

# Intellectual Property & Technology Law Journal

Edited by the Technology and Proprietary Rights Group of Weil, Gotshal & Manges LLP

VOLUME 36 • NUMBER 5 • MAY 2024

## Patent Eligibility of Software Inventions: An Overview of the Laws in Japan, Europe, and the United States – Part I

By Kamaram Munira

Despite attempts to harmonize patent laws worldwide, laws for determining the eligibility of software innovations vary from country to country. This two-part article describes and compares the patent eligibility laws of the United States, Japan, and the European Patent Convention to understand how the different patent eligibility laws influence patenting trends of software innovations. After a brief introduction, this first part reviews the Japanese, European, and United States approaches. The conclusion of this article, to be published in the next issue of the *Intellectual Property & Technology Law Journal*, will compare the current Japanese, American and European approaches for examining eligibility of software patents and will discuss patenting trends of software inventions in Japan, Europe, and the United States.

### INTRODUCTION

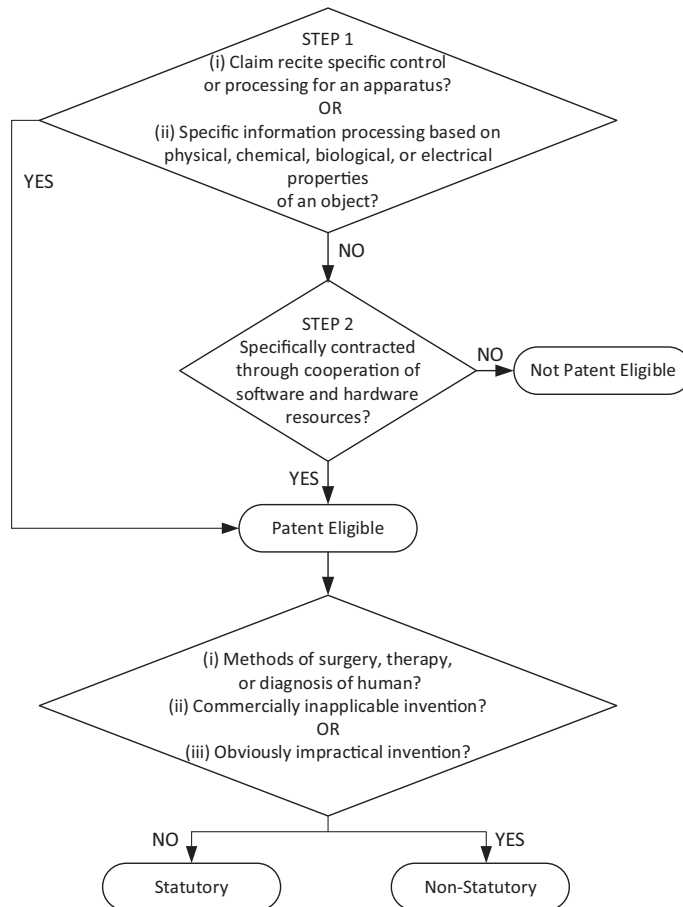
Today's leading technologies, such as Artificial Intelligence, Machine Learning, Robotics, Virtual

and Augmented Reality, Blockchain, the Internet of Things, Cloud Computing, and Cyber Security, involve software innovations. As a result, businesses and public research organizations increasingly use software-related patents to protect their software innovations.

However, the laws governing the eligibility of software patents may hinder businesses from obtaining software patents. The federal courts in the United States have struggled over the patent eligibility standards since the 1970s creating nothing but confusion for patent owners, practitioners, examiners, and judges.<sup>1</sup> The reason for the confusion is the nature of software innovations has been said to be similar to those of mathematical algorithms, mental activities, business methods, or abstract ideas, which are deemed as patent-ineligible subject matter.<sup>2</sup> In addition to the United States, software patents also remain controversial in the rest of the world, including Europe. Under the European Patent Convention,<sup>3</sup> a computer program per se is not considered a patentable invention.<sup>4</sup> However, in many cases, a software program can be considered a technical solution to a technical problem and can be patented.<sup>5</sup> On the other hand, Japan has embraced software patents with few limitations.<sup>6</sup>

Kamaram Munira, Ph.D., an attorney in the Washington, D.C., office of Banner Witcoff, Ltd., drafts, prosecutes and litigates U.S. and international patent applications for clients in software and hardware technology areas. She may be contacted at [kmunira@bannerwitcoff.com](mailto:kmunira@bannerwitcoff.com).

**Figure 1- Framework for Determining Statutory Patents by the Japan Patent Office**



In this article, patent eligibility laws of three jurisdictions – Japan, Europe, and the United States – are discussed and compared. While the statutory interpretations of the meaning of “invention” are very similar, the final decisions about what kinds of software innovations are patentable are different in each of these jurisdictions.

## THE JAPANESE APPROACH

Japanese patent law is designed to encourage and contribute to the development of industries in Japan by “encourag[ing] inventions” and “promoting the protection and utilization of inventions.”<sup>7,8</sup> Most of the rules regarding how software patents are examined in Japan have been laid down by a series of Examination Guidelines. The 1975 Examination Guidelines noted that software is

“exceedingly abstract” and outside the bounds of protection, however, guidelines published in 2000 rendered software eligible<sup>9</sup> for patent protection.<sup>10</sup>

The 2015 Examination Guidelines<sup>11</sup> for Patent and Utility Model is the most current version. Figure 1<sup>12</sup> depicts a flowchart illustrating the procedure for determining patent eligibility based on Chapter I of Part II of the current Examination Guidelines titled “Eligibility for Patent and Industrial Applicability.”

