Patenting Software-related Inventions according to the European Patent Convention

A review of past and present law and practice

Yannis Skulikaris

Director, Examination & Opposition of Software-related Inventions
European Patent Office
The Hague, The Netherlands
yskulikaris@epo.org

***Abstract*— This paper presents a retrospective of the different epochs in patenting software-related inventions in the European Patent Office (EPO). To put things in perspective, it also makes reference to other jurisdictions as well, in particular USA. The emphasis is however on present EPO practice. Three different epochs are presented and the corresponding approaches to dealing with software-related inventions are discussed, also with regard to the applicable case law: the "contribution" approach, the "further technical effect" approach and the present approach (also known as the "Hitachi-Comvik" approach). This is based on distinguishing between non-technical features (which are not taken into consideration when comparing the invention with pre-existing technology), and those technical features contributing to non-obviousness of the invention when compared to the pre-existing technology. A primer on the structure and function of the EPO and the basic requirements of patenting is included in order to make the text accessible also to non-experts in the field. Past and present landmark case law of the EPO Boards of Appeal is mentioned and briefly explained, but the emphasis is on those decisions that define the present practice. Reference is made to an important technological development, commonly described as Industry 4.0.**

Keywords*— *EPO; EPC; patents; software; software patents; computer-implemented inventions; software-implemented inventions; software-related inventions; CII; Industry 4.0

I. INTRODUCTION

Patenting of software-related inventions has been practiced in numerous jurisdictions for some years now. It has been either directly regulated in the patent laws or indirectly, by means of case law. It has not been always conflict-free, and a lot of debate has taken place in numerous *fora*, sometimes politically motivated, sometimes emotionally charged. The main issue of the debate is under which conditions patenting of software-related inventions fosters innovation and is conducive to economic growth. The arguments on each side depend on the applicable law, the interests of the parties involved, the intellectual property policy followed and the case law that affects patenting practice. In the meantime a substantial amount of patents for software-related inventions has been issued worldwide. In parallel, a considerable number of patent applications which have been refused at first instance, has gone through litigation with various outcomes in different jurisdictions. The resulting case law does not always point in the same direction, especially if one compares case law on both sides of the Atlantic.

The European Patent Office (EPO), following its mission to support innovation, competitiveness and economic growth, has been quite active and authoritative in the field, with a well defined practice and abundant case law from the EPO Boards of Appeal[1]. But even within this case law there were decisions that have been perceived by different observers as divergent. In order to clarify this situation, the President of the EPO, on October 22, 2008, referred four relevant questions to the Enlarged Board of Appeal[2]. The corresponding opinion (G03/08), issued on May 12, 2010, did not lead to any change of the patenting practice of the Examining and Opposition Divisions.

However, discussion still continues, since software technology evolves fast and so does telecommunication

[1] The European Patent Organization (an intergovernmental entity with 38 member states, independent from the EU and financially autonomous), includes also a judicial body, the Boards of Appeal. This is an independent second instance, which, broadly speaking, is responsible for reviewing the decisions of the Examining and Opposition Divisions.

[2] The Enlarged Board of Appeal (EBoA) is a special unit of the Boards of Appeal, ensuring the uniform application of the EPC, by deciding on points of law referred to it by the EPO Boards of Appeal or by the President of the EPO. The EBoA involves also judges from the EPO member states.

technology. The two disciplines form more and more a convergent, technically related and fast expanding field with substantial economic activity.

It is not the intention of this paper to concentrate on the controversial views around patenting of computer-related inventions in general. The purpose is rather to give a clear understanding on the practice of the EPO and the legal provisions on which such practice is based in those cases where software plays an important role in the claimed invention. A retrospective of past practice is helpful to reach such understanding. Having acquired this kind of knowledge, the inclined reader will be much better prepared to deal with the controversial discussions mentioned above.

In the following, statements that are not purely statements of fact, reflect the personal views of the author, unless otherwise stated. Furthermore, any legal information is of general nature and does not pertain to any specific jurisdiction unless otherwise stated. Due to the limitations inherent in such subject-matter, such information cannot be complete, and is not intended as legal advice. Finally, it is stressed that the cited case law applies to the respective cases only. It is the established practice of the EPO under the EPC that any case has to be judged on its own merits.

