nature while adding the words ‘apply it.’” (emphasis in original)).

<sup>12</sup> *Alice Corp. Pty. Ltd.*, 573 U.S. at 222; *see also Mayo Collaborative Servs.*, 566 U.S. at 82 (“Other cases offer further support for 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>13</sup> *Alice Corp. Pty. Ltd.*, 573 U.S. at 222.

<sup>14</sup> *Id.* at 223 (internal quotation marks omitted).

<sup>15</sup> *Id.* at 223 (second alteration in original).

<sup>16</sup> *Id.* at 226.

<sup>17</sup> *See* Annal D. Vyas, *Alice in Wonderland v. CLS Bank: The Supreme Court’s Fantastic Adventure into Section 101 Abstract Idea Jurisprudence*, 9 AKRON INTELL. PROP. J. 1, 18–22 (2015).

<sup>18</sup> Michael Xun Liu, *Subject Matter Eligibility and Functional Claiming in Software Patents*, 20 N.C. J. L. & TECH. 227, 254–55 (2018). *See also* Mark A. Perry & Jaysen Chung, *Alice at Six: Patent Eligibility Comes of Age*, 20 CHI.-KENT J. INTELL. PROP. 64, 65 (2021) (“Although simple in conception, the distinction between the three categories of patent-ineligible subject matter and patent-eligible inventions can be difficult to apply in practice.”); Daryl Lim, *The Influence of Alice*, 105 MINN. L. REV. 345, 346 (2021) (“The concern with *Alice* is not simply that its standards are too narrow but rather that *Alice*’s standards are virtually indiscernible.”).

for amending § 101 to abrogate the Supreme Court's patent-eligibility standard has been circulated among scholars and practitioners.<sup>19</sup>

However, this paper attempts to demonstrate the Federal Circuit's efforts to provide workable approaches to apply step one and step two. Next, Part II discusses how the Federal Circuit looks to claim language and specification to determine whether a claim is directed to a patent-ineligible subject matter. Part III illustrates that the Federal Circuit may have developed a workable standard for determining whether a claim encompasses an inventive concept by asking whether the alleged inventive concept is not well-understood, routine, and conventional in light of the specification. Finally, Part IV presents why a bright-line rule for applying the *Alice* Standard has been formed.

## II. FEDERAL CIRCUIT'S APPROACH TO STEP ONE

Since *Alice*, while applying step one by a common law methodology,<sup>20</sup> the Federal Circuit has developed some specific approaches to step one in three aspects.<sup>21</sup>

### A. Claim Language as the Center of the *Alice* Step One Analysis

The first aspect is how to define a disputed claim for purposes of the step one analysis.<sup>22</sup> In 2015, the Federal Circuit in *Internet Patents Corp. v. Active Network, Inc.* first stated that “the claims are considered *in their entirety* to ascertain whether their character as a whole is directed to excluded subject matter.”<sup>23</sup> However in 2016, the Federal Circuit in *In re TLI Commc'ns LLC Pat. Litig.* cautioned that courts “must be careful to avoid oversimplifying the claims because [a]t some level, all inventions . . . embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.”<sup>24</sup>

In 2019, the Federal Circuit in *ChargePoint, Inc. v. SemaConnect, Inc.* clarified that to what extent this entirety approach may permit courts to consider a

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<sup>19</sup> See, e.g., Jorge A. Goldstein, Michelle K. Holoubek, & Krishan Y. Thakker, *The Time Has Come to Amend 35 U.S.C. § 101*, 44 AIPLA Q.J. 171, 173–74 (2016) (introducing a proposed amendment that removes the “inventive concept” requirement from 35 U.S.C. § 101); Christian Dorman, “*One if by Land, Two if by Sea*”: *The Federal Circuit's Oversimplification of Computer-Implemented Mathematical Algorithms*, 2018 U. ILL. J.L. TECH. & POL'Y 285, 309–11 (2018) (introducing activities attempting to amend 35 U.S.C. § 101); Tanner Mort, *Abstract Ideas: The Time Has Come for Congress to Address the Patentability of Software and Business Method Inventions*, 56 IDAHO L. REV. 383, 416–17 (2020) (discussing a proposed 35 U.S.C. § 101 that defines “inventive concept” specifically).

<sup>20</sup> See Hung H. Bui, *A Common Sense Approach to Implement the Supreme Court's Alice Two-Step Framework to Provide “Certainty” and “Predictability”*, 100 J. PAT. & TRADEMARK OFF. SOC'Y 165, 219 (2018) (describing the Federal Circuit's decision in *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288 (Fed. Cir. 2016)); see also *Amdocs (Israel) Ltd.*, 841 F.3d at 1294–95.

<sup>21</sup> See Chen, *Patent-Eligibility Standard*, *supra* note 5, at 7–9.

<sup>22</sup> See Chen, *Patent-Eligibility Standard*, *supra* note 5, at 8; see also Dustin Luettgen, *A Logical and Lawful Application of § 101 Jurisprudence: The USPTO's 2019 Subject Matter Eligibility Guidance*, 28 J.L. & POL'Y 445, 465–66 (2020) (describing *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759 (Fed. Cir. 2019)).

<sup>23</sup> *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015) (emphasis added).

<sup>24</sup> *In re TLI Commc'ns LLC Pat. Litig.*, 823 F.3d 607, 611 (Fed. Cir. 2016) (internal citations and quotation marks omitted and the first alteration in original).

specification.<sup>25</sup> The *ChargePoint* court stated that “we have found the specification helpful in illuminating what a claim is ‘directed to.’”<sup>26</sup> The *ChargePoint* court recognized that “in some cases the ‘directed to’ inquiry may require claim construction, which will often involve consideration of the specification.”<sup>27</sup> In addition, the *ChargePoint* court noted that “[t]he ‘directed to’ inquiry may also involve looking to the specification to understand “the problem facing the inventor” and, ultimately, what the patent describes as the invention.”<sup>28</sup> However, the *ChargePoint* court cautioned that “while the specification may help illuminate the true focus of a claim, when analyzing patent eligibility, reliance on the specification must always yield to the claim language in identifying that focus.”<sup>29</sup>

Recently in 2020, the Federal Circuit in *CardioNet, LLC v. InfoBionic, Inc* confirmed that step one allows courts to “consider the patent’s written description, as it informs our understanding of the claims.”<sup>30</sup> Additionally, the *CardioNet* court clarified that step one disregards “whether the prior art demonstrates that the idea or other aspects of the claim are known, unknown, conventional, unconventional, routine, or not routine.”<sup>31</sup> The *CardioNet* court emphasized that prior art evidence is used merely for analyzing novelty and obviousness questions.<sup>32</sup> Ultimately, the *CardioNet* court held that step one “does not require an evaluation of the prior art or facts outside of the intrinsic record regarding the state of the art at the time of the invention.”<sup>33</sup>

It should be noted that *CardioNet, LLC* does not mean “that it is impermissible for courts to ‘look[ ] outside the intrinsic evidence’ as part of their *Alice* step one inquiry or that *all* evidence presented by the parties.”<sup>34</sup> Rather, *CardioNet, LLC* merely provides that “there is no basis for *requiring*, as a matter of law, consideration of the prior art in the step one analysis in every case.”<sup>35</sup> Therefore, “[i]f the extrinsic evidence is overwhelming to the point of being indisputable, then a court could take [judicial] notice of that and find the claims directed to the [ineligible subject matter.]”<sup>36</sup>

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<sup>25</sup> See *infra* Part II.A; *ChargePoint, Inc.*, 920 F.3d at 766.