Under Japanese patent law, an invention must be a “highly advanced creation of technical ideas” that “utilize[s] the laws of nature.”<sup>13</sup> Laws of nature are any laws other than economic laws, arbitrary arrangements (e.g., a rule for playing a game), mathematical formula, mental activities of humans, business methods, pure academic principles, etc.<sup>14</sup> The reference to “technical ideas” seems to be linked to

---

the concept that an invention must be “technical,” i.e., something objective and that can be repeated (not the product of randomness), and linked to the concept of enablement. Finally, “creation” is to distinguish inventions from mere discoveries, where human beings do not intervene.<sup>15</sup> Japanese patent law also specifies that an invention can include software that comprises “a set of instructions given to a computer which work to produce a specific result” or “any other information that is to be processed by a computer equivalent to a . . . [software program].”<sup>16</sup> Article 29(1) of the Japanese Patent Act specifies the requirement of patentability – “an invention that is industrially applicable.”

The Japanese patent system has separate guidelines for software inventions’ patent eligibility.<sup>17</sup> Under the new Examination Guidelines, as illustrated in Figure 1, steps 1 and 2 determine a patent eligible “invention,” while step 3 determines “industrial applicability.” In step 1, a claim for a software invention as a whole can be a patent eligible if (i) the claim recites specific control or processing for an apparatus, or (ii) the claim recites specific information processing based on the technical properties of an object.<sup>18</sup> The technical properties include an object’s physical, chemical, biological or electric properties, such as the rotation rate of an engine, rolling temperature, physical or chemical relation of bound substances, etc.<sup>19</sup> The claimed software invention is patent eligible if the software invention falls under (i) or (ii).

For software inventions that cannot be determined whether they fall under the above (i) or (ii) in step 1, but which are created to use computer software as a whole, such as those relating to a method for doing business, playing a game, or calculating a mathematical formula, patent eligibility is further evaluated by determining whether the claimed software invention recites a specific information processor or an operation method constructed through the cooperation of the software and the hardware resources. In other words, for the claimed software invention to be patent eligible under step 2, there should be meaningful interaction between hardware and software components.<sup>20</sup> As the Examination Guidelines<sup>21</sup> and the case law<sup>22</sup> point out, only hardware mentions are insufficient. There must be a specific indication of how the software interacts with the hardware. Merely mentioning a random apparatus is not sufficient for patent

eligibility. If a claimed software invention fails under steps 1 and 2, it is patent ineligible.

The second requirement for patentability under Article 29(1) of the Japanese Patent Act (step 3 of Figure 1) is that the invention is industrially applicable. To fulfil the industrial applicability requirement, the software invention cannot be:

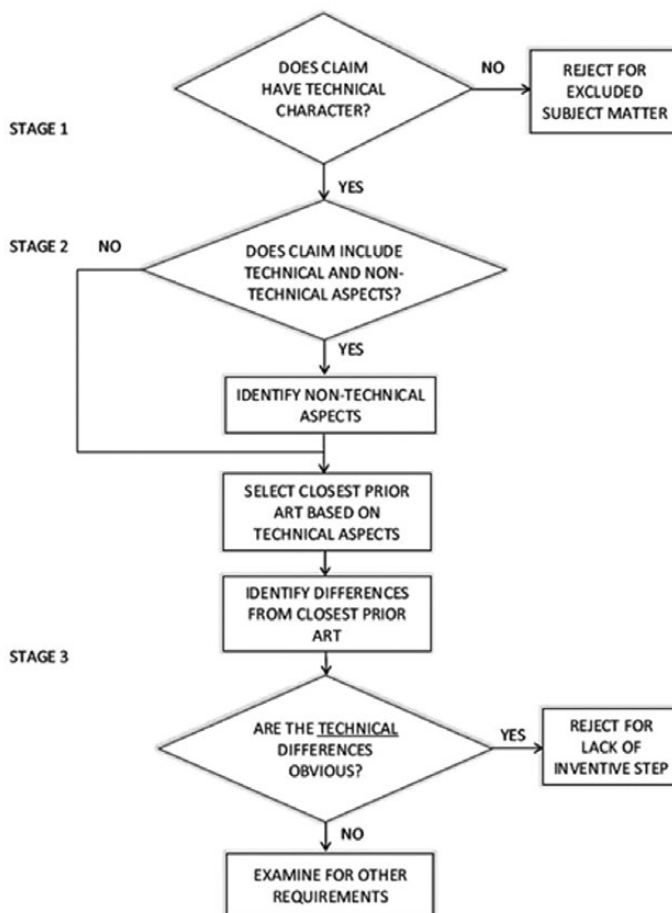
- (i) Inventions of methods of surgery, therapy, or diagnosis of humans;
- (ii) Commercially inapplicable inventions (e.g., inventions applied only for personal, academic, or experimental use and are not marketable or tradable); or
- (iii) Inventions that cannot be practically implemented.<sup>23</sup>

## THE EUROPEAN APPROACH

When the word “European” is used, it usually means the countries which are parties to the European Patent Convention (EPC) and, therefore, follow the case law of the European Patent Office (EPO). The EPO is a branch of the European Patent Organization responsible for examining patent applications based on the EPC.<sup>24</sup> EPO’s “bundle-patents” are recognized by all the member countries of the EPC, even though they have slightly different legal values because they are regulated, for the most part, by the state law of the individual member countries. Because the European Patent Convention entered into force in 1978 – before the European Union was even formed – there was no EPO patent case law before the early 80s. Nonetheless, creating a centralized Patent Office with an appellate board that decides whether an Examining Division was right or wrong in granting a patent or rejecting an application helped harmonize European patent law.