II. Basic Structure And Function Of The European Patent Organisation And The European Patent Office

The European Patent Organisation was founded in the 70's in order to centralize and harmonize the patent granting procedure in Europe. The Organisation consists of the European Patent Office (EPO) and the Administrative Council. The European Patent Office (in this paper the acronym "EPO" refers exclusively to this Office) is the executive Organ of the European Patent Organisation. The other Organ of the Organisation, the Administrative Council, is the body that governs the EPO and also forms a kind of legislative authority for European patent law. The Administrative Council consists of delegates of the member states, each member state having one vote.

The EPO is not an EU Agency[3], and is financially autonomous. It is financed only by the procedural fees that cover its activities, the renewal fees of pending patent applications and half of the renewal fees of granted patents. The other half of the renewal fees of granted patents goes to the member states in which the patents are valid.

The EPO is bound by European patent law as laid down in the European Patent Convention (EPC), which has been adopted by the 38 member states of the European Patent Organisation (as of September 2016), and as interpreted by the independent EPO Boards of Appeal, the judiciary of the EPO. The Administrative Council also has legislative authority in that it is competent to adopt and/or change the Rules and a limited number of Articles of the EPC[4]. However, the only body having the general authority to change the Articles of the EPC, is the so-called Diplomatic Conference, consisting of delegates of the member states and convening, in an *ad hoc* manner, specifically for the purpose of EPC revision[5]. Also in the Diplomatic Conference each member state has one vote.

The Examining Divisions of the EPO, normally consisting of 3 technical experts, are responsible for examining European patent applications and deciding, after a highly interactive procedure involving the applicant[6] and/or his representative, as to whether such applications fulfill the requirements of the EPC. If this is the case, a European patent is granted, otherwise the application is refused. Within nine months after the grant, anyone can challenge the granted patent by filing an opposition[7]. An opposition is examined by an Opposition Division consisting of three technical experts. Any adverse decision of the Examining Divisions or any decision of the Opposition Divisions is subject to appeal before the EPO Boards of Appeal.

The EPC also foresees limitation and revocation proceedings for granted patents, but such proceedings, at least presently (September 2016), do not play any significant role in the field of software-related inventions.

The subject-matter for which patent protection is sought has to be formulated in the so-called "claims"[8]. These are clear and concise formulations of the technical features that define what exactly is put under protection. Any subsequent litigation about the granted patent will necessarily be based on the claims.

The effect of the granted patent is, broadly speaking, that the patentee has the right to exclude anybody else from the commercial exploitation of the patented subject-matter.

[3] The European Patent Organization has 38 member states (as of September 2016), as contrasted to the EU with its 28 member states.

[4] See in particular Article 33 (1)(a)(b) EPC.

[5] The last EPC revision took place in 2000, the Act of Revision carries the date November 29, 2000. This revision did not have any effect on the EPO practice in software-related inventions.

[6] The European patent system is a so-called "first-to-file" system, meaning that the rights of the patent belong to the person or entity that files the patent application.

[7] In contrast to the examination of a patent application, which is a procedure involving only the applicant and the EPO (*ex parte* procedure), opposition involves the patentee, one or more opponents, and the Opposition Division in the role of an impartial referee (*inter partes* procedure). In opposition proceedings the patent may be maintained in unamended or amended form, or revoked. The outcome of opposition proceedings is subject to appeal in front of the EPO Boards of Appeal.

[8] Claims of computer-implemented inventions are mainly categorized as method claims or apparatus claims. The two categories are mutually exclusive and the categorization is based on the wording of the claim. Method claims are formulated in terms of method steps, apparatus claims are formulated in terms of device features. In addition, claims to computer-readable media that carry instructions which, when loaded and executed in a computer, perform a method claimed in an allowable method claim, are in principle allowable.

However, the patentee can offer licenses for the exploitation of the patent.

The centralized mechanism for granting European patents stops, save for the cases of opposition, revocation and limitation, at the point of grant. A granted European patent is equivalent to a bundle of national patents, which take effect in those member states which have been designated by the patentee. This bundle of national patents is subject, for the rest of the patent's life, to national patent laws in the individual member states, unless the EPC provides otherwise. The patent is maintained valid in each member state as long as the patentee pays the renewal fees in this state, keeping in mind that the patent term is, in general, 20 years from the date of filing. In other words, the present mechanism of the EPO does not affect the life of the patent after grant. This means that any litigation with regard to infringement or validity of a European patent has to take place in the individual member states, before national courts, and will be determined by national patent law (unless, as stated above, the EPC provides otherwise). All 38 member states of the European Patent Organisation have national patent laws whose basic provisions, in particular the patentability requirements, have been harmonized with the EPC. However, it is not excluded that different courts in various member states will reach different decisions in the same case. Obviously, such considerations could possibly influence the business decisions of the patentees[9].

