

# Comparative Patent Eligibility with a Focus on Software Patents (\*)

Invited Researcher: Matteo DRAGONI (\*\*)

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*This research aims at investigating software patent-eligibility in Japan and to make a comparison with the practice that has been developed under the European Patent Convention (EPC) and in the United States. Even though the research mainly targets software patent-eligibility, also patentability issues and aspects are taken into account.*

*Legislations concerning IP rights seem harmonized but, especially with regard to the patent protection of computer programs, U.S. and Europe show a few significant differences, with reverberations on the level of protection. The Japanese system seems to offer some sort of “third model”, which is different from both the United States and the EPC system, notwithstanding several similarities with both the aforementioned realities may be found.*

*This work, after the analysis of software inventions’ patent-eligibility in Japan, Europe and United States, ends with an assessment of the level of protection of computer programs in Japan from a patent perspective, taking into consideration (and weighing) the differences with U.S. and Europe.*

## I. A framework of the current situation regarding software patenting in Japan

### 1. Software patenting requirements: Patent-eligibility, inventive step and other considerations

(1) The current IP legal framework: The statute

The starting point<sup>1</sup> when talking about the current Japanese approach<sup>2</sup> to software patent-eligibility and patentability is the definition of invention.

Art. 2 of the Japanese Patent Act (JPA) clarifies that ““Invention” in this Act means the highly advanced creation of technical ideas utilizing the laws of nature”<sup>3</sup>

According to Japanese scholarship, making a reference to laws of nature would specify that mental activities, pure academic principles, rules for games and businesses per se etc. are excluded from patentability<sup>4</sup>.

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(\*) This is a summary of the report published under the 2016FY Industrial Property Research Promotion Project entrusted by the Japan Patent Office.

(\*\*) Ph.D., LL.M. (Stanford) - Research Fellow, University of Pavia, at our institute over a period of approximately 3 months from August 22, 2016 through November 19, 2016, as an Invited Researcher for the Fiscal Year 2016.

<sup>1</sup> See generally Yoshiaki Aita, Ch. 3 Legal Protection of Computer Software, 3 History of Legal Protection of Software, 3) Patent Protection (Yoshiaki Aita et al., Advanced Science Technology and Intellectual Property Rights, Hatsumei Kyokai, 2001, pp. 117-119. See also Akihiro Sako, *Patentability of Inventions Incorporating Human Mental Acts (Intellectual Property High Court, August 26, 2008)*, Intellectual Property Law and Policy Journal, vol. 34, 2011.

<sup>2</sup> See <https://www.j-platpat.inpit.go.jp/web/all/top/BTmTopEnglishPage> (last visited on December 17th, 2016).

<sup>3</sup> See Law No.121 of April 13, 1959, as lately amended by the Act on the Partial Revision of the Patent Act and Other Acts (Act No. 55 of July 10, 2015), Article 2(1). See <http://www.japaneselawtranslation.go.jp/law/detail/?id=42&vm=04&re=02> (last visited on November 15, 2016).

<sup>4</sup> See NOBUHIRO NAKAYAMA, PATENT LAW, Koudondou, 2012, 2nd ed, pp. 105-106.

Then the reference to “technical ideas” seems to be linked to the concept that an invention must be something “technical”, *i.e.* something objective and that can be repeated - not the product of randomness<sup>5</sup> - and linked to the concept of enablement<sup>6</sup>.

Finally, “creation” is used to distinguish inventions from mere discoveries, where human beings do not intervene<sup>7</sup>.

Art. 2 of the JPA also defines a "computer program, etc."<sup>8</sup> and, more significantly, since recently the JPA clarifies that “programs etc.” may constitute invention of “product”<sup>9</sup>.

## (2) The current IP legal framework: the JPO Examination Guidelines and Examination Handbook

Other important sources which can be relied upon when dealing with software patents are the JPO “Examination Guidelines for Patent and Utility Model in Japan” and the JPO “Examination Handbook for Patent and Utility Model”<sup>10</sup>.

Mainly based on Art. 2 of the JPA, but also on the case law, the Examination Guidelines enlist a series of subject matters excluded from patent-eligibility, also called “Non-Statutory Inventions”<sup>11</sup>:

“(i) *A law of nature as such.*

(ii) *Mere discoveries and not creations.*

(iii) *Those contrary to a law of nature.*

(iv) *Those in which a law of nature is not utilized.*

(v) *Those not regarded as technical ideas.*

(vi) *Those for which it is clearly impossible to solve the problem to be solved by any means presented in a claim.”*

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<sup>5</sup> See *Id.* at 114. See also Supreme Court of Japan, February 29, 2000, Hanta, No. 1028, at 173 (so called *Breeding and Proliferation Method* case), as explained in Akihiro Sako, *Patentability of Inventions*, *supra* note 1, at footnote 15.