<sup>26</sup> *Id.* at 766.

<sup>27</sup> *Id.* at 767.

<sup>28</sup> *Id.* at 767.

<sup>29</sup> *Id.* at 766.

<sup>30</sup> *CardioNet, LLC*, 955 F.3d at 1368.

<sup>31</sup> *Id.* at 1372.

<sup>32</sup> *Id.* at 1373.

<sup>33</sup> *Id.* at 1374.

<sup>34</sup> *Id.* at 1373 (emphasis and alteration in original and internal citation omitted).

<sup>35</sup> *Id.* at 1373 (emphasis added).

<sup>36</sup> *Id.* at 1373–74.

### B. Improvement Test

The second aspect focuses on improvement contributed by the claimed invention.<sup>37</sup> In 2016, the Federal Circuit developed this improvement test in three cases related to computer or software technologies.<sup>38</sup>

In *Enfish, LLC v. Microsoft Corp.*, the Federal Circuit first held that step one “asks whether the focus of the claims is on the *specific asserted improvement* in computer capabilities (i.e., the self-referential table for a computer database) or, instead, on a process that qualifies as an ‘abstract idea’ for which computers are invoked merely as a tool.”<sup>39</sup> Later, the Federal Circuit in *McRO, Inc. v. Bandai Namco Games Am. Inc.* looked to whether the disputed claims “focus on a *specific* means or method that *improves* the relevant technology or are instead directed to a result or effect that itself is the abstract idea and merely invoke generic processes and machinery.”<sup>40</sup>

The improvement test was phrased differently in *Affinity Labs of Tex., LLC v. DIRECTV, LLC*, where the Federal Circuit held that step one “look[s] at the ‘focus of the claimed advance over the prior art’ to determine if the claim’s ‘character as a whole’ is directed to excluded subject matter.”<sup>41</sup> Nevertheless, the *Affinity* court eventually found that the disputed claim was “not directed to the solution of a ‘technological problem,’ nor [was] it directed to an *improvement* in computer or network functionality.”<sup>42</sup> In 2019, the Federal Circuit in *Trading Techs. Int’l, Inc. v. IBG LLC* merged the first aspect and second aspect by stating that step one “evaluate[s] ‘the focus of the claimed advance over the prior art’ to determine if the character of the claim as a whole, *considered in light of the specification*, is directed to excluded subject matter.”<sup>43</sup>

Notably, the *Affinity* court did not cite any prior art references when it provided step one analysis,<sup>44</sup> so “prior art” mentioned by the *Affinity* court does not have to be a

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<sup>37</sup> See Ted G. Dane, *Are the Federal Circuit’s Recent Section 101 Decisions A “Specific Improvement” in Patent Eligibility Law?*, 26 FED. CIRCUIT B.J. 331, 345–59 (2017) (discussing how the Federal Circuit looked to improvement made by the disputed claims in some cases).

<sup>38</sup> See *infra* Part II.B.

<sup>39</sup> *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016) (emphasis added). The court in *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC* recognized that in *Enfish, LLC*, “we found claim language reciting the invention’s specific improvements to help our determination in step one of the *Alice* framework that the invention was directed to those specific improvements in computer technology.” 827 F.3d 1341, 1348 (Fed. Cir. 2016) (emphasis in original).

<sup>40</sup> *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016) (emphasis added) (citing *Enfish, LLC*, 822 F.3d at 1336; *Rapid Litig. Mgmt. Ltd. v. CellzDirect, Inc.*, 827 F.3d 1042, 1048 (Fed. Cir. 2016)).

<sup>41</sup> *Affinity Labs of Tex., LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016) (emphasis added).

<sup>42</sup> *Id.* at 1262 (emphasis added and internal citation omitted).

<sup>43</sup> *Trading Techs. Int’l, Inc. v. IBG LLC*, 921 F.3d 1084, 1092 (Fed. Cir. 2019) (emphasis added) (citing *Intell. Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1338 (Fed. Cir. 2017) (quoting *Affinity Labs of Tex., LLC*, 838 F.3d at 1257)).

<sup>44</sup> See *Affinity Labs of Tex., LLC*, 838 F.3d at 1258–62.

kind of prior art for novelty or obviousness analyses.<sup>45</sup> In addition, requiring an advance over the prior art does not turn the *Affinity* approach into an obviousness analysis because, although “commercial success” may overcome a finding of obviousness,<sup>46</sup> the Federal Circuit in *Versata Dev. Grp., Inc. v. SAP Am., Inc.* has stated that “[c]ommercial success is not necessarily a proxy for an improvement in a technology nor does it necessarily indicate that claims were drawn to patent eligible subject matter.”<sup>47</sup>

After years of evolution, the improvement test has required a claimed improvement to be “specific.”<sup>48</sup> In 2018, the Federal Circuit in *Ancora Techs., Inc. v. HTC Am., Inc.* found that “[i]mproving security—here, against a computer’s unauthorized use of a program—*can be* a non-abstract computer-functionality improvement if done by a *specific* technique that departs from earlier approaches to solve a *specific* computer problem.”<sup>49</sup> In 2019, the Federal Circuit in *Koninklijke KPN N.V. v. Gemalto M2M GmbH* noted that “[a]n improved result, *without more stated in the claim*, is not enough to confer eligibility to an otherwise abstract idea.”<sup>50</sup> In 2020, the Federal Circuit in *TecSec, Inc. v. Adobe Inc.* concluded that the improvement test asks two inquiries: (1) “whether the focus of the claimed advance is on a solution to ‘a problem specifically arising in the realm of computer networks’ or computers” and (2) “whether the claim is properly characterized as identifying a ‘specific’ improvement in computer capabilities or network functionality, rather than only claiming a desirable result or function.”<sup>51</sup>

Recently in 2021, the Federal Circuit in *In re Mohapatra* seemed to offer a new approach to step one by “look[ing] to whether the claims are sufficiently concrete or specific to be directed to a patent-eligible process rather than a patent-ineligible

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<sup>45</sup> See also Jasper L. Tran & J. Sean Benevento, *Alice at Five*, 2019 PATENTLY-O PAT. L.J. 25, 29 (2019) (“The specification can provide helpful evidence to support eligibility, if it identifies particular improvements over the prior art.”). “Prior arts” are defined in 35 U.S.C. § 102 and generally mean any forms of information available to the public before the patent filing date. See Timothy R. Holbrook, *Patent Disclosures and Time*, 69 VAND. L. REV. 1459, 1462–79 (2016) (introducing prior arts under the 1952 Patent Act and the America Invents Act). In a typical analysis of novelty (or anticipation), a claim is invalid “if a single prior art reference discloses each and every limitation of the claimed invention.” *Schering Corp. v. Geneva Pharms.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003). In a typical obviousness analysis, courts consider factual findings such as “the scope and content of the prior art; the differences between the prior art and the claimed invention; the level of ordinary skill in the field of the invention; [] objective considerations such as commercial success, long-felt need, and the failure of others[]; and] the motivation to select and combine specified teachings of the prior art.” *Canfield Sci., Inc. v. Melanoscan, LLC*, 987 F.3d 1375, 1378 (Fed. Cir. 2021) (internal citations omitted).