The EPO Boards of Appeal are completely independent in reaching their decisions. They are not bound by any instructions but are obliged to comply only with the provisions of the EPC. They are responsible for reviewing the decisions of the first instance (mainly Examining Divisions, Opposition Divisions) in examination and opposition proceedings. In doing so they interpret the EPC in cases where disputes arise. In the field of software-related inventions the Boards of Appeal have developed the interpretation of those EPC provisions relating to the term “invention” in a number of decisions, providing clear guidance on what is patentable and what is not.

Any European patent application remains secret for 18 months after the filing date. Once the 18 months lapse, the application is published and from then onwards, the patenting procedure is transparent and the file is made available to the public. Any interested party has ample opportunity of checking the file and making third party observations. Such observations do not even necessitate a proven interest in the outcome of the procedure. Since all important information pertaining to the patenting procedure is public[10], submissions of third parties are facilitated. As already stated, even after proceedings before the EPO have been concluded, any European patent can be individually challenged in front of the national patent courts, which have the last say.

The EPO processes as well international filings under the Patent Cooperation Treaty[11] (PCT). These filings lead to issuance of preliminary rulings as to the patentability of the invention in question, and form the basis for European or other regional or national filings.

The EPO receives annually a substantial number of applications under the EPC and the PCT (160000 European filings in 2015) and grants a substantial number of European patents (68500 European patents in 2015). Approx. half of the filings come from applicants outside Europe. Approx. half of the granted patents go to patentees outside Europe as well. EPO has approx. 7000 employees of 30 different nationalities in five places of employment, i.e. Munich, The Hague, Berlin, Vienna and Brussels.

III. The Legal Provisions Concerning Computer-Implemented Inventions In General And Software-Related inventions In Particular

According to a generally accepted and widely used definition, a “computer-implemented invention” (CII) is an invention whose implementation involves the use of a computer, computer network or other programmable apparatus, the invention having one or more features which are realized wholly or partly by means of a computer program. "Software-related" inventions, as the term suggests, and as experience shows, are mainly implemented by means of computer programs. But it is a fact that most patent applications in these fields do not specify exactly whether the implementation is in hardware, software or a mix of the two. Therefore, in the following the terms "computer-implemented", "software-implemented" and "software-related" are used interchangeably.

In practical terms, typical computer-implemented inventions include for instance a mechanism of resource allocation within an operating system (e.g. memory allocation to different tasks during the operation), the digital control of an ABS system[12], the functionality of a mobile phone, the implementation of a ground collision avoidance system in an aircraft based on GPS

[9] For instance, the patentee, faced with infringement in different member states, could possibly choose to file an infringement case in that jurisdiction that appears to him more authoritative and favorable to his case ("forum shopping").

[10] All correspondence between the EPO and the patent applicant, all correspondence between the parties involved in opposition proceedings, as well as all procedural steps and any submissions of third parties are being made publicly available without delay.

[11] The PCT is an international treaty with 150 contracting states (as of September 2016), which makes it possible to take steps towards patent protection for an invention simultaneously in each of a large number of countries by filing an "international" patent application.

[12] The system that prevents the blocking of the wheels of a vehicle during braking (ABS) uses computers and software to process various parameters from sensors and thus regulate the pressure of the brakes.

and data stored in a terrain data base, or the balancing of fuel in the fuel tanks of an aircraft during flight for the purpose of preserving the centre of gravity of the aircraft within prescribed limits. Software is involved in all these cases.

As with all inventions, software-related inventions are only patentable if they have technical character and solve a technical problem, are novel and provide an inventive technical contribution to the prior art. This inventive contribution requirement is also known as "inventive step". The term “prior art” means whatever technical information of similar nature has been made available to the public in any possible way, prior to the filing date of the application.