<sup>6</sup> See Akihiro Sako, *Patentability of Inventions*, *supra* note 1, at footnote 8.

<sup>7</sup> See Akihiro Sako, *Patentability of Inventions*, *supra* note 1, at footnote 9 and the references cited therein.

<sup>8</sup> See Law No.121 of April 13, 1959, as amended during the years, Article 2(4).

<sup>9</sup> See Law No.121 of April 13, 1959, Art. 2(3)(i).

<sup>10</sup> 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 (Kobundou, 2015).

<sup>11</sup> See the Examination Guidelines for Patent and Utility Model in Japan, page 2, 2.1.

### (3) Software patent-eligibility and patentability: JPO Guidelines and Handbook, case law and practice

When dealing specifically with software patent-eligibility<sup>12</sup>, the Examination Guidelines specify<sup>13</sup> that inventions relating to business methods, playing a game and calculating mathematical formula can be considered as “not utilizing the laws of nature when considered as a whole”<sup>14</sup> even though they make use of “an article, apparatus, device, system, computer software etc.”<sup>15</sup>

The JPO Guidelines also state that some inventions relating to business methods, playing a game or calculating formulas could be deemed “statutory inventions” just because they utilize computer software. In such a case, the invention and its patent-eligibility must be considered “from the point of view of computer software”<sup>16</sup>.

On the contrary, some inventions can be considered to be a “creation of a technical idea utilizing a law of nature” independently of whether computer software is used or not. Those kinds of inventions do not have to be examined “from a viewpoint of computer software”.

When an invention is specifically related to software and must be therefore analyzed under the “computer software viewpoint”, the Examination Handbook tries to provide some guidance on how that must be done.

First of all, the software of a software-related invention is considered “a creation of a technical idea utilizing a law of nature” if the information processing by such software is “specifically implemented by using hardware resources”<sup>17</sup>.

In Japan, as specified by the JPA that allows for the patenting of software computer programs as “product inventions”, it is possible to patent software “per se”. Therefore, the specific interaction between hardware and software components is not necessary to patent a software invention but it is an example (probably the most common one) of how a software invention is usually deemed to be “using a law of nature”, which is in any case the basic requirement an invention must possess to be considered patent-eligible.

In doing the patent-eligibility examination, the invention is considered “as a whole”, as the

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<sup>12</sup> See NOBUHIRO NAKAYAMA, PATENT LAW, *supra* note 4. See also Ryuta Hirashima, A Note on Patenting Computer Software-related Invention & Assessing the Requirement “Utilizing a Law of Nature” Under the Japanese Patent Law—Something Like “the Suggestion” from LSI Simulator Case, *Intellectual Property Law and Policy Journal*, Vol. 20., pp.65-94, 2008.

<sup>13</sup> See Part 3. Chapter 2.2.(2) of the JPO Examination Guidelines.

<sup>14</sup> See Intellectual Property High Court, First Division, June 24, 2008, 2007 (Gyo-Ke) 10369 with regard to the “essence of the invention” evaluation which might occur.

<sup>15</sup> *Id.* See Akihiro Sako, *Patentability of Inventions*, *supra* note 1. See also Tokyo District Court Judgment, January 20, 2003, *Hanji*, No. 1809, p. 3/*Hanta*, No. 1114, p. 145; Tokyo High Court, December 21, 2004, 2004 (Gyo-Ke) 188, *Hanji* 1891-139; Intellectual Property High Court, August 26, 2008, *Hanji*, No. 2041, p. 124/*Hanta* No. 1296, p. 263, 2008 (Gyo-Ke) 10001; Tokyo IP High Court, September 24, 2014, 2014(Gyo-ke)10014; Tokyo IP High Court, February 24, 2016, 2015 (Gyo-Ke) 10130.

<sup>16</sup> *Id.* See also Katsuya Tamai, “Business Method Patent and the Examination of the Non-technical Elements of the Patent Application -A Comparative Study with the Practice in Europe-”, *Patent Studies* No.38, p.22 (2004).

<sup>17</sup> See JPO Examination Handbook, Annex B, page 9 and seq.

Examination Guidelines carefully point out<sup>18</sup> and the case law confirms<sup>19</sup>.