<sup>46</sup> See *Canfield Sci., Inc.*, 987 F.3d at 1378.

<sup>47</sup> *Versata Dev. Grp., Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1335 (Fed. Cir. 2015), abrogated on other grounds by *SIPCO, LLC v. Emerson Elec. Co.*, 980 F.3d 865, 870 n.1 (Fed. Cir. 2020).

<sup>48</sup> See *infra* Part II.B.

<sup>49</sup> *Ancora Techs., Inc. v. HTC Am., Inc.*, 908 F.3d 1343, 1348 (Fed. Cir. 2018), as amended (Nov. 20, 2018) (emphasis added). See *cf.* *Customedia Techs., LLC v. Dish Network Corp.*, 951 F.3d 1359, 1364 (Fed. Cir. 2020) (“[I]t is not enough, however, to *merely* improve a fundamental practice or abstract process by invoking a computer *merely* as a tool.” (emphasis added)).

<sup>50</sup> *Koninklijke KPN N.V. v. Gemalto M2M GmbH*, 942 F.3d 1143, 1150 (Fed. Cir. 2019) (emphasis added).

<sup>51</sup> *TecSec, Inc. v. Adobe Inc.*, 978 F.3d 1278, 1293 (Fed. Cir. 2020) (internal citations omitted). See also *Customedia Techs., LLC*, 951 F.3d at 1364 (“To be a patent-eligible improvement to computer functionality, we have required the claims to be directed to an improvement in the functionality of the computer or network platform itself.”).

result.”<sup>52</sup> But, this idea is actually from *SAP Am., Inc. v. InvestPic, LLC* of which the step one analysis was partially based on a view that the disputed claims in *McRO, Inc.* “had the specificity required to transform a claim from one claiming only a result to one claiming a way of achieving it.”<sup>53</sup> Eventually, the *Mohapatra* court adopted the *McRO* approach to “look to whether the claims in the patent focus on a specific means or method, or are instead directed to a result or effect that itself is the abstract idea and merely invokes generic processes and machinery.”<sup>54</sup>

### C. Laundry List of Claims Directed to a Patent-Ineligible Subject Matter

The third aspect is that the Federal Circuit has created a laundry list of claims directed to patent-ineligible subject matters.<sup>55</sup> For example, in 2016, the Federal Circuit in *Elec. Power Grp., LLC v. Alstom S.A.* summarized four categories of claims directed to an abstract idea that deals with information.<sup>56</sup> Since 2020, the Federal Circuit has conceptualized many examples regarding what claim should fall within an abstract idea.<sup>57</sup>

Those patent-ineligible claims can be categorized into four groups. The first group involves information processing, including: (1) “collecting information, including when limited to particular content (which does not change its character as information)”<sup>58</sup>; (2) “analyzing information by steps people go through in their minds, or by mathematical algorithms, without more, as essentially mental processes”<sup>59</sup>; (3) “merely presenting the results of abstract processes of collecting and analyzing information, without more (such as identifying a particular tool for presentation)”<sup>60</sup>; (4) the combination of collecting, analyzing, and presenting information<sup>61</sup>; (5) “tailoring the provision of information to a user’s characteristics, such as location”;<sup>62</sup> (6) “merely displaying data by conventional methods as part of a series of abstract steps”<sup>63</sup>; (7) “the ideas of encoding and decoding image data and of converting formats, including when

<sup>52</sup> *In re Mohapatra*, 842 F. App’x 635, 638 (Fed. Cir. 2021) (citing *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1167 (Fed. Cir. 2018)).

<sup>53</sup> *SAP Am., Inc.*, 898 F.3d at 1167 (citing *McRO, Inc.*, 837 F.3d at 1314).

<sup>54</sup> *Mohapatra*, 842 F. App’x at 638 (quoting *Two-Way Media Ltd. v. Comcast Cable Commc’ns, LLC*, 874 F.3d 1329, 1337 (Fed. Cir. 2017) (citing *McRO, Inc.*, 837 F.3d at 1314)).

<sup>55</sup> See Luetzgen, *supra* note 22, at 480 (describing how a patent examiner should approach step one analysis under the USPTO’s 2019 Subject Matter Eligibility Guidance that provides a list of categories of patent-ineligible subject matters).

<sup>56</sup> See *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353–54 (Fed. Cir. 2016).

<sup>57</sup> See, e.g., *Brit. Telecomms. PLC v. IAC/InterActiveCorp*, 813 F. App’x 584, 587 (Fed. Cir. 2020); *CardioNet, LLC v. InfoBionic, Inc.*, 816 F. App’x 471, 475 (Fed. Cir. 2020); *Adaptive Streaming Inc. v. Netflix, Inc.*, 836 F. App’x 900, 903 (Fed. Cir. 2020); *Mortg. Application Techs., LLC v. MeridianLink, Inc.*, 839 F. App’x 520, 526 (Fed. Cir. 2021); *WhitServe LLC v. Donuts Inc.*, 809 F. App’x 929, 933 (Fed. Cir. 2020); *Bozeman Fin. LLC v. Fed. Rsrv. Bank of Atlanta*, 955 F.3d 971, 978 (Fed. Cir. 2020); *Elec. Commc’n Techs., LLC v. ShoppersChoice.com, LLC*, 958 F.3d 1178, 1182 (Fed. Cir. 2020); *Ericsson Inc. v. TCL Commc’n Tech. Holdings Ltd.*, 955 F.3d 1317, 1327 (Fed. Cir. 2020); *In re Abel*, 838 F. App’x 558, 561 (Fed. Cir. 2021).

<sup>58</sup> *Elec. Power Grp., LLC*, 830 F.3d at 1353.

<sup>59</sup> *Id.* at 1354.

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

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

<sup>62</sup> *Brit. Telecomms. PLC*, 813 F. App’x at 587.

<sup>63</sup> *CardioNet, LLC*, 816 F. App’x at 475.

data is received from one medium and sent along through another, are by themselves abstract ideas” and “claims focused on those general ideas governing basic communication practices, *not on any more specific purported advance in implementation*”<sup>64</sup>; (8) “information storage and exchange,” even where “it uses computers as a tool or is limited to a particular technological environment” and “[t]he mere automation of the exchange and storage of information.”<sup>65</sup>

The second group is concerned with commercial activities, including: (1) “[c]arrying out fundamental economic practices involving *simple information exchange*” and “use of standard computers and networks to carry out those functions—more speedily, more efficiently, more reliably”<sup>66</sup>; (2) “[f]undamental economic practice[s] *long prevalent in our system of commerce*”<sup>67</sup>; (3) “the process of *recording authentication information*—such as the customer’s name, address, and telephone number—and *including that information* in a subsequent communication with the customer.”<sup>68</sup>

The third group focuses on what humans can do, including: (1) “giving a message to an intermediary who, unlike the sender, knows the intended recipient’s location”; (2) “filtering [internet] content”; (3) “tracking financial transactions to determine whether they exceed a pre-set spending limit”; (4) “using a marking affixed to the outside of a mail object to communicate information about the mail object”; (5) protecting privacy of message recipient.<sup>69</sup>

The fourth group relates to human minds, including: (1) “[c]ontrolling access to resources [as] exactly the sort of process that ‘can be performed in the human mind, or by a human using a pen and paper’”<sup>70</sup>; (2) “a process that can be and has been performed by humans without the use of a computer.”<sup>71</sup>

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<sup>64</sup> *Adaptive Streaming Inc.*, 836 F. App’x at 903 (emphasis added).