The term "technical character" is not mentioned literally in the EPC, but the EPC stipulates in Article 52 that European patents shall be granted for any inventions, in all fields of technology (see footnote 15 for the precise text of Article 52 EPC). Furthermore, the EPC requires in numerous Rules[13] that the invention has to rely on technical features. Furthermore, ample case law has established that "technical character" is an implicit requirement of the EPC[14].

The term "novel" or "new" is taken to mean that the invention, as claimed, should not have been made available to the public prior to the filing date. In order to judge this, the invention, as claimed, is compared to the so-called "prior art". The term “prior art”, as already mentioned, means whatever technical information of similar nature has been made available to the public in any possible way, prior to the filing date of the application.

The term "inventive" is taken to mean that the invention, as claimed, should not be derivable in an obvious way from the prior art. Consequently, the invention should demonstrate a non-obvious contribution to the prior art.

Whilst the EPC explicitly sets out the patentability requirements of novelty and inventive step (Articles 54 and 56 EPC respectively), it does not contain a legal definition of the term "invention". It has, however, been part of the European legal tradition since the early days of the patent system that patent protection should be reserved for technical creations. This is the origin of the "technical character" principle. The subject-matter of a patentable invention must therefore have a "technical character" or, to be more precise, involve a "technical teaching", that is an instruction addressed to a skilled person as to how to solve a particular technical problem using particular technical means.

The starting point for defining the legal framework within the European patent grant procedure for assessing the patentability of software-related inventions is Article 52 of the European Patent Convention (EPC)[15]. According to this provision, a patent may be granted in respect of any invention as long as it meets the requirements for patentability stipulated in Article 52 (novelty, inventive step, industrial applicability), and is not excluded from patent protection.

IV. A Brief Analysis Of Article 52 EPC

During the EPC revision which took place in 2000, and entered into force on 13.12.2007, Article 52 was amended to the effect that it explicitly mentions "all fields of technology". This is taken to mean that any new ideas in non-technological fields like economics, commerce, art and the like, cannot be inventions in the sense of the EPC, and therefore these fields are not eligible for patenting. To clarify this, and although the EPC does not define the term "invention", it does contain a list of subject-matter and activities that are excluded from patent protection. Such subject-matter and activities are listed in Article 52(2) EPC, which stipulates that they are not to be regarded as "inventions" within the meaning of the EPC. The list is not exhaustive but includes the major exclusions, for instance "methods for doing business" and "programs for computers". If, for a moment, we set aside "programs for computers", and concentrate on the rest of the items in the list, we realize that common to those exclusions is that they do not constitute "technical" subject-matter in the colloquial sense of the term. There has been also wide consensus amongst the users of the patent system that such subject-matter should not be eligible for patentability.

However, programs for computers (or "software", for ease of expression, whereby the two terms are used

[13] Rule 42 EPC stipulates that the invention shall relate to a technical field and that the invention shall tackle a technical problem. Rule 43 EPC requires that the invention shall be defined in the claims in terms of technical features.

[14] For instance see • 935 / 95 (Controlling Pension Benefits System/PBS PARTNERSHIP), under part V, paragraph B below.

[15] Article 52 EPC reads:

Patentable inventions

(1) European patents shall be granted for any inventions, in all fields of technology, provided that they are new, involve an inventive step and are susceptible of industrial application.

(2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1:
(a) discoveries, scientific theories and mathematical methods;
(b) aesthetic creations;
(c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers;
(d) presentations of information.

(3) Paragraph 2 shall exclude the patentability of the subject-matter or activities referred to therein only to the extent to which a European patent application or European patent relates to such subject-matter or activities as such.

interchangeably) have certain properties that make them different from the rest of the items in the exclusion list. The most intriguing property within the context of Article 52 EPC is that software can be used to implement certain items out of the exclusion list, such as mathematical methods, aesthetic creations, business methods or rules for playing games. Beyond these cases, there has been extensive scientific research in the last years, whereby software has been used for simulating mental acts[16].

This means that if, on one hand, computer programs would be deleted from the exclusion list[17], such that they would be unconditionally allowed, then they could be used to circumvent the exclusions of some of the other items in the list.

But if, on the other hand, they would be absolutely excluded, then any technical invention that would be implemented by means of computer programs would not be eligible for patent protection.