Figure 2<sup>25</sup> depicts a flowchart illustrating the procedure for determining patent eligibility based on the EPC and Guidelines for Examination in the EPO.<sup>26</sup> Article 52(1) of the EPC states that patents “shall be granted for any inventions which are susceptible of industrial application, which are new and which involve an inventive step.” Therefore, the first requirement for a claim to be patent eligibility is that that claim needs to recite an invention. Article 52(1) of EPC is further qualified by Article 52(2), which states that, along with discoveries, scientific

**Figure 2 - Framework for Determining Patent Eligibility by the European Patent Office**



theories, mathematical methods, aesthetic creations, schemes, rules, and methods for performing mental acts, playing games or doing business, and presentations of information, computer programs or software cannot be regarded as inventions. However, Article 52(3) of the EPC qualifies the exclusion of the subject matters listed in Article 52(3) as only applying to the extent to which the patent relates to such subject matters or activities “as such.”

Subsequent case law<sup>27</sup> from the EPO has clearly established that this exclusion of computer programs from Article 52(2) is only very narrowly applied. In order to be not excluded from patentability as a computer or a software program, the claim must have a “technical character”<sup>28</sup> that produces a “further technical effect” when run on a computer,<sup>29</sup> as illustrated in stage 1 of Figure 2. The “further

technical effect” has to go beyond normal physical interactions between the software and the hardware on which the software is run.<sup>30</sup> Nevertheless, it turns out that in practice, this hurdle for “technical character,” i.e., producing a “further technical effect,” is remarkably easy to overcome. A claim directed to a computer-implemented method, a computer-readable storage medium, or a device is deemed to have technical character and thus to represent an invention in the sense of Article 52(1) of the EPC.<sup>31</sup> If a claim for a software innovation does not have a technical character, the claim is rejected as having excluded subject matter. Otherwise, the claim is further examined under stage 2 of Figure 2.

After the stage 1 examination of whether there is an invention under Article 52(1) of the EPC, in stage 2, it is determined whether the claim involves

---

an “inventive step” as per the second requirement of Article 52(1) and Article 56. The claim must present a non-obvious solution to a technical problem.<sup>32</sup> When assessing whether a claim involves an “inventive step,” the established approach taken by the EPO is to assess which claim limitations are deemed to be “technical” and which are deemed to be “non-technical.”<sup>33</sup> It is often the case that claims for software inventions comprise a mix of technical and non-technical features. To assess the “inventive step,” only the technical features are considered.<sup>34</sup> The technical features will also include “the features which, when taken in isolation, are non-technical, but do, in the context of the invention, contribute to producing a technical effect serving a technical purpose, thereby contributing to the technical character of the invention.” Features that do not contribute to the technical character of the invention cannot support the presence of an inventive step.<sup>35</sup>

The third stage of the examination selects the closest prior art based on the identified technical features of the second stage and identifies the difference between the prior art and the identified technical features to determine whether those identified technical features are non-obvious.<sup>36</sup> In doing so, it is assumed that the non-technical features are already present in the prior art. If the technical features are obvious over the prior art, the claim is rejected for lack of an inventive step. On the other hand, the claim has an inventive step if the technical features are non-obvious.

This filtering of non-technical features at the second stage of the examination be brutal for the “inventive step” as it can leave a highly reduced set of features based on which it can at times be significantly challenging to successfully argue for the presence of an inventive step at stage 3 of the examination (as shown in Figure 2). For example, consider a set of claims which relate to a manner of data processing but where the claims recite relatively standard hardware features (e.g., a memory for storing data values; and a processor for performing data operations on data values retrieved from the memory) as well as further aspects of the data processing carried out. In this situation, the EPO examiner may conclude that those further aspects of the data processing carried out are non-technical (e.g., relate solely to subject matter which is excluded by the EPC, such as a mathematical method, a method of doing business, or a program for a computer) and

do not contribute to the technical character of the claimed invention (by, in the context of the invention, contributing to the production of a technical effect serving a technical purpose). Consequently, these features may be excluded from the search. In the extreme case when all claim features suffer this fate other than the above-mentioned standard hardware features, all the technical features of the claims will be obvious over “notoriously well known” hardware components.

## THE AMERICAN APPROACH

Patents in the United States are governed by the Patent Act, which established the United States Patent and Trademark Office (USPTO).<sup>37</sup> Unlike the European Patent Act but similar to the Japanese Patent Act, the Patent Act of the United States never explicitly lists subject matter that are ineligible for patentability. Rather, the text of the current patent eligibility statute – U.S.C. 35 § 101 – merely states that “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.” Therefore, 35 U.S.C. § 101 establishes broad categories of patent protection (e.g., processes, machines, manufacture, or composition of matter), without any specific exclusions.