<sup>65</sup> *Mortg. Application Techs., LLC*, 839 F. App’x at 526.

<sup>66</sup> *WhitServe LLC*, 809 F. App’x at 933 (emphasis added).

<sup>67</sup> *Bozeman Fin. LLC*, 955 F.3d at 978 (emphasis added, second alteration in original and internal quotation marks omitted) (citing *Bilski*, 561 U.S. at 611, but indirectly quoting Judge Rader’s dissenting opinion in *In re Bilski*, 545 F.3d 943, 1013 (Fed. Cir. 2008)).

<sup>68</sup> *Elec. Commc’n Techs., LLC*, 958 F.3d at 1182 (emphasis added) (stating that such the process “is abstract not only because it is a longstanding commercial practice, but also because it amounts to nothing more than gathering, storing, and transmitting information.”); *see also* *WhitServe LLC v. Dropbox, Inc.*, 854 F. App’x 367, 371 (Fed. Cir. 2021) (“In other words, the system is for requesting, transmitting, receiving, copying, deleting, and storing data records. Such transmitting, saving, and storing of client records is a fundamental business practice that ‘existed well before the advent of computers and the Internet’”).

<sup>69</sup> *See Abel*, 838 F. App’x at 561 (citations omitted).

<sup>70</sup> *Ericsson Inc.*, 955 F.3d at 1327.

<sup>71</sup> *Mortg. Application Techs., LLC*, 839 F. App’x at 526 (indicating that such a process may be shown by the prosecution history).

## III. FEDERAL CIRCUIT'S APPROACH TO STEP TWO

As for step two, the Federal Circuit also applies a common law methodology to search for an inventive concept.<sup>72</sup> In *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, the Federal Circuit has described that it examines first “eligible and ineligible claims of a similar nature from past cases” and then “the claims in the patents at issue to determine whether the trial court was correct in ruling them all to be invalid under § 101.”<sup>73</sup>

However, the Federal Circuit has developed an “unconventionality” approach to step two.<sup>74</sup> For instance, in *Berkheimer v. HP Inc.*, the Federal Circuit stated that step two “[t]he second step of the *Alice* test is satisfied when the claim limitations involve *more than* performance of well-understood, routine, [and] *conventional* activities previously known to the industry.”<sup>75</sup> There, the Federal Circuit opined that some disputed claims “contain[ed] limitations directed to the arguably *unconventional* inventive concept described in the specification.”<sup>76</sup>

The unconventionality approach originates from *Mayo Collaborative Servs.*<sup>77</sup> There, in determining whether an inventive concept existed in the disputed claims to ensure that “that the patent in practice amounts to significantly more than a patent upon the natural law itself,” the Supreme Court criticized that “the steps in the claimed processes (apart from the natural laws themselves) involve well-understood, routine, conventional activity previously engaged in by researchers in the field.”<sup>78</sup> Later, in *Alice*, when analyzing each step in the disputed claims, the Supreme Court opined that “all of these computer functions [performed at the claimed steps] are ‘well-understood, routine, conventional activit[ies]’ previously known to the industry.”<sup>79</sup>

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<sup>72</sup> See *Amdocs (Israel) Ltd.*, 841 F.3d at 1294–95 (“Instead of a definition, then, the decisional mechanism courts now apply is to examine earlier cases in which a similar or parallel descriptive nature can be seen—what prior cases were about, and which way they were decided.”). One commentator observed that the patent-eligibility issue has become a mirror issue of obviousness. See Paxton M. Lewis, *The Conflation of Patent Eligibility and Obviousness: Alice’s Substitution of Section 103*, 2017 UTAH L. REV. ONLAW 13, 27–28 (2017).

<sup>73</sup> *Amdocs (Israel) Ltd.*, 841 F.3d at 1295, 1299.

<sup>74</sup> See Ping-Hsun Chen, *Federal Circuit’s Unconventionality Approach to Patent-Ineligibility Challenges in a Motion to Dismiss*, 20 UIC REV. INTELL. PROP. L. 331, 338–53 (2021) (describing how the Federal Circuit determined an inventive concept by looking for any unconventional feature recited in the claim) [hereinafter, Chen, *Federal Circuit’s Unconventionality Approach*].

<sup>75</sup> *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1367 (Fed. Cir. 2018) (emphasis added, alteration in original and quotation marks omitted).

<sup>76</sup> *Id.* at 1370 (emphasis added).

<sup>77</sup> See Michael R. Woodward, *Amending Alice: Eliminating the Undue Burden of “Significantly More”*, 81 ALB. L. REV. 329, 337–38 (2018) (commenting that requiring the claimed steps to do more than “consist of well-understood, routine, conventional activity already engaged in by the scientific community” is a form of novelty and obviousness analysis).

<sup>78</sup> *Mayo Collaborative Servs.*, 566 U.S. at 73.

<sup>79</sup> *Alice Corp. Pty. Ltd.*, 573 U.S. at 225 (second alteration in original) (citing *Mayo Collaborative Servs.*, 566 U.S. at 73). See also Kwon, *supra* note 6, at 508 (stating that under *Alice*, “if the claim only involves ‘well-understood, routine, conventional activity,’ the court must find the claim patent ineligible”); Michael Gershoni, *An Argument Against Reinventing the Wheel: Using an Obviousness Analysis to Bring Consistency and Clarity to Patent Eligibility Determinations of Software Patents After Alice Corp.*, 44 AIPLA Q.J. 295, 309 (2016) (“*Alice* holds that combining a ‘long prevalent’ idea and a ‘generic’ machine to perform ‘well-understood, routine, [and] conventional activities’ is insufficient to constitute an inventive concept” (alteration in original)).

This “well-understood, routine, conventional activity” notion first appeared in *PerkinElmer, Inc. v. Intema Ltd.*, a post-*Mayo*, pre-*Alice* case, where the Federal Circuit noted that “[p]rocess claims fail this [‘inventive concept’] requirement if, apart from the ineligible concept, they contain *nothing more than* ‘well-understood, routine, conventional activity previously engaged in by researchers in the field.’”<sup>80</sup> The second post-*Mayo*, pre-*Alice* case, *SmartGene, Inc. v. Advanced Biological Lab’s, SA*, proposed that “*Mayo* demanded that, when a claim involves an abstract idea (or, in *Mayo* itself, a law of nature), eligibility under section 101 requires that the claim involve ‘*enough*’ *else*—applying the idea in the realm of tangible physical objects (for product claims) or physical actions (for process claims)—that is *beyond* ‘well-understood, routine, conventional activity.’”<sup>81</sup>