So obviously the two extremes would not work. The way out of this tense situation is a proper interpretation of the "as such"[18] provision in Article 52(3) and a pragmatic examining approach that places due emphasis on all requirements of the EPC, notably on the requirement of inventive step based on the technical features of the invention.

Applying such pragmatic approach, the EPO does not grant patents for computer programs or computer-implemented business methods that make no technical contribution to the prior art. It should be emphasised that, under Article 52(3) EPC, the exclusions have to be interpreted narrowly. This means that if an invention is implemented by means of a computer program, the mere fact that a computer program is used to implement the invention does not automatically exclude the invention from patentability. In other words, not the mere presence, but the function of the program is important, i.e. what the program does. Therefore, inventions having a technical character which are or may be implemented by computer programs may well be patentable.

The examining practice of the EPO and the case law of the Boards of Appeal are based on this interpretation of the term "invention".

This interpretation of the term “invention” is expected to serve well also patenting in the fields of cloud computing and Internet of Things. These are two important constituents of the technological development colloquially known as Industry 4.0.

It is interesting to note at this point that in the US there are no "statutory" exclusions from patentability, i.e. there is no provision in US law that corresponds to Article 52(2)(3) EPC. However, there are judicially created exceptions (by case law), e.g. abstract ideas, physical phenomena, laws of nature etc.[19]

V. The EPO Practice In Examining Software-Related Inventions: The Past And The Present

Three out of the various legal requirements that the claims of any software-related invention have to fulfill (or "hurdles" that the claims have to take), i.e. compliance with Article 52(2)(3) EPC (colloquially referred to as "technical character"), compliance with novelty (Article 54 EPC), compliance with inventive step (Article 56 EPC), and their interrelation in examination proceedings will be looked at more closely. A fourth requirement, that of industrial application (Article 57 EPC), is normally not an issue in software-related inventions.

The focus will be on the requirement of technical character and an overview of past and present EPO practice in assessing compliance with Article 52(2)(3) EPC will be presented.

The present practice is also explained in the EPO Guidelines for Examination, which are publicly available on the EPO Internet site[20].

There are three different epochs which can be identified in the recent past, according to the methodology applied in assessing compliance with Article 52 (2)(3) EPC. These three slightly different approaches have been mainly influenced by the evolving case law from the EPO Boards of Appeal. However, these approaches have led to the same broad results, never departing from the basic principle that patents are granted only for inventions that demonstrate an inventive technical contribution to the pre-existing technology.

A. The Contribution Approach (until 1998)

During the first epoch, until approx. 1998, the so-called "contribution" approach was applied. It involved the search for the closest prior art and was based on the following steps: first, once the closest prior art was identified, the difference

[16] Two typical cases are rule-based systems (e.g. expert systems), and systems based on inductive inference, i.e. software programs that simulate the learning ability of humans (e.g. neural networks).

[17] A corresponding suggestion was made, discussed but not accepted during the last EPC revision (Act of Revision dated November 29, 2000).

[18] "as such" in the sense of Article 52 (3) EPC means that protection is sought for the excluded subject-matter itself and nothing else. For an extensive discussion on the term "as such" the inclined reader is referred to T208/84 (Computer-related invention/VICOM), concerning a method and apparatus for improved digital image processing, and also to T1173/97 (Computer program product/IBM) and T935/97 (Computer program product II/IBM).

[19] reference is made to the recent decision Alice Corp. v. CLS Bank International, decided by the US Supreme Court in 2014, see part V.B

[20] http://www.epo.org/law-practice/legal-texts/guidelines.html

between this prior art and the claim was defined, in terms of claimed features, the so-called "delta". Then the problem was identified, which was solved by exactly those features belonging to the "delta". Then the question was answered, whether that problem belonged to a field excluded from patentability by means of Article 52 (2)(3) EPC. If this was the case, then the claim was judged to infringe Article 52(2)(3) EPC. Otherwise the claim was found compliant.

The basis for such approach can be found in the EPO Boards of Appeal decision T 0208/84 (Computer-related invention/VICOM) of 15.7.1986, where it was stated that

"Generally speaking, an invention which would be patentable in accordance with conventional patentability criteria should not be excluded from protection by the mere fact that for its implementation modern technical means in the form of a computer program are used. Decisive is what technical contribution the invention as defined in the claim when considered as a whole makes to the known art."