To conclude, it is important to note that also at the inventive step stage of the examination the invention is considered and evaluated “as a whole”, *i.e.* without artificially severing the original parts from the non-original parts and, most importantly, without separating technical from non-technical elements.

## II. A comparison with the evolution of EPO and U.S. approaches

### 1. Europe

When dealing with software patenting in Europe, we must start from Art. 52.1 EPC, according to which patents “*shall be granted for any inventions which are susceptible of industrial application, which are new and which involve an inventive step*”.

According to Art. 52.2 EPC, discoveries, scientific theories, mathematical methods, aesthetic creations, schemes, rules and methods for performing mental acts, playing games or doing business, presentations of information and programs for computers shall not be regarded as inventions.

The above-mentioned exclusion, however, is not as absolute as it might seem, since art. 52.3 EPC clarifies that it is limited only to patent applications directed to computer programs “*as such*”.

#### (1) The current situation: the EPO Enlarged Board of Appeal decision of 2010 and its progeny

Some cases in the early 2000 regarding software patentability / patent-eligibility<sup>20</sup> were deemed to cast many doubts about the correct interpretation of the (art. 52 EPC) computer programs exclusion from patentability, the EPO Enlarged Board of Appeal (EBA) was asked to clarify the matter and decided as follows. According to the EBA<sup>21</sup>, a computer program, in order to be patentable, has to generate “further technical effects”, but those effects do not have to be original or new. Moreover, tying the software with “any hardware” is not enough: further technical effects must be achieved, but only when the software is claimed alone.

In fact, if something else containing the software is claimed, for instance a “storage medium”,

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<sup>18</sup> See also Guidelines of Examination, chapter 2.2, previously quoted, where the need to consider the invention “as a whole” is also stressed.

<sup>19</sup> See *ex multis* Intellectual Property High Court, First Division, June 24, 2008, 2007 (Gyo-Ke) 10369. See Intellectual Property High Court, September 26, 2006, 2005 (Gyo-Ke), 10698 (so called *Amusement Management* case) as explained in Akihiro Sako, *Patentability of Inventions*, *supra* note 1, at note 55.

<sup>20</sup> See T 258/03, *Auction Method/HITACHI*; T 424/03, *Clipboards formats I/Microsoft*; T 154/04, *DUNS LICENSING ASSOCIATES/Estimating Sales Activities*

<sup>21</sup> See G 03/08.

there is no patent-eligibility issue there. Since “storage media” per se are not excluded from patentability, the analysis will immediately be focused on the patentability requirements<sup>22</sup>.

In such analysis, the EBA clarifies that all the elements of the claimed invention have to be taken into account, not only the technical / non-excluded ones.

Lastly, the fact that when a program is run on a computer it produces a technical effect because current circulates into the computer is not enough to confer technical character to the computer claimed alone<sup>23</sup>.

The EBA’s teachings are followed in the subsequent decisions of the Technical Boards and they have been incorporated in the EPO Guidelines for Examination, whose last version entered into effect from November 1<sup>st</sup>, 2016<sup>24</sup>.

Finally, it must be stressed that during the “inventive step” analysis the Art. 52.2 EPC exclusions are revived: the invention’s inventive part must have technical character, *i.e.* it must produce an overall technical effect or some technical effects must be produced from the effect of the software on the computer. In other words, the invention must represent a “technical solution to a technical problem”, which means that only the features contributing to the technical characters of the invention must be considered when assessing the inventive step, be them technical or non-technical ones<sup>25</sup>.

## 2. The United States

U.S. statutory law never contained an explicit list of “excluded subject matters”, *i.e.* categories of inventions (or “non-inventions”) that are excluded from patentability. As a consequence, in the U.S. there was no explicit exclusion of “software patents” from the scope of the Patent Act. However, a less specific (if compared to the EPC) list of “excluded categories” has been created through a series of judicial precedents.

United States courts, through a series of decisions interpreting the U.S. Patent Act and in particular USC 35 § 101, began to exclude ‘*abstract ideas, natural phenomena or natural laws*’ from the scope of patentable subject matter.

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<sup>22</sup> See G 03/08, pp. 38-39 at 10.8.7.

<sup>23</sup> See G 03/08, p. 53 at 13.5. See also G 03/08, pp. 53 and seq.

<sup>24</sup> See <https://www.epo.org/law-practice/legal-texts/guidelines.html> (last visited on December 18, 2016).

<sup>25</sup> See EPO Guidelines for Examination, Part G, Chapter VII.5.4.1.