After *Alice*, the Federal Circuit in *Ultramercial, Inc. v. Hulu, LLC* acknowledged that to pass step two a claim must include “additional features” and for the first time required that “those ‘additional features’ must be *more than* ‘well-understood, routine, conventional activity.’”<sup>82</sup> Since then, this “more than” notion has appeared in several later decisions.<sup>83</sup> The “more than” notion may be phrased differently. For instance, the Federal Circuit in *Rapid Litig. Mgmt. Ltd. v. CellzDirect, Inc.* held that “[a]t step two, *more is required than* ‘well-understood, routine, conventional activity already engaged in by the scientific community,’ which fails to transform the claim into ‘significantly more than a patent upon the’ ineligible concept itself.”<sup>84</sup> In *FairWarning IP, LLC v. Iatric Sys., Inc.*, the Federal Circuit expressively required that “[t]his *inventive concept* must do more than simply recite ‘well-understood, routine, conventional activity.’”<sup>85</sup>

However, the “well-understood, routine, conventional activity” notion is occasionally presented in a negative tune. For example, in *Intellectual Ventures I LLC v. Symantec Corp.*, the Federal Circuit opined that “[s]imply appending conventional steps, specified at a high level of generality,’ which are ‘well known in the art’ and consist of ‘well-understood, routine, conventional activit[ies]’ previously engaged in by

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<sup>80</sup> *PerkinElmer, Inc. v. Intema Ltd.*, 496 F. App’x 65, 68 (Fed. Cir. 2012) (emphasis added).

<sup>81</sup> *SmartGene, Inc. v. Advanced Biological Lab’s, SA*, 555 F. App’x 950, 955 (Fed. Cir. 2014) (emphasis added). *See also* *Genetic Techs. Ltd. v. Merial LLC.*, 818 F.3d 1369, 1376 (Fed. Cir. 2016) (“That is, under the *Mayo/Alice* framework, a claim directed to a newly discovered law of nature (or natural phenomenon or abstract idea) cannot rely on the novelty of that discovery for the inventive concept necessary for patent eligibility; instead, the application must provide something inventive, *beyond* mere ‘well-understood, routine, conventional activity.’”) (emphasis added) (a post-*Alice* case); *INO Therapeutics LLC v. Praxair Distrib. Inc.*, 782 F. App’x 1001, 1010 (Fed. Cir. 2019).

<sup>82</sup> *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715 (Fed. Cir. 2014) (emphasis added). *See also* *Vyas*, *supra* note 17, at 16 (analyzing the *Ultramercial* decision).

<sup>83</sup> *See, e.g.*, *Shortridge v. Found. Constr. Payroll Serv., LLC*, 655 F. App’x 848, 852 (Fed. Cir. 2016); *In re Chorna*, 656 F. App’x 1016, 1021 (Fed. Cir. 2016); *Affinity Labs of Tex.*, 838 F.3d at 1262; *Intell. Ventures I LLC v. Erie Indem. Co.*, 850 F.3d 1315, 1328 (Fed. Cir. 2017); *Cap. One Fin. Corp.*, 850 F.3d at 1341; *Smart Sys. Innovations, LLC v. Chi. Transit Auth.*, 873 F.3d 1364, 1373–74 (Fed. Cir. 2017); *Intell. Ventures I LLC v. Erie Indem. Co.*, 711 F. App’x 1012, 1018 (Fed. Cir. 2017); *In re Morinville*, 767 F. App’x 964, 969 (Fed. Cir. 2019); *In re Morsa*, 809 F. App’x 913, 918 (Fed. Cir. 2020); *Mortg. Application Techs., LLC v. MeridianLink, Inc.*, 839 F. App’x 520, 526 (Fed. Cir. 2021).

<sup>84</sup> *Rapid Litig. Mgmt. Ltd.*, 827 F.3d at 1047 (emphasis added). *See also* *Smartflash LLC v. Apple Inc.*, 680 F. App’x 977, 981 (Fed. Cir. 2017).

<sup>85</sup> *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1093 (Fed. Cir. 2016) (emphasis added). *See also* *GREE, Inc. v. Supercell Oy*, 834 F. App’x 583, 588 (Fed. Cir. 2020); *NetSoc, LLC v. Match Grp., LLC*, 838 F. App’x 544, 547 (Fed. Cir. 2020).

workers in the field, is *not sufficient* to supply the inventive concept.”<sup>86</sup> In *ChargePoint, Inc. v. SemaConnect, Inc.*, the Federal Circuit stated that “[t]hese additional features *cannot simply be* ‘well-understood, routine, conventional activit[ies]’ previously known to the industry.”<sup>87</sup>

In some cases, the application of the “well-understood, routine, conventional activity” notion focuses on “conventional activity.”<sup>88</sup> For instance, in *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, the Federal Circuit recognized the patent-eligibility analysis is “to consider whether various claim elements simply recite “well-understood, routine, conventional activit[ies].”<sup>89</sup> But, the *Bascom* court found that “[a]s is the case here, an inventive concept can be found in the *non-conventional* and non-generic arrangement of known, conventional pieces.”<sup>90</sup> In *Cellspin Soft, Inc. v. Fitbit, Inc.*, the Federal Circuit required that “[a]n inventive concept reflects something more than the application of an abstract idea using ‘well-understood, routine, and conventional activities previously known to the industry.’”<sup>91</sup> But, the *Cellspin* court held that “[w]e have no basis, at the pleadings stage, to say that these claimed techniques, among others, were well-known or *conventional* as a matter of law.”<sup>92</sup>

In 2019, the Federal Circuit in *Chamberlain Grp., Inc. v. Techtronic Indus. Co.* deviated from its traditional application of the “well-understood, routine, conventional activity” notion by stating that under step two “[t]he appropriate question is not whether the entire claim as a whole was ‘well-understood, routine [and] conventional’ to a skilled artisan (i.e., whether it lacks novelty).”<sup>93</sup> Then, the court proposed that “there are two distinct questions: (1) whether each of ‘the [elements] in the claimed [product] (apart from the natural laws themselves) involve well-understood, routine, conventional activity previously engaged in by researchers in the field’ and (2) whether all of the steps “*as an ordered combination* add[ ] nothing to the laws of nature that is not already present when the steps are considered separately.”<sup>94</sup>

The *Chamberlain* approach does not focus on an inventive concept or additional features as the traditional application does. Rather, it looks to each claim limitation individually. Recently, the *Chamberlain* approach has been embraced by some district courts.<sup>95</sup> However, it is unclear whether the *Chamberlain* approach is a

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<sup>86</sup> *Intell. Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1313 (Fed. Cir. 2016) (emphasis added and alterations in original). *See also In re Rudy*, 956 F.3d 1379, 1386 (Fed. Cir. 2020) (“And our step-two analysis is equally applicable because ‘well-understood, routine, conventional activities previously known to the industry’ cannot provide an inventive concept.”).

<sup>87</sup> *ChargePoint, Inc.*, 920 F.3d at 773 (emphasis added).

<sup>88</sup> *See Chen, Federal Circuit’s Unconventionality Approach*, *supra* note 74, at 338–53.

<sup>89</sup> *Bascom Glob. Internet Servs., Inc.*, 827 F.3d at 1350.

<sup>90</sup> *Id.* (emphasis added).

<sup>91</sup> *Cellspin Soft, Inc. v. Fitbit, Inc.*, 927 F.3d 1306, 1316 (Fed. Cir. 2019).

<sup>92</sup> *Id.* at 1318 (emphasis added).

<sup>93</sup> *Chamberlain Grp., Inc. v. Techtronic Indus. Co.*, 935 F.3d 1341, 1348–49 (Fed. Cir. 2019) (second alteration in original).