During this period, claims drafted to computer programs or computer program products or computer-readable media were considered non-patentable.

Decision of the EPO Boards of Appeal 0769/92 (General purpose management system/SOHEI) of 31.5.1994 confirmed this practice and furthermore stipulated that

"*if technical considerations concerning particulars of the solution of the problem the invention solves are required in order to carry out that same invention",* then such technical considerations *"lend a technical nature to the invention in that they imply a technical problem to be solved by (implicit) technical features".*

The biggest criticism against this methodology, voiced mainly by the patent attorneys, was that it included the use of the closest prior art and the assessment of the difference between the prior art and the invention. These steps pertain to the assessment of novelty and inventive step (Articles 54 and 56 EPC respectively) rather than to the assessment of compliance with Article 52 EPC. Since each Article of the EPC had to be complied with independently of the others, it appeared questionable to use steps that pertained to assessment of novelty and inventive step when assessing exclusion from patentability for lack of technical character.

Interestingly, on July 3, 1998, the case State Street Bank & Trust Co. vs Signature Financial Group, Inc. was decided by the US Court of Appeals for the Federal Circuit[21]. Broadly speaking, it was decided that subject-matter, including business methods, is "statutory" (meaning patentable in principle) if it offers a useful, concrete and tangible result. This case was held to confirm the general patentability of business methods in the US system.

B. The Further Technical Effect Approach (1998 - 2004)

The criticism against the "contribution" approach eventually found its expression in two seminal decisions of the EPO Boards of Appeal, namely T 1173/97 (Computer program product/IBM), decided on 1.7.1998, and T 0935/97 (Computer program product II/IBM), decided on 4.2.1999. These decisions marked the advent of the so-called "further technical effect" approach, from 1998 onwards.

In both decisions it was explicitly stated in the considerations of the Board that

"*Determining the technical contribution an invention achieves with respect to the prior art is therefore more appropriate for the purpose of examining novelty and inventive step than for deciding on possible exclusion under Article 52(2) and (3)*" .

A further implication of the two mentioned IBM decisions was that claims referring to computer program products and a computer-readable medium embodying a computer program product were from 1998 on also patentable. The practical condition was that the program product claim should be dual to a patentable method claim[22].

It is reasonable to assume that the Board, in deciding the IBM cases, acknowledged a need to allow claims that would enable dealing efficiently with cases of direct and indirect infringement (or contributory infringement). In certain jurisdictions of the EPO member states the courts dealing with infringement make a distinction between direct infringement (e.g. when a company produces a patented product, for instance software, without a license) and indirect infringement (e.g. when a shop shells this product off-the-shelf). Patent attorneys have argued that in order to enable some court orders to be executed, claims to computer program products (i.e. to the off-the-shelf products) were necessary.

It may also be the case that the Board took into consideration certain developments in US case law, namely the so-called Beauregard case[23], which allowed claims to a computer-readable medium by considering it an article of manufacture.

---

[21] Broadly speaking, the US court system for patent matters consists of three instances: the District Courts, the Court of Appeal for the Federal Circuit (CAFC), which is a centralized court of second instance, and the Supreme Court of the US.

[22] Incidentally, a similar conclusion was reached by the US Court of Appeal for the Federal Circuit (CAFC) on August 16, 2011, in the case *CyberSource Corp. v. Retail Decisions, Inc.*

[23] in re Gary M. Beauregard, US Court of Appeals for the Federal Circuit, May 12, 1995. The Court agreed with the USPTO, which eventually reviewed and discarded the reason for rejection of claims to a computer program product, that reason being that a computer program product on a computer-readable medium was considered equivalent to printed matter.

The "further technical effect" approach focused on the functionality of the claimed invention which went beyond the mere physical interaction of hardware and software. In other words, it was important what the computer program did, how it affected the internal functioning of the computer and in which way it produced an identifiable technical effect that solved a technical problem, beyond the mere fact that it ran on a computer. If this function was judged to be technical in the sense that the solution was to a technical problem, as contrasted to a financial, commercial, actuarial or aesthetic problem, then the claim was considered to fulfil the requirement of "technical character", independently of the claim category.