However, the federal courts in the United States, through a series of decisions interpreting 35 U.S.C. § 101, created a list of subject matters excluded from patentability. The list of subject matter excluded from patentability includes laws of nature, natural phenomena, and abstract ideas.<sup>38</sup> Patent eligibility-related challenges to software inventions are always based on the patent claims covering abstract ideas.<sup>39</sup> The USPTO, considering the decisions of the federal courts, prepared guidance in 2019 for use by USPTO examiners and judges in evaluating subject matter eligibility (described in § 2106 of Manual of Patent Examination Procedures (MPEP) published by the USPTO).<sup>40</sup> The following subsections summarize various federal court decisions related to software patents and the USPTO’s guidance for determining the eligibility of patents.

## Decisions Regarding Patent Eligibility of Software Patent from the Federal Courts

The U.S. Supreme Court issued its first decisions dealing specifically with software patents in



---

the 1970s. In 1972, the U.S. Supreme Court found the inventions in *Gottschalk v. Benson* (involving a method for converting binary-coded decimals into pure binary numerals) to be patent ineligible as it could be performed mentally by humans without the help of any machine (computer or otherwise), and such mental processes and abstract ideas are not patentable as they are the basic tools of scientific and technological work.<sup>41</sup> The invention in *Parker v. Flook* (involving a method to automatically recalculate alarm limits) was struck down in 1798 for just applying a new mathematical formula.<sup>42</sup>

However, three years later, the U.S. Supreme Court found the claims in *Diamond v. Diehr* to be patent eligible even though the claims recited a well-known mathematical equation.<sup>43</sup> The invention at issue in *Diehr* was a computer-controlled process for curing rubber that involved the precision heating of rubber in a heating mold for an optimum curing time which was calculated with the known Arrhenius equation.<sup>44</sup> The mold was opened when the actual elapsed curing time matched the calculated optimum cure time.<sup>45</sup> The U.S. Supreme Court's holding in *Diehr* fundamentally changed the patentability of software inventions by stating that the application of otherwise patent ineligible subject matter, such as laws of nature and mathematical algorithms, to a process, a structure, or a machine were patent-eligible.<sup>46</sup> The claimed invention in *Diehr* did not seek patent protection for the known Arrhenius equation or pre-empt the use of that equation. Rather, the claimed invention sought patent protection for a process of curing rubber that applied the Arrhenius equation.<sup>47</sup> The court also stated that a determination of the boundary line between a patentable application of a mathematical algorithm and an unpatentable method of calculation involving the mathematical algorithm is determined from the consideration of the claim "as a whole."<sup>48</sup> It is inappropriate to dissect the claims into old and new elements and then ignore the presence of the old elements in the analysis. This is particularly true in a process claim, because a new combination of steps in a process may be patentable even though all the constituents of the combination were well known and in common use before the combination was made. However, an ineligible subject matter does not become eligible subject matter merely by adding insignificant post-solution activities to a claim comprising the ineligible

subject matter.<sup>49</sup> While the holding in *Diehr* solved the problem of what exactly must be considered when dealing with the patent-eligibility analysis of software inventions, subsequent cases reveal that the issue was far from solved.

After *Diehr*, the U.S. Supreme Court did not deal with software patent-eligibility issues for almost thirty years. During this time, the U.S. Court of Appeals for the Federal Circuit (CAFC) took *Diehr*'s more permissive approach towards software patent-eligibility and developed it even further. In particular, the CAFC decided on a few cases that were clearly favorable to the eligibility of software inventions. For example, in *State Street Bank & Trust Co. vs. Signature Financial Group, Inc.*, the CAFC stated that some types of subject matter, standing alone, represent no more than abstract ideas unless they are reduced to a practical application.<sup>50</sup> Therefore, a claim drawn towards the transformation of data, through a machine governed by an algorithm, into other data (amounts of currency into final share prices) can be seen as the practical application of a mathematical formula, which produces a "useful, concrete and tangible result," and such a claim is patent eligible.<sup>51</sup> However, in *In re Bilski*, the CAFC rejected its own "useful, concrete and tangible result" test from *State Street* and stated that eligibility could be determined by a "machine-or-transformation" test where a patent eligible claim should be tied to a particular machine or show a transformation of an article into a different state or article.<sup>52</sup>

Between 2010 and 2014, a trilogy of U.S. Supreme Court decisions completely changed the landscape of patent eligibility in the United States. The first decision was *Bilski vs. Kappos*, where the U.S. Supreme Court questioned both the "useful, concrete and tangible result" test from *State Street* and the "machine-or-transformation" test from *In re Bilski*.<sup>53</sup> The court stated that both tests could be useful tools to assess the patent eligibility of a claimed invention, but these tests were not absolute, and a case-by-case approach would be preferable.<sup>54</sup>

The second decision is not about software inventions but about the patent-eligibility of a process to identify the correct medicine dosage to administer to patients in *Mayo Collaborative Services vs. Prometheus Laboratories*.<sup>55</sup> The U.S. Supreme Court explained that the process was patent ineligible as it was drawn upon a natural law involving the correct

---

dosage of a drug, and this natural law had been known for many years.<sup>56</sup>

The third case about patent eligibility, *Alice Corporation vs. CLS Bank International*, was directly related to software patents.<sup>57</sup> In *Alice*, the U.S. Supreme Court had to deal with several patents regarding an automated platform for mitigating settlement risk (e.g., the risk that one of the parties will not comply with its obligations).<sup>58</sup> In examining the patents and confirming the patent-ineligibility findings of the CAFC, the U.S. Supreme Court reorganized some of the concepts already expressed in *Mayo* and tried to create a more defined test to assess patent eligibility.<sup>59</sup> This test is what the subsequent literature, courts, and the USPTO call the *Mayo-Alice* two-step test.