<sup>94</sup> *Id.* at 1349 (emphasis in original, alternations, except for the last one, in original, and international citations omitted).

<sup>95</sup> *See, e.g., Tenaha Licensing LLC v. Tigerconnect, Inc.*, No. CV 19-1400-LPS-SRF, 2020 WL 30426, at \*8 (D. Del. Jan. 2, 2020); *Tenaha Licensing LLC v. Ascom (US) Inc.*, No. CV 19-568-LPS-SRF, 2020 WL 30427, at \*8 (D. Del. Jan. 2, 2020); *Tenaha Licensing LLC v. Vocera Commc’ns, Inc.*, No. CV 19-208-LPS-SRF, 2020 WL 30489, at \*8 (D. Del. Jan. 2, 2020); *Personalized Media Commc’ns*,

conflict within the Federal Circuit case law. In *Yu v. Apple Inc.*, the district court adopted the *Chamberlain* approach and criticized that the plaintiff showed “no evidence or good argument that these elements individually were not ‘well-understood, routine, conventional activities previously known to the industry.’”<sup>96</sup> But, on appeal, the Federal Circuit did not review the *Chamberlain* approach, while it found that the representative claim was “recited at a high level of generality and merely invokes well-understood, routine, conventional components to apply the abstract idea identified above.”<sup>97</sup>

Finally, as the Federal Circuit in *Aatrix Software, Inc. v. Green Shades Software Inc.* has suggested, “[i]n a situation where *the specification* admits the additional claim elements are well-understood, routine, and conventional, it will be difficult, if not impossible, for a patentee to show a genuine dispute.”<sup>98</sup> For example, in *Secured Mail Sols. LLC v. Universal Wilde, Inc.*, the alleged inventive concept was a sender-generated barcode.<sup>99</sup> There, the Federal Circuit reviewed the specification and found that the alleged inventive features were commonplace, well-known or conventional.<sup>100</sup> The Federal Circuit also determined that “[t]he fact that many of [the asserted] technologies [implementing the alleged inventive concept] were well-known can be discerned from [the disputed] patents themselves.”<sup>101</sup> Ultimately, the Federal Circuit affirmed the district court’s decision on the patent-ineligibility of the disputed claims.<sup>102</sup>

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LLC v. Netflix Inc., 475 F. Supp. 3d 289, 297 (S.D.N.Y. 2020); Vaporstream, Inc. v. Snap Inc., No. 2:17-cv-00220-MLH (KSx), 2020 WL 978731, at \*11 (C.D. Cal. Feb. 28, 2020) (referring to the *Chamberlain* approach as the “inventive concept” step); *Yu v. Apple Inc.*, No. 3:18-CV-06181-JD, 2020 WL 1429773, at \*7 (N.D. Cal. Mar. 24, 2020), *aff’d*, 1 F.4th 1040 (Fed. Cir. 2021); *Cellspin Soft, Inc. v. Fitbit, Inc.*, No. 17-CV-05928-YGR, 2021 WL 1421612, at \*7 (N.D. Cal. Apr. 14, 2021); *Jacob’s Jewelry Co., Ltd. v. Tiffany & Co.*, No. 20 CIV. 4291 (KPF), 2021 WL 2651656, at \*4 (S.D.N.Y. June 28, 2021).

<sup>96</sup> *Yu v. Apple Inc.*, No. 3:18-CV-06181-JD, 2020 WL 1429773, at \*5, \*7 (N.D. Cal. Mar. 24, 2020).

<sup>97</sup> *Yu v. Apple Inc.*, 1 F.4th 1040, 1045 (Fed. Cir. 2021).

<sup>98</sup> *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 890 F.3d 1354, 1356 (Fed. Cir. 2018) (emphasis added).

<sup>99</sup> *Secured Mail Sols. LLC v. Universal Wilde, Inc.*, 873 F.3d 905, 911 (Fed. Cir. 2017).

<sup>100</sup> *Id.* at 912.

<sup>101</sup> *Id.*

<sup>102</sup> *Id.*

#### IV. FEDERAL CIRCUIT'S EFFORTS TO CREATE A BRIGHT-LINE RULE FOR THE *ALICE* STANDARD

##### *A. Definition of a Bright-Line Rule*

Some commentators referred to the Supreme Court's rule excluding three patent-ineligible subject matters from patent protection as a bright-line rule because the rule provides no exceptions.<sup>103</sup> On the opposite, some commentators observed that the Supreme Court has consistently refused to impose a bright-line rule on patent-eligibility.<sup>104</sup> Thus, what a bright-line rule is depends on whether such a rule has established a recognized bright line.

Here, a bright-line rule means a rule providing explanatory requirements, for example the Federal Circuit's machine-or-transformation ("MOT") test. The MOT test was used for determining patent-eligibility and provided that a claim may satisfy 35 U.S.C. § 101 if the "claim is tied to a particular machine" or the "claim transforms an article."<sup>105</sup> The MOT test also took into considerations that "the use of a specific machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility" and that "the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity."<sup>106</sup> The MOT test as a positive rule would provide predictability of patent-eligibility analysis.<sup>107</sup>

Before *Alice*, the Supreme Court in *Bilski v. Kappos* abrogated the MOT test primarily because the test was treated as the solo test for patent-eligibility.<sup>108</sup> However, in the post-*Alice* era, the Federal Circuit has established a MOT-like test for applying the *Alice* standard.

##### *B. Step One*

Regarding step one, the Federal Circuit has crystalized the improvement test requiring that a patent-eligible claim focus on a technological solution to a specific problem caused by, for instance, computers or computer networks and recite features

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<sup>103</sup> See David Swetnam-Burland & Stacy O. Stitham, *Alice's Adventures in Oz: Revealing the Man Behind the Curtain*, 9 AKRON INTELL. PROP. J. 29, 39 (2015) (discussing the Federal Circuit's approach to the *Alice* standard).

<sup>104</sup> See, e.g., Aashish R. Karkhanis, *Quantifying Patent Eligibility Judgments*, 15 WAKE FOREST J. BUS. & INTELL. PROP. L. 203, 224–25 (2014) (illustrating the impacts of *Alice Corp. Pty.*); Krystina L. Ho, *America Invents-and So Can You? The Dichotomy of Subject-Matter Eligibility Challenges in Post-Grant Proceedings*, 115 COLUM. L. REV. 1521, 1530–31 (2015) (stating that there is no definitive test for patent-eligibility).

<sup>105</sup> See *In re Bilski*, 545 F.3d 943, 961 (Fed. Cir. 2008).

<sup>106</sup> *Id.* at 961–62.

<sup>107</sup> See William Michael Schuster, *Predictability and Patentable Processes: The Federal Circuit's in Re Bilski Decision and Its Effect on the Incentive to Invent*, 11 COLUM. SCI. & TECH. L. REV. 1, at 27 (2009) (describing the benefits of the MOT), available at <https://journals.library.columbia.edu/index.php/stlr/article/view/3841/1633> (last visited Nov. 1, 2021).