Subsequent case law, for instance decision • 931 / 95 (Controlling Pension Benefits System/PBS PARTNERSHIP), decided on 8.9.2000, confirmed this approach and developed the case law in the sense that it differentiated between method and apparatus claims. In its headnotes it concluded:

"I. Having technical character is an implicit requirement of the EPC to be met by an invention in order to be an invention within the meaning of Article 52(1)EPC. (following decisions T 1173/97 and T 935/97).

II. Methods only involving economic concepts and practices of doing business are not inventions within the meaning of Article 52(1) EPC. A feature of a method which concerns the use of technical means for a purely non-technical purpose and/or for processing purely non-technical information does not necessarily confer a technical character on such a method.

III. An apparatus constituting a physical entity or concrete product, suitable for performing or supporting an economic activity, is an invention within the meaning of Article 52(1) EPC."

Therefore, from 2000 onwards, apparatus claims were considered to possess technical character. Of course, any claim had still to take the further hurdles (novelty, inventive step).

The main criticism against this approach was that it was somehow circular or even cryptic, in the sense that it attempted to define "technical character" in a self-referential manner. In that sense, some attorneys argued, it didn't enable real argumentation. The counterargument was that numerous Board Of Appeal decisions would provide positive and negative examples of what subject-matter possessed technical character and what subject-matter did not. Thus, a realistic argumentation could be produced in favour of any individual case where technical character would really be present.

A further criticism was based on the difference in dealing with apparatus and method claims, since apparatus claims, in contrast to method claims were considered *a priori* compliant with the requirement of technical character.

Finally, in 2004, decision T 0258/03 (Auction method / HITACHI) marked a partial change in approach, but no change in the basic requirements of patentability.

C. The Hitachi-Comvik Approach (2004 – present (September 2016))

The "Hitachi-Comvik" approach is the present methodology for assessing compliance with the technical character requirement of the EPC. It has been established by decision T 0258/03 (Auction method/HITACHI) of 21.4.2004, which, in its headnotes, stipulated:

"I. A method involving technical means is an invention within the meaning of Article 52(1) EPC (as distinguished from decision T 931/95-Controlling pension benefits system/PBS PARTNERSHIP) (see points 4.1 to 4.4 of the reasons).
II. Method steps consisting of modifications to a business scheme and aimed at circumventing a technical problem rather than solving it by technical means cannot contribute to the technical character of the subject-matter claimed (see point 5.7 of the reasons."

Essentially, the HITACHI decision did not negate the "further technical effect" approach. It simply developed the case law in the sense that method claims need only involve technical means in order to take the hurdle of Article 52 EPC. Even if the initial method claims do not involve technical means, it is always possible to amend them and cite technical means in the field of computer-implemented inventions. As a consequence, both method and apparatus claims take easily the Article 52 hurdle. But it would be wrong to assume that the overall requirements of patentability have been relaxed, since there is still the Article 56 hurdle to take. And concerning this hurdle, decision T 0641/00 (Two identities/ COMVIK) of 26.9.2002, concluded:

"I. An invention consisting of a mixture of technical and non-technical features and having technical character as a whole is to be assessed with respect to the requirement of inventive step by taking account of all those features which contribute to said technical character whereas features making no such contribution cannot support the presence of inventive step.

II. Although the technical problem to be solved should not be formulated to contain pointers to the solution or partially anticipate it, merely because some feature appears in the claim does not automatically exclude it from appearing in the formulation of the problem. In particular where the claim refers to an aim to be achieved in a non-technical field, this aim may legitimately appear in the formulation of the problem as part of the framework of the technical problem that is to be solved, in particular as a constraint that has to be met."

In conclusion, the present approach is essentially a two-step procedure. In the first step, it deals in a more or less formal manner with the requirement of technical character. However, in the second step, it scrutinizes the features of the claimed invention, clarifying that only technical features support the presence of inventive step.

In more detail, during the first step an evaluation is made as to whether the claimed subject-matter is an invention within the meaning of Article 52 of the EPC. For apparatus claims this is always the case. For method claims, if the claim involves technical means (for example the use of a computer or the Internet), then the claim is judged to be an invention according to Article 52 EPC. In such a positive case, an evaluation of the remaining requirements of the EPC (novelty, inventive step) takes place in the second step.

In the second step of this approach, when evaluating the existence of novelty and inventive step, the Examining Division disregards any features that do not contribute to the technical character of the claimed invention.