The first step of the *Mayo-Alice* test determines whether the claims at issue are directed to one of those patent ineligible subject matters. If the claims at issue are directed to patent ineligible concepts, at the second step of the *Mayo-Alice* test, the elements of the claim are considered both individually and “as an ordered combination” to determine whether the additional elements (e.g., the elements not directed to patent ineligible concepts) “transform the nature of the claim” into a patent eligible application.<sup>60</sup>

The second step of the *Mayo-Alice* test is a search for an “inventive concept” – i.e., an element or combination of elements that is “sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.”<sup>61</sup> Following this test, for the first step, the U.S. Supreme Court determined that all the claims at issue in *Alice* were directed to a patent-ineligible concept (more precisely, an abstract idea). Turning to the second part of the *Mayo-Alice* test, the Supreme Court found that mere generic computer implementation of an abstract idea fails to show any “inventive concept” (i.e., an application of the idea that goes beyond simply reciting “apply it” with a computer involved, constituting an improvement to an existing technological process).<sup>62</sup>

In other words, the U.S. Supreme Court clarified that the interaction of the software with physical components is not enough, in itself, to make an invention patent-eligible: a reference to hardware-software interaction only limits the invention to a particular technological environment, without adding anything “of substance” to the underlying

abstract idea, but this was deemed not enough to pass the just coined *Mayo-Alice* test.<sup>63</sup>

After the U.S. Supreme Court decided *Alice*, software patents in the United States witnessed a tremendous increase in the invalidation of software patents, under 35 U.S.C. § 101, both at the district court level and at the CAFC level. However, the pessimistic view toward software patents changed a little after the opinion of the CAFC in *DDR Holdings, LLC v. Hotels.com*<sup>64</sup> (claims at issue established an “inventive concept” under the second step of the *Mayo-Alice* test for resolving an Internet-centric problem and were therefore directed to a patent eligible subject matter). The pessimistic view further decreased in 2016, when three cases about software-related inventions were decided in favor of the patentee using the second step of the *Alice-Mayo* test: *Enfish, LLC v. Microsoft Corporation*<sup>65</sup> (directed to a specific improvement to the way computers operate), *Bascom Global Internet Services, Inc. v. AT&T Mobility LLC*<sup>66</sup> (the ordered combination of claim limitations revealed an inventive concept that transformed the abstract idea into a patent-eligible invention), and *McRO Inc. v. Bandai Namco Games America Inc.*<sup>67</sup> (claimed improvement was allowing computers to produce accurate and realistic lip synchronization and facial expressions that previously could only be produced by human animators). In those cases, the CAFC made reassuring statements: an invention’s ability to run on a general purpose computer does not doom its patent eligibility;<sup>68</sup> improvements to computers’ functionality and/or specific implementation of solutions to problems in the software arts might well be a sign of patent-eligibility;<sup>69</sup> claims having a broad scope are not banned per se, since some inventions could have a broader scope than others, and the level of preemption is not, in itself, an indicator of patent-eligibility;<sup>70</sup> the interaction between rules created by a patentee and a general purpose computer is something that could be patent-eligible.<sup>71</sup>

Just a few days after *McRO* was decided, the CAFC rendered another opinion in *Intellectual Ventures v. Symantec Corp.*, in which the CAFC clarified once again that inventions merely embodying abstract ideas but that do not teach a specific, non-conventional way to apply such ideas do not deserve the monopolistic protection granted by the patent system.<sup>72</sup> Moreover, the CAFC once again clarified a few key points of the new approach created under

---

the *Mayo-Alice* test: (i) mentioning physical components, such as a computer, is not enough to pass the patent-eligibility test, otherwise, an expert draftsman could always go past U.S.C. 35 § 101,<sup>73</sup> and (ii) linking the invention to a particular technological environment, such as the Internet, a computer network, a telephone network, etc., is similarly not enough for an invention to be qualified patent eligible.<sup>74</sup> As is evident from the *Intellectual Ventures* case, the *Mayo-Alice* two-step test is fundamentally based on a case by case approach. The situation has not changed much during 2017, 2018, and 2019. Most of the patent applications were declared ineligible during this period, especially in the software field, with only a few cases where software patents successfully managed to pass *Mayo-Alice*'s two-step test. Such cases include:

- (i) *Trading Technologies International Inc. v. CQG, Inc.* where the CAFC confirm the patent-eligibility of a graphical user interface under *DDR Holdings*, *McRO* and *Enfish*, and stated that “for some computer-implemented methods, software may be essential to conduct the contemplated improvements”;<sup>75</sup>
- (ii) *Visual Memory LLC v. Nvidia Corp.*, where the CAFC, quoting *Enfish*, underlined that the invention is patent-eligible because it claims a technological improvement whose advantages are discussed and explained in the specification of the patent;<sup>76</sup>
- (iii) *In Finjan Inc. v. Blue Coat Systems, Inc.*, where the CAFC considered the invention patent-eligible because the claims, directed to a method of virus scanning that scans an application program, generates a security profile identifying any potentially suspicious code in the program, and links the security profile to the application program, relate to an invention capable of realizing an improvement in computer functionality;<sup>77</sup>
- (iv) *Core Wireless Licensing S.A.R.L., v. LG Electronics, Inc.*, where the CAFC stated that an invention concerning a graphical user interface for mobile devices indeed contains claims which are directed to an improved user interface for electronic devices, making it more efficient to use mobile devices;<sup>78</sup> and

- (v) *Uniloc USA, Inc. v. ADP, LLC* where two out of four patents were held to be directed to applications of abstract ideas.<sup>79</sup> Cases like *DDR Holdings*, *Enfish*, *Bascom*, *McRO*, *Trading Technology International*, and *Visual Memory* gave inventors and businesses some sort of reassurance that software patents are not “doomed” or “dead.”