<sup>108</sup> See *Bilski*, 561 U.S. at 604. See also David Swetnam-Burland & Stacy O. Stitham, *Patent Law 101: The Threshold Test As Threshing Machine*, 21 TEX. INTELL. PROP. L.J. 135, 138 (2013) (describing how *Bilski v. Kappos* has impacted on the Federal Circuit's Patent-Eligibility Jurisprudence).

considered as “a ‘specific’ improvement in computer capabilities or network functionality.”<sup>109</sup>

Although a patent-eligible claim is not required to be tied to a particular machine, the Federal Circuit’s step one analysis does look for machinery nature of an alleged technological solution or specific improvement.<sup>110</sup> For instance, in *SRI Int’l, Inc. v. Cisco Sys., Inc.*, the representative claim recited:

A computer-automated method of hierarchical event monitoring and analysis within an enterprise network comprising: deploying a plurality of network *monitors* in the enterprise network; detecting, by the network *monitors*, suspicious network activity based on analysis of network traffic data selected from one or more of the following categories: {network packet data transfer commands, network packet data transfer errors, network packet data volume, network connection requests, network connection denials, error codes included in a network packet, network connection acknowledgements, and network packets indicative of well-known network-service protocols}; generating, by the *monitors*, reports of said suspicious activity; and automatically receiving and integrating the reports of suspicious activity, by one or more hierarchical *monitors*.<sup>111</sup>

The Federal Circuit found the disputed claims “directed to using a specific technique [] to solve a technological problem arising in computer networks.”<sup>112</sup> The identified specific technique was use of “a plurality of network *monitors*” for analyzing “specific types of data on the network.”<sup>113</sup>

In *Ancora Techs., Inc.*, the representative claim recited:

A method of restricting software operation within a license for use with a computer including an erasable, non-volatile memory area of a BIOS of the computer, and a volatile memory area; the method comprising the steps of: selecting a program residing in the volatile memory, using an agent to set up a verification *structure* in the erasable, non-volatile memory of the *BIOS*, the verification *structure* accommodating data that includes at least one license record, verifying the program using at least the verification *structure* from the erasable non-volatile memory of the *BIOS*, and acting on the program according to the verification.<sup>114</sup>

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<sup>109</sup> See *TecSec, Inc.*, 978 F.3d at 1293.

<sup>110</sup> See *infra* Part IV.B.

<sup>111</sup> *SRI Int’l, Inc. v. Cisco Sys., Inc.*, 930 F.3d 1295, 1301 (Fed. Cir. 2019) (emphasis added) (quoting U.S. Patent No. 6,711,615 claim 1).

<sup>112</sup> *Id.* at 1303.

<sup>113</sup> *Id.* (emphasis added).

<sup>114</sup> *Ancora Techs., Inc.*, 908 F.3d at 1345–46 (emphasis added) (quoting U.S. Patent No. 6,411,941 claim 1).

The disputed claims were found “directed to a solution to a computer-functionality problem.”<sup>115</sup> The Federal Circuit noted that the identified functionality improvement was built on “a structure containing a license record” which “is stored in a particular, modifiable, non-volatile portion of the computer’s *BIOS*” and “used for verification by interacting with the distinct computer memory that contains the program to be verified.”<sup>116</sup>

*SRI* and *Ancora* indicate that an alleged technological solution must encompass physical components arranged specifically for solving the designated problem.<sup>117</sup> However, those physical components should not be a functional term.<sup>118</sup> For instance, in *Ericsson Inc. v. TCL Commc’n Tech. Holdings Ltd.*, the disputed claims were found “directed to the abstract idea of controlling access to, or limiting permission to, resources.”<sup>119</sup> The representative claim recited:

A system for controlling access to a platform, the system comprising: a platform having a software services component and an interface component, the interface component having at least one interface for providing access to the software services component for enabling application domain software to be installed, loaded, and run in the platform; an *access controller* for controlling access to the software services component by a requesting application domain software via the at least one interface, the access controller comprising: an *interception module* for *receiving a request* from the requesting application domain software to access the software services component; and a *decision entity* for *determining if the request should be granted* wherein the decision entity is a *security access manager*, the security access manager holding access and permission policies; and wherein the requesting application domain software *is granted access* to the software services component via the at least one interface *if the request is granted*.<sup>120</sup>

The patentee identified “the process of requesting and controlling access as recited in the claim [as] a specific technique for improving computer performance.”<sup>121</sup> But, the Federal Circuit opined that the disputed claims were “drafted functionally” and “silent as to how access is controlled.”<sup>122</sup> In fact, relying on the specification, the Federal Circuit criticized that the terms “access controller,” “interception module,” “decision entity” and “security access manager” were merely four functional computer components that together failed to specify how the representative claim controls access to a platform.<sup>123</sup>

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<sup>115</sup> *Id.* at 1349.

<sup>116</sup> *Id.* at 1348–49 (emphasis added).

<sup>117</sup> See *supra* Part IV.B.

<sup>118</sup> See *infra* Part IV.B.

<sup>119</sup> *Ericsson Inc.*, 955 F.3d at 1326.

<sup>120</sup> *Id.* at 1325–26 (emphasis added) (quoting U.S. Patent No. 7,149,510 claim 1).

<sup>121</sup> *Id.* at 1328.

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

<sup>123</sup> *Id.* at 1326.

Moreover, when a disputed claim focuses on pure information processing, the Federal Circuit focuses more on functionality improvement without identifying physical arrangement.<sup>124</sup> For example, in *Data Engine Techs. LLC v. Google LLC*, one of the disputed patents was found “directed to a specific method for navigating through three-dimensional electronic spreadsheets.”<sup>125</sup> The identified improvement was “allow[ing] computers, for the first time, to provide rapid access to and processing of information in different spreadsheets” and users to easily navigating three-dimensional spreadsheets.<sup>126</sup> The Federal Circuit held that the representative claim recited the “technical solution and improvement in computer spreadsheet functionality.”<sup>127</sup> Specifically, the Federal Circuit pointed to several claimed features: (1) “displaying on a screen display a row of spreadsheet page identifiers [(each shown as a notebook tab)] along one side of the first spreadsheet page”; (2) “require[ing] at least one user-settable identifying character to label the notebook tab”; (3) “navigating through the various spreadsheet pages through selection of the notebook tabs”; (4) “requir[ing] a formula that uses the identifying character to operate on information spread between different spreadsheet pages that are identified by their tabs.”<sup>128</sup> Therefore, the Federal Circuit opined that the representative claim was not an “idea

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<sup>124</sup> See *infra* Part IV.B.

<sup>125</sup> *Data Engine Techs. LLC v. Google LLC*, 906 F.3d 999, 1007–08 (Fed. Cir. 2018).

<sup>126</sup> *Id.* at 1008.

