SOFTWARE PATENT PROTECTION UNDER THE EUROPEAN
PATENT CONVENTION

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Student: Daniel de Santiago Villagrán
Professor: Mika Hemmo
Master in International Business Law
Faculty of Law
The primary objective of the thesis will be to focus on patent protection of software under the European Patent Convention, by analysing the different approaches that the European Patent Office has taken into consideration since the mid-1980s. These approaches are rooted in the different decisions that emanate from the Technical Boards of Appeal of the European Patent Office. The thesis will examine the most relevant decisions illustrating the juridical tendencies and fundaments that have been utilized to decide over the patentability of computer programs. The analysis will conclude with the latest approach taken by the Technical Board of the European Patent Office. The study will examine the patentability requirements of inventions in general established within the European Patent Convention. Subsequently, a case law analysis will be performed of relevant decisions taken by the Technical Boards of Appeal on the patentability of computer programs.

Sources for carrying out this research such as case law, legislation, specialized legal commentary; journals and books will serve in this matter. The present study sustains that computer programs may be patented as long as they comply with all the general requirements of an invention prescribed under the European Patent Convention together with an inherent condition established by case law called the technical character requirement. Nevertheless, due to the fact that the Technical Boards of Appeal are not bound by previous case law, the current position could keep evolving as it relies on the political stance the European Patent Office has on patentability of computer programs.

### Keywords

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1. INTRODUCTION TO THE STUDY

Presently, the rapid evolution of technology influences every aspect of our lives making this phenomenon impossible to decelerate. The constant influence of technology over economic, political and cultural aspects of nations can be experienced through a passive change, but disruptive effects are evident over a relatively short period of time. The purpose of this thesis required researching a topic that is not common for an average legal scholar, but nevertheless is becoming an increasingly mandatory legal topic. Currently, there is little doubt that the software industry is one of the most important and rapidly growing in the world generating millions of euros worth of revenue.

The topic of this thesis is a fusion of two different worlds, which comprises the field of intellectual property rights in combination with a product of technology, called software. The software industry has experienced a precipitated growth since the birth of the personal computer. This phenomenon made software development redirect from being a tailored made product for specific purposes, into a technological product utilized in every single house hold. Nevertheless, software cannot only be reduced to private use in households or offices. Its application is found in many sectors and industries, ranging from the automobile and aeroplane industry to the application of software in industrial processes.

Intellectual property rights protect intangible property, which in this case are the ideas and creations of the mind materialized through a computer program. This specific subject matter possesses a particular nature, which can be described as a hybrid. Software is a hybrid technology because it encompasses static and dynamic features. This particular nature makes software unique when speaking about the scope of protection under intellectual property rights. Computer programs can be protected by three main different rights; these rights encompass trade secrets, copyright and patents. Software can also be protected through trademarks and licensing agreements but this will not be the object of this thesis.

From the perspective of intellectual property rights the current discussion not only focuses on the way software should be protected, but how the scope of protection of patent, copyright and trademark may interact and protect an identical subject matter. Software has an extensive and unforeseeable life span ahead. This means that the legal framework will need to adapt at a fast pace in order to catch up with this expansionist area of technology. Software is relatively a new area of technology in comparison to other sectors of
technology, thus the effects of the current position regarding patents in Europe will surely evolve during the near future.

The most active discussion within the patent field is centred today around the issue related to software patent protection. This study will demonstrate the special nature that software possess and examine how patentability of computer programs or of computer implemented inventions\(^1\) (CII) under the European Patent Convention has been conceived.

The thesis is comprised of six chapters. The first chapter is conceived as an introductory chapter to this study. It will begin by presenting the objective, research questions and the methodology utilized within the thesis. Subsequently, it will present a general notion of intellectual property giving a legal overview of the notion of software. This will prove essential for anyone that is not familiar with technical aspects of computer programing and its science.

As for the second chapter of the study, the aim will be to provide a description of the three main types of protection granted by intellectual property rights in matter of software protection. Firstly, the study will describe the main characteristics of each intellectual property right. Subsequently, the thesis will deal with the function that intellectual property rights accomplish in the protection of software. The content of the third chapter will analyse the patentability requirements of an invention under the European Patent Convention. The main conditions for patentability are novelty, inventive step, industrial application and patentable subject matter.