### Guidance Issued by the USPTO for Determining Patent Eligibility

The most recent guideline for determining patent eligibility, the “2019 Revised Patent Subject Matter Eligibility Guidance,” was issued on January 7, 2019, by the USPTO (2019 Guidance).<sup>80</sup> Additionally, the USPTO released an update to the 2019 Guidance, the “October 2019 Patent Eligibility Guidance Update,” on October 17, 2019.<sup>81</sup> Based upon pre-*Alice* and post-*Alice* decisions by federal circuit courts of appeals, the 2019 Guidance identified groups of concepts constituting an “abstract idea” and divided the first step of the *Mayo-Alice* test into two prongs. Figure 3<sup>82</sup> depicts a flowchart illustrating the procedure in the 2019 Guidance.

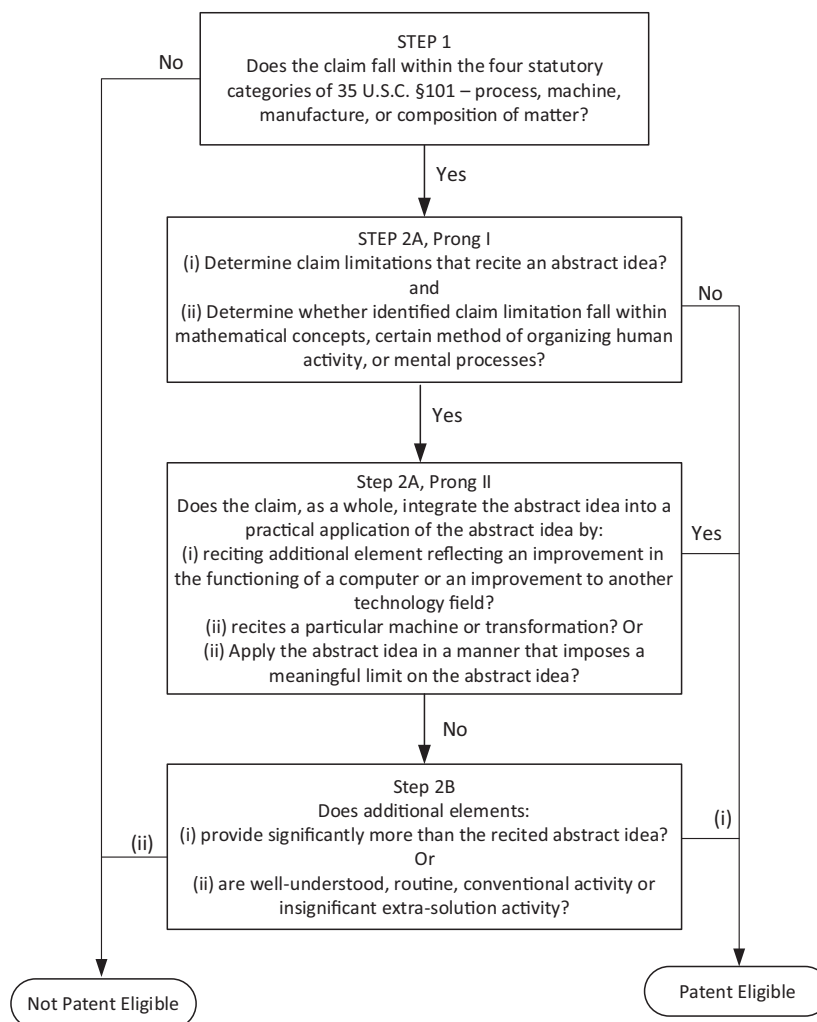
Under Step 1, the claimed invention must be to one of the four statutory categories defined in 35 U.S.C. §101 – a process, a machine, manufacturing of a matter, or a composition. A software invention will either fall under the process or the machine category. If the claimed invention covers material not found in any of the four statutory categories, that invention will fall outside the scope of 35 U.S.C. §101 and will not be eligible for patenting.<sup>83</sup>

If the claimed invention covers material within the four statutory categories of 35 U.S.C. §101, the claim will be examined under Step 2A, Prong I of Figure 3, which is the original first step of the *Mayo-Alice* test. Under Step 2 A, Prong I, the 2019 Guidance instructs examining the claim to evaluate whether any of the claim limitations recites a judicial exception, i.e., an abstract idea, a law of nature, or a natural phenomenon.<sup>84</sup> Most claims for software innovations are examined to determine whether they recite abstract ideas.