<sup>127</sup> *Id.*

<sup>128</sup> *Id.* There, the representative patent-eligible claim recited:

In an electronic spreadsheet system for storing and manipulating information, a computer-implemented method of representing a three-dimensional spreadsheet on a screen display, the method comprising:

displaying on said screen display a first spreadsheet page from a plurality of spreadsheet pages, each of said spreadsheet pages comprising an array of information cells arranged in row and column format, at least some of said information cells storing user-supplied information and formulas operative on said user-supplied information, each of said information cells being uniquely identified by a spreadsheet page identifier, a column identifier, and a row identifier;

while displaying said first spreadsheet page, *displaying a row of spreadsheet page identifiers along one side of said first spreadsheet page, each said spreadsheet page identifier being displayed as an image of a notebook tab on said screen display* and indicating a single respective spreadsheet page, wherein at least *one spreadsheet page identifier* of said displayed row of spreadsheet page identifiers *comprises* at least *one user-settable identifying character*;

*receiving user input for requesting display of a second spreadsheet page* in response to *selection with an input device of a spreadsheet page identifier* for said second spreadsheet page;

in response to said receiving user input step, *displaying said second spreadsheet page on said screen display* in a manner so as to obscure said first spreadsheet page from display while continuing to display at least a portion of said row of spreadsheet page identifiers; and

*receiving user input for entering a formula in a cell on said second spreadsheet page, said formula including a cell reference* to a particular cell on another of said spreadsheet pages having a particular spreadsheet page identifier comprising at least one user-supplied identifying character, *said cell reference comprising said at least one user-supplied identifying character for said particular spreadsheet page identifier* together with said column identifier and said row identifier for said particular cell.

*Id.* at 1005 (emphasis added) (quoting U.S. Patent No. 5,590,259 claim 12).

of navigating through spreadsheet pages using *buttons or a generic method* of labeling and organizing spreadsheets.”<sup>129</sup> Rather, the Federal Circuit concluded that the representative claim utilized “a *specific interface* and implementation for navigating complex three-dimensional spreadsheets using *techniques unique to computers*.”<sup>130</sup>

Another example is *Finjan, Inc. v. Blue Coat Sys., Inc.*, where the representative claim recited:

A method comprising: receiving by an inspector a Downloadable; generating by the inspector a first Downloadable *security profile* that identifies suspicious code in the received Downloadable; and linking by the inspector the first Downloadable *security profile* to the Downloadable before a web server makes the Downloadable available to web clients.<sup>131</sup>

The claimed “security profile” was required to “include the information about *potentially* hostile operations produced by a ‘behavior-based’ virus scan.”<sup>132</sup> The Federal Circuit considered the “behavior-based” virus scan as an improvement in computer functionality.<sup>133</sup> Specifically, the Federal Circuit found that the “behavior-based” virus scan can detect previously-unknown viruses or anti-detection known viruses by “analyz[ing] a downloadable’s code and determin[ing] whether it performs potentially dangerous or unwanted operations.”<sup>134</sup> The Federal Circuit commented that the “behavior-based” virus scan was “distinguished from traditional, ‘code-matching’ virus scans” that merely compare a downloadable file with known viruses.<sup>135</sup> Thus, the Federal Circuit held that the disputed claims were “directed to a non-abstract improvement in computer functionality, rather than the abstract idea of computer security writ large.”<sup>136</sup>

### C. Step Two

Regarding step two, the Federal Circuit has provided a negative rule requiring that an alleged inventive concept is not “well-understood, routine, conventional activity” previously known to the industry or in the relevant field.<sup>137</sup> However, this approach has become an easy way to reach a patent-ineligibility decision.<sup>138</sup> For instance, in *Universal Secure Registry LLC v. Apple Inc.*, the Federal Circuit found that the asserted inventive concept was “conventional and long-standing” as the specification has described.<sup>139</sup>

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<sup>129</sup> *Id.* at 1008–09 (emphasis added).

<sup>130</sup> *Id.* at 1009 (emphasis added).

<sup>131</sup> *Finjan, Inc. v. Blue Coat Sys., Inc.*, 879 F.3d 1299, 1303 (Fed. Cir. 2018) (emphasis added) (quoting U.S. Patent No. 6,154,844 claim 1).

<sup>132</sup> *Id.* at 1304 (emphasis in original).

<sup>133</sup> *Id.*

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

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

<sup>136</sup> *Id.* at 1305.

<sup>137</sup> *See supra* Part III.

<sup>138</sup> *See infra* Part IV.C.

<sup>139</sup> *See Universal Secure Registry LLC v. Apple Inc.*, 10 F.4th 1342, 1350 (Fed. Cir. 2021).

Under this negative rule, a patentee may rely on an unconventional arrangement of conventional elements to pass step two.<sup>140</sup> For example, in *Amdocs (Israel) Ltd.*, the Federal Circuit considered the unconventional architecture of the claimed system as an inventive concept embraced by the disputed claim.<sup>141</sup> The disputed claim recited a computer program product that is implemented in the claimed system composed of physical components, such as network devices, information source modules (“ISMs”), gatherers, a central event manager (“CEM”), a central database, a user interface server, and terminals or clients.<sup>142</sup> The disputed claim comprised arguably-generic limitations, such as “computer code for storing the plurality of data records in a database,” “computer code for outputting a report based on the queries.”<sup>143</sup> However, the disputed claim had other limitations that together constitute an inventive concept.<sup>144</sup> These inventive limitations included: (1) “computer code for collecting network communications usage information in real-time from a plurality of network devices at a plurality of layers”; (2) “computer code for filtering and aggregating the network communications usage information”; and (3) “computer code for completing a plurality of data records from the filtered and aggregated network communications usage information, the plurality of data records corresponding to network usage by a plurality of users.”<sup>145</sup> Ultimately, the Federal Circuit held that the claimed collecting, filtering, aggregating, and completing steps “all depend[ed] upon the [claimed] system’s unconventional distributed architecture” and that “the ordered combination of these limitations yield[ed] an inventive concept.”<sup>146</sup>

## V. CONCLUSION

Although the Supreme Court in *Alice* may create an ambiguous standard for determining whether a claim is patent-eligible, the Federal Circuit has provided workable guidance for lower courts to apply the *Alice* standard.

Regarding step one, the Federal Circuit requires considering the entirety of a disputed claim and consulting the specification that helps understand the disputed claim. The Federal Circuit also emphasizes that prior art as extrinsic evidence should be disregarded unless they overwhelmingly show that the disputed claim is directed to a patent-ineligible subject matter.

To pass step one, a plaintiff may assert that a claim offers an advance over the prior art by showing any specific features the claimed invention has included to improve functionality. On the other hand, the Federal Circuit has provided a laundry list of patent-ineligible subject matters. Consequently, the focus of patent-eligibility has to be on step two.

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<sup>140</sup> See Ping-Hsun Chen, *Questionable Patent-Eligibility of IoT Technology*, 22 MARQ. INTELL. PROP. L. REV. 165, 181–83 (2018) (discussing a case concerning “an unconventional system composed of existing devices” which constitutes an inventive concept).

<sup>141</sup> See *Amdocs (Israel) Ltd.*, 841 F.3d at 1301–04 (discussing the patent-eligibility issue of claim 16 of U.S. Patent No. 7,412,510).

<sup>142</sup> *Id.* at 1291, 1302.

<sup>143</sup> *Id.* 1302-03 (citing U.S. Patent No. 7,412,510 claim 16).

<sup>144</sup> *Id.* at 1303.

<sup>145</sup> *Id.* 1302–03.

<sup>146</sup> *Id.* at 1303.

Regarding step two, the Federal Circuit may have established a bright-line rule and requires showing that an inventive concept is more than a “well-understood, routine, conventional” activity known to the industry. Thus, a plaintiff has to illustrate how the alleged inventive concept is not “well-understood, routine, conventional.” However, the ultimate challenge depends on whether the specification expresses that such an inventive concept is well-understood, routine, or conventional.