If the first step concludes that the claimed subject-matter does not constitute an invention in the sense of Article 52 EPC, then such subject-matter is not searched and not examined, unless the applicant amends the application in such a way that the first step is positive.

It has to be mentioned at this point that only such features which do not have any interrelation with the tackled technical problem are disregarded.

The inclined reader is advised to study also decision T154/04 (Estimating sales activity/DUNS LICENSING ASSOCIATES) of 15.11.2006 for an extensive review of case law and a confirmation of this practice.

Finally, opinion of the Enlarged Board of Appeal G03/08, which resulted from a referral of the President of the EPO and was given on 12.5.2010, has not lead to any change of the patenting practice, also making an explicit positive reference to the present practice as set out in the aforementioned decision T154/04 (Estimating sales activity/DUNS LICENSING ASSOCIATES). The Enlarged Board of Appeal explained that the existing decisions should be seen as a legitimate development of the case law.

It has been intensively debated whether a definition of the terms “technical”, “technical character”, “technical contribution” etc is feasible. Such definition would allegedly help to better understand the EPO examining practice. However, despite the repeated efforts, no commonly acceptable, workable definition of these terms has been found. It is the position of the EPO that the best way to create a workable perception of these terms is to take into consideration the various positive and negative cases decided by the Boards of Appeal. Such inductive method[24] appears to be the only way to come to a workable perception as to what is “technical” in the sense of the EPC.

To wrap up the present practice in a few concluding words, one can say that software inventions and in particular business methods, even if they involve the use of a computer, are not themselves patentable in Europe, if their technical implementation is straightforward. However, if the technical implementation involves solving a technical problem, such solution might be patentable (but not the business method itself). Such business methods are, however, often patented in the USA, irrespective of a technical effect.

Claims to pure business methods in patent applications are not searched by the EPO because a meaningful search into the state of the art is not possible. In such cases a declaration is issued that no search report will be established or, where appropriate, a partial search report only will be established. In cases where the claimed subject-matter involves technical means, the EPO will issue a search report or partial search report. Where the employed technical means are so conventional that they were widely available to everyone at the date of filing and no documentary evidence is considered required because of their notoriety, no document will be cited in the search report. A statement will be inserted in the search report indicating that these technical means are considered to be so commonplace that no citation is considered necessary. This practice also enables the EPO to indicate to the applicant at a very early stage that the claims of the application contain subject-matter that is not patentable, and therefore help the applicant avoid unnecessary cost.

There is no legal basis in the EPC for requesting a program source code from the applicant, nor is it the policy of the EPO to require or examine source codes or to publish them as annexes to patent application documents (which consist of the request for grant, the claims, the description, the drawings and the abstract). The source code is neither necessary nor appropriate for sufficient disclosure of a computer-implemented invention. Moreover, given the length and complexity of source code listings, which can often stretch to hundreds of pages, it would be practically impossible to examine them.

Considering the patenting of software inventions and in particular business methods in US jurisdiction, there have been some recent important developments. One major decision was rendered by the US Supreme Court on June 28, 2010. In Bilski et al. v. Kappos the Court dealt rather with the test applicable for patentability than with any restriction to

[24] "inductive" in this context means based on positive and negative examples, as contrasted to a "dogmatic" definition. An inductive learning process achieves the learning effect by presenting positive and negative examples of the concept to be learned in an iterative process. In contrast to that, an *a priori* definition of the concept to be learned is more appropriate for mathematical concepts, not for "fuzzy" concepts like "technical character".

patentable subject matter. The findings of this case were cited in CyberSource Corp. v. Retail Decisions, Inc., decided by the US Court of Appeals for the Federal Circuit on August 16, 2011. In both cases, business method claims were rejected as referring to mental activities. A further important decision is Alice Corp. v. CLS Bank International, decided by the US Supreme Court in 2014. The case concerned financial transactions and the Supreme Court stated that abstract ideas (as claimed in the case at hand) were not patentable, and this would not change even if the claims referred to computer implementations of those ideas. However, it appears that even after these decisions, business methods will not be absolutely excluded from patenting in the US.

VI. Conclusions

The EPO has adopted a pragmatic and workable approach to patenting software-related inventions, following the principle that only technical inventions are patentable in the European system. The users of the system, by and large, confirm that this principle, as implemented by the EPO, serves the EPO's mission of supporting innovation, competitiveness and economic growth in the best possible way.