Then the 2019 Guidance determines whether the recited judicial exceptions fall under any of the three groupings of subject matter enumerated by the 2019 Guidance, namely, “mental processes,” “mathematical concepts,” and “certain methods of organizing human activities.”<sup>85</sup> The “mathematical concepts” grouping may comprise mathematical



**Figure 3 - Framework for Determining Patent Eligibility by the United States Patent and Trademark Office**



relationships, formulas, and calculations.<sup>86</sup> The “certain methods of organizing human activity” grouping comprises fundamental economic principles or practices, commercial or legal interactions, and practices for managing personal behavior, relationships, or interactions between people.<sup>87</sup> The “mental processes” grouping is defined as concepts performed in the human mind or by a pen or paper.<sup>88</sup> If the claim does not recite an abstract idea, then the claim is patent eligible. If the claim recites abstract ideas, then the claim is examined under step 2A, prong II.

The claim is examined under step 2A, prong II to determine if “the claim as a whole integrates the recited judicial exception into a practical application of that exception.”<sup>89</sup> The claim “as a whole” means

all limitations in the claim, including the claim limitations reciting abstract ideas and additional limitations in the claim that do not recite abstract ideas. Integration into a practical application is examined by identifying the additional elements recited in the claim and evaluating how all the limitations reciting abstract ideas and additional limitations “interact and impact each other when evaluating whether the . . . [abstract idea] is integrated into a practical application.”<sup>90</sup> A claim “as a whole” is integrated into a practical application if the claim reflects an improvement in the functioning of a computer or an improvement to another technology or technical field, recites a particular machine (other than a general computer) applying or using the identified

abstract ideas, recites a particular transformation of an article to a different state or thing, or uses the abstract ideas in a manner that imposes a meaningful limit on the abstract ideas such that the claim is more than a drafting effort designed to monopolize the abstract idea.<sup>91</sup> If the claim as a whole is integrated into a practical application, then the claim is patent eligible. Otherwise, the claim is examined under step 2B of Figure 3.

Under Step 2B (the second step of the *Mayo-Alice* test), the additional limitations are examined to determine whether the additional limitations amount to “significantly more” than the identified abstract idea. The 2019 Guidance explains that the additional items amount to significantly more if “the additional elements were unconventional in combination.”<sup>92</sup> If the additional limitations amount to significantly more, the claim is patent eligible. However, if the additional limitations just recite “well-understood, routine, conventional activity in the field” or “insignificant extra-solution activity,” then the claim is not patent eligible. “Well-understood, routine, conventional activity in the field” may consist of activities well recognized by those of ordinary skill of the technology recited in the claim. Such activities may include receiving or transmitting data, performing calculations, recordkeeping, storing or retrieving information from memory, web browsers, extracting data from a file, etc.<sup>93</sup> “Extra-solution activities” can be understood as activities incidental to the primary process or product that are merely a nominal or tangential addition to the claim. Examples of extra-solution activities include gathering data, selecting a particular data source, or manipulating a type of data.<sup>94</sup>

★★★

*Editor's note:* The conclusion of this article will be published in the next issue of the *Intellectual Property & Technology Law Journal*.

## Notes

1. David O. Taylor, Amending Patent Eligibility, 50 U.C. Davis L. Rev. 2149 (2017).
2. See Athul K. Acharya, Abstraction in Software Patents (and How to Fix It), 18 J. Marshall Rev. Intell. Prop. L. 364 (2019).

3. See Convention on the Grant of European Patents, Oct. 5, 1973, 1065 U.N.T.S. 199 (hereinafter EPC).
4. EPC, art. 52(2)(c).
5. See T-208/84.
6. Kazuyuki Motohashi, Japan's Patent System and Business Innovation: Reassessing Pro-patent Policies, Patents, Innovation and Economic Performance: OECD Conference Proceedings, OECD Publishing (2004), <https://doi.org/10.1787/9789264015272-5-en>.
7. Patent Act, Law No. 121 of 1959, art. 1, translated in (Japanese Law Translation [JLT DS]), <https://www.japaneselawtranslation.go.jp/en/laws/view/3693> (Japan).
8. Toshiko Takenaka, The Role of the Japanese Patent System in Japanese Industry, 13 UCLA Pac. Basin L.J. 25 (1994).
9. See Hiroaki Sakai, Historical Transition of Computer Program Protection - A Review of Examination Guidelines over a Quarter Century, Habataki - 21 seiki no chiteki zaisanho (Flapping - Intellectual Property Law in 21st Century), marking the 70th birthday of Mr. Nobuhiro Nakayama,” pp.154-172 (Kobundo Publishing Co., 2015).
10. See Kazuyuki Motohashi, Software Patent and Its Impact on Software Innovation in Japan, RIETI Discussion Paper Series 09-E-038 4 (2009), <https://www.rieti.go.jp/jp/publications/dp/09e038.pdf>.
11. See Japan Patent Office, Examination Guidelines for Patent and Utility Model in Japan, Part III, Chapter 1 (2015), [https://www.jpo.go.jp/e/system/laws/rule/guideline/patent/tukujitu\\_kijun/document/index/03\\_0100\\_e.pdf](https://www.jpo.go.jp/e/system/laws/rule/guideline/patent/tukujitu_kijun/document/index/03_0100_e.pdf) (hereinafter JPO Examination Guidelines).
12. Author created the flowchart based on the JPO Examination Guidelines.
13. Law No. 121 of 1959, art. 2(1).
14. JPO Examination Guidelines, sec. 2.1.4.
15. Id. sec. 2.1.
16. Law No. 121 of 1959, art. 2(4).
17. JPO Examination Guidelines, sec. 2.2.
18. Id.
19. Id.
20. See Intellectual Property High Court, First Division, June 24, 2008, 2007 (Gyo-Ke) 10369.
21. JPO Examination Guidelines, sec. 2.2.
22. See Intellectual Property High Court, February 29, 2008, 2007 (Gyo-Ke) 10239; Intellectual Property High Court, September 26, 2006, 2005 (Gyo-Ke), 10698.
23. See Id. sec. 3.
24. See the EPO, <http://www.epo.org/about-us/epo.html> (The European Patent Organization was set up on October 7, 1977 based on the EPC signed in Munich in