(1) The Supreme Court decides again on patent-eligibility after almost thirty years: *Bilski*, *Mayo* and *Alice*

Between 2010 and 2014, a trilogy of Supreme Court decisions changed completely the landscape of patent-eligibility in the United States.

The first decision is *Bilski v. Kappos* (2010), where the Supreme Court began demolishing the existing system by questioning the validity of both *State Street*'s “useful, concrete and tangible result” test and the older (but still in use) “machine-or-transformation” test<sup>26</sup>. In this regard, the Court states that both tests can be useful tools to assess the patent-eligibility of a claimed invention, but they are not absolute, and a case-by-case approach is preferable. However, in denying the patent-eligibility of the claimed invention, the Supreme Court slightly mixed patent-eligibility criteria (natural laws, natural phenomena and abstract ideas) with some of the patentability concepts.

The second case about patent-eligibility is *Mayo Collaborative Services v. Prometheus Laboratories*<sup>27</sup>. This case is not about software patents but involves a claimed invention regarding a method to identify the correct dosage of a medicine to administer to patients. The Supreme Court states that the applicants try to secure a patent on a natural law involving the correct dosage of a drug that has been known for many years. In this decision, the Supreme Court also admits that the §102 novelty enquiry might sometimes overlap with the §101 patent-eligibility analysis, but that this is not a good reason to eliminate the Section 101 investigation entirely in favor of a “patentability-oriented” approach.

The third case about patent-eligibility, *Alice Corporation v. CLS Bank International*<sup>28</sup>, is once again directly related to software patents. In examining the patents, the Supreme Court reorganizes some of the concepts already expressed in *Mayo* and tries to create a more defined test to assess patent-eligibility. This is what the subsequent literature and the courts will call *Mayo-Alice* two-step test: “*First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. If so, we then ask, “[w]hat else is there in the claims before us?” To answer that question, we 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. We have described step two of this analysis as 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>29</sup>

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<sup>26</sup> See *Bilski v. Kappos*, 130 S. Ct. 3218 (2010).

<sup>27</sup> See *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. (2012).

<sup>28</sup> See *Alice Corp. Pty Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014).

<sup>29</sup> *Id.* page 7 of the decision.

Following this test, the Supreme Court finds that mere generic computer implementation of the abstract idea of risk hedging fails to show any “inventive concept”, rejecting any sort of “any hardware approach”<sup>30</sup>.

## (2) The current situation after *Alice*

After *Alice* was decided by the Supreme Court, the United States witnessed a tremendous increase in software patents’ invalidations, both at the district court level and at the appeal (Federal Circuit) level<sup>31</sup>. Such a trend started to be seen in a less “pessimistic” way after the opinion of the CAFC in *DDR Holdings, LLC v. Hotels.com*<sup>32</sup> and seemed to decrease in 2016, when three cases about software-related inventions were decided in favor of the patentee: *Enfish, LLC v. Microsoft Corporation*<sup>33</sup>, *Bascom Global Internet Services*<sup>34</sup>, *Inc. v. AT&T Mobility LLC* and *McRO Inc. v. Bandai Namco Games America Inc.*<sup>35</sup>.

These new decisions, however, do not have to be seen as a fundamental change in the Federal Circuit’s approach towards software patents or patent-eligibility in general. Just a few days after *McRO* was decided, the CAFC rendered another opinion in *Intellectual Ventures v. Symantec Corp.*<sup>36</sup> in which it clarified once again that inventions merely embodying abstract ideas but that do not teach a specific, non-conventional, way to apply such idea do not deserve the monopolistic protection granted by the patent system.

As it is evident from the *Intellectual Ventures* case, *Mayo-Alice*’s two-step test offers no brightline rule regarding patent-eligibility of software patents, but a mere case-by-case approach.

Finally, once the patent-eligibility test is passed, the next steps are novelty and non-obviousness, which are not analyzed very differently from what the patent law and the USPTO guidelines instruct.

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<sup>30</sup> *Id.* pages 15 and 16 in particular.

<sup>31</sup> See generally Robert R. Sachs, Two Years After Alice: A Survey of the Impact of a "Minor Case" (Part 1), 2016 available at <http://www.bilskiblog.com/blog/2016/06/two-years-after-alice-a-survey-of-the-impact-of-a-minor-case.html> (last visited on November 14, 2016) for a review and some statistics on this trend, as well as <http://www.uspto.gov/patent/laws-and-regulations/examination-policy/2014-interim-guidance-subject-matter-eligibility-0> (last visited on November 14, 2016).