The fourth and fifth chapters encompass the fundamental part of this thesis. Chapter four relates to the study of the three main approaches reflected in the case law of the Technical Boards of Appeal of the European Patent Office. The fifth chapter will examine the latest opinion of the Enlarged Board of Appeal of 2008, which ensured that the case law of the Technical Boards was in order and no substantive contradictions were acknowledged between the different approaches.

The final chapter will conclude the present study taking into consideration past, present developments and possible future outcomes regarding the patentability of software under the European patent scheme.

\(^1\) This term is recognized by EPO as the official term which comprises computer programs and other programmable apparatuses. Please refer to section 2.3.2.2 of this thesis for the definition of the said term.
1.1 Objective and Research Questions

The primary objective of the thesis will be to focus on patent protection of software under the European Patent Convention, by analysing the different approaches that the European Patent Office has taken into consideration since the mid-1980s. These approaches are rooted in the different decisions that emanate from the Technical Boards of Appeal of the European Patent Office. The thesis will examine the most relevant decisions illustrating the juridical tendencies and fundamentals that have been utilized to decide over the patentability of computer programs. The analysis will conclude with the latest approach taken by the Technical Board of the European Patent Office.

Main research questions:

Which are the requirements for patentability under the European Patent Convention?

Which are the different approaches taken by the European Patent Office regarding the patentability of computer programs?

What is the current position of the European Patent Office on the patentability of software?

Is software patentable under the European Patent Convention?

1.2 Research Methodology

The study will investigate the patentability requirements of inventions in general established within the European Patent Convention. Subsequently, after studying the substantial patentability requirements, a case law analysis will be performed of relevant decisions taken by the Technical Board of Appeal of the European Patent Office on patentability of computer programs. The analysis will reflect the past approaches and depict the development of case law in order to demonstrate the different criteria utilized by the EPO regarding the subject matter of this study. The thesis will utilize diverse sources for carrying out the research such as case law, legislation, specialized legal commentary, journals and books will serve in this matter.

1.3 Intellectual Property

In order to envision the manner by which computer software is protected, an initial understanding of what is considered to be intellectual property shall be portrayed. Intellectual property can be given a simple and clear definition, the concept that will be utilized is established by the WIPO; *Intellectual property (IP) refers to creations of the
mind: inventions, literary and artistic works, and symbols, names, images, and designs used in commerce. In other words, it refers to the legal rights handed to the creators or inventors of products resulting from intellectual activity in the fields of industry, science, art and literature. Intellectual property law does not only concede rights to the right-holder but it also deters others from taking unfair advantage of the creator’s product, and providing remedies should this happen.

The term “intellectual property” or “intellectual property rights” will be utilized interchangeably throughout whole thesis. Another popular term utilized in this field is “industrial property” which is also frequently applied, but normally it is understood to exclude copyright. The use of the concept “intellectual property” dates back almost for one hundred and fifty years ago to refer to this area of law.

In order to illustrate the on-going interaction of intellectual property rights (IPR) with our everyday lives the following example will be described to depict an everyday situation. As you are reading this thesis, the literary content that is of the author’s creation is protected by copyright. Simultaneously you are probably sitting on a chair in the Helsinki University library (Kaisa-talo) that is protected by designs rights. Ergo you might be making quick notes to your notebook with a pen, which has a mechanism that, at some stage, was patented and also contains a trademark. Additionally, to summarize your thoughts you are typing notes into a laptop, which is protected by this kind of property rights, its external parts and internal parts protected by patents and design rights, such as the semiconductor chip and the shape of the product, to name some.

In pursuance of fully comprehending the meaning of IPR, the distinction between intangible property and the tangible object in which they are embodied must be explained. Intellectual property rights are considered to be of a different nature and separate from property rights in tangible goods. This diverse nature can be explained by the following example: a person that writes and sends a letter to a friend describing his adventures during his trip to Asia. Once the recipient has received the letter, he may store this letter and

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7 Ibid
conserve all property rights over the physical letter and the ink. He can also dispose of this letter, destroy it and even when he dies it will be part of his inheritance. Despite the recipient having personal property rights in the letter as a physical object, the author (sender) retains intellectual property rights over the literary content of the