- 
- 1973 and the EPO and the Administrative Councils are its executing branches).
25. Author created the flowchart based on The Guidelines for Examination in the European Patent Office, Part G, Chap. I, [https://www.epo.org/law-practice/legal-texts/html/guidelines/e/g\\_i.htm](https://www.epo.org/law-practice/legal-texts/html/guidelines/e/g_i.htm) (last visited on Apr. 11, 2022) (hereinafter EP Guidelines).
26. *Id.*
27. See T 1173/97; G 3/08.
28. EPO Guidelines, sec. 2.
29. *Id.*, sec. 3.6.
30. *Id.*
31. T 258/03; T 424/03; G 3/08.
32. EPO Guidelines, sec. 2; T 0641/00; T 1784/06.
33. EPO Guidelines, sec. 2.
34. *Id.*, sec. 5.4.
35. T 641/00; T 1784/06.
36. EPO Guidelines, sec. 5.4.
37. 35 U.S.C. § 1 et seq.
38. See *Diamond v. Diehr*, 450 U.S. 175, 185 (1981).
39. See Dina Roumiantseva, *The Eye of the Storm: Software Patents and the Abstract Idea Doctrine in CLS Bank v. Alice*, 28 *Berkeley Tech. L.J.* 569 (2013).
40. See *Manual of Patent Examining Procedure*, 9th ed., rev. 10.2019 (Jun. 2019) (hereinafter MPEP).
41. *Id.* at 67–68.
42. See *Parker v. Flook*, 437 U.S. 584, 589–90 (1978).
43. See *Diamond v. Diehr*, 450 U.S. 175, 187 (1981).
44. *Id.* at 172.
45. *Id.* at 178.
46. *Id.* at 187.
47. *Id.*
48. *Id.* at 188.
49. *Id.* at 193 (citing *Flook*).
50. See *State St. Bank & Tr. Co. v. Signature Fin. Grp., Inc.*, 149 F.3d 1368 (Fed. Cir. 1998).
51. *Id.* at 1373.
52. See *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008).
53. See *Bilski v. Kappos*, 561 U.S. 593, 612 (2010).
54. *Id.*
55. *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 566 U.S. 66 (2012).
56. *Id.* at 72.
57. *Alice Corp. Pty. v. CLS Bank Int’l*, 573 U.S. 208 (2014).
58. *Id.* at 212.
59. *Id.* at 218–226.
60. *Id.* at 221.
61. *Id.*
62. *Id.* at 223.
63. *Id.* at 224.
64. See *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014).
65. See *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016).
66. See *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016).
67. See *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299 (Fed. Cir. 2016).
68. See *Enfish, LLC*, 822 F.3d at 1339.
69. See *Bascom Glob. Internet Servs., Inc.*, 827 F.3d at 1350.
70. See *McRO, Inc.*, 837 F.3d at 1309.
71. See *Id.* at 1316.
72. See *Intell. Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307 (Fed. Cir. 2016).
73. *Id.* at 1315.
74. *Id.* at 1314.
75. See *Trading Techs. Int’l, Inc. v. CQG, INC.*, 675 F.App’x 1001, 1005 (Fed. Cir. 2017).
76. See *Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253, 1260 (Fed. Cir. 2017).
77. See *Finjan, Inc. v. Blue Coat Sys., Inc.*, 879 F.3d 1299, 1304 (Fed. Cir. 2018).
78. See *Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc.*, 880 F.3d 1356, 1362 (Fed. Cir. 2018).
79. See *Uniloc USA, Inc. v. ADP, LLC*, 772 F.App’x 890 (Fed. Cir. 2019).
80. 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (hereinafter 2019 Guidance).
81. October 2019 Patent Eligibility Guidance Update, 84 Fed. Reg. 55942 (Oct. 18, 2019) (hereinafter 2019 update).
82. Flowchart created by Author based on guidance in MPEP § 2106.
83. See *In re Nuijten*, 500 F.3d 1346, 1354, 84 USPQ2d 1495, 1500 (Fed. Cir. 2007).
84. MPEP §2106.04(II)(1).
85. 2019 Guidance at 51–52.
86. 2019 Update at 2.
87. *Id.* at 3–4.
88. *Id.* at 7.
89. 2019 Guidance at 53.
90. 2019 Update at 12.
91. MPEP §2106.05(a–c),(e).
92. 2019 Guidance at 56.
93. MPEP §2106.05(d).
94. *Id.*

Copyright © 2024 CCH Incorporated. All Rights Reserved.  
Reprinted from *Intellectual Property & Technology Law Journal*, May 2024, Volume 36,  
Number 5, pages 13–23, with permission from Wolters Kluwer, New York, NY,  
1-800-638-8437, [www.WoltersKluwerLR.com](http://www.WoltersKluwerLR.com)



® Wolters Kluwer