<sup>32</sup> *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1255 (Fed. Cir. 2014).

<sup>33</sup> *Enfish, LLC v. Microsoft Corp.*, 2016 U.S. App. LEXIS 8699, 2016 WL 2756255 (Fed. Cir. May 12, 2016).

<sup>34</sup> *BASCOM Global Internet Services, Inc. v. AT&T Mobility LLC*, No. 15-1763 (Fed. Cir. June 27, 2016).

<sup>35</sup> *McRO, Inc. v. Bandai Namco Games America, Inc.*, No. 15-1080 (Fed. Cir. Sept. 13, 2016).

<sup>36</sup> *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 120 U.S.P.Q.2d 1353 (Fed. Cir. 2016).

### **III. A comparison with the current EPO and U.S. approaches**

#### **1. Software Patent-Eligibility**

As the previous paragraphs highlight, at the patent-eligibility phase inventions are treated slightly differently in Japan, Europe and in the United States.

##### **(1) Japan**

Starting from Japan, we have seen that the invention is examined as a whole in order to assess whether we are dealing with a creation of technical ideas utilizing laws of nature. However, when a computer program is present in the claims, it is not enough to recite general hardware components to make the computer program patent-eligible, but it must be clear from the claims that hardware and software work together. At the same time, it is not necessary that a computer program be tied to some machine or hardware: Art. 2 of the JPA recognizes that software programs can be patented even “per se” (as product inventions), as long as they utilize the laws of nature.

##### **(2) Europe**

In Europe, in principle if the invention “as a whole” points to an excluded category (such as computer programs), such an invention may not be patent-eligible. However, both the case law and the most recent EPO Guidelines confirm that computer programs may be patent-eligible even when claimed “as such”, provided that they produce “further technical effects”.

It should also be noted that the technical Boards of Appeal of the EPO have recently adopted a so called “any hardware approach”: Except for when a computer program is claimed “as such”, it is usually sufficient to mention some sort of hardware in connection with the software to make the computer program invention patent-eligible.

##### **(3) United States**

In the United States, from 2010 to the present, there have been several changes with regard to patent-eligibility. The current standard is the previously mentioned “*Mayo-Alice* test”.

This newly coined test, interpreted many times (and in slightly different ways) though the case law of district courts and more significantly of the Federal Circuit, goes directly to the “essence” of the invention, making novelty and non-obviousness considerations a recurrent part of this analysis. As



a consequence, mentioning technical/physical components or linking the claimed invention to a particular technological environment (computer network, telephone network etc.), is not enough to pass the new test, even when an interaction between software and hardware is clearly specified.

## **2. Software Patentability**

Amongst the patentability requirements, the most important one is non-obviousness / inventive step, since novelty and industrial applicability are rarely a problem and easy to meet.

### **(1) Japan**

In Japan, once the patent-eligibility analysis is successfully passed, inventive step is of course the next hurdle for software patents. The invention in this phase is once again examined “as a whole”, so, once the eligibility has been determined, if the solution which is offered to the problem has inventive step, the invention is granted a patent. Therefore, it does not matter whether the physical components are not inventive and the core of the invention resides in some abstract ideas, in new information etc. If the patent-eligibility analysis has determined that the interaction between software and hardware was a meaningful one, every overall solution which shows an inventive step is potentially patentable.

### **(2) Europe**

As already mentioned, the most important part of software patent examination is the analysis of the inventive step. Even here, the EPO guidelines specify that an invention must be considered as a whole. However, differently from the previous evaluation, since the invention represents a technical solution to a technical problem, only the features that contribute to the “technical character” of the invention can be taken into account. It does not matter whether those features are technical or non-technical when individually considered (*e.g.* a mathematical equation, a computer program etc.), but it does matter that, considered together, they contribute to the technical character.

It seems therefore that the invention is not really examined “as a whole” but differentiating between elements pertaining to Article 52.2 excluded and non-excluded categories.

### (3) United States

In the United States, the invention is examined “as a whole”, an expression which is specifically mentioned by the relevant statute<sup>37</sup>, to see whether it was obvious for the PHOSITA or not. Several criteria and tests are used by examiners and judges depending on the situation<sup>38</sup>. What is important is that there is no separation between technical and non-technical elements in this phase. The separation between abstract/non abstract and between natural laws or phenomena and their application is done at the patent-eligibility phase.

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<sup>37</sup> See 35 U.S.C. 103.

<sup>38</sup> See for example the USPTO Manual of Patent Examining Procedure, Section 2141 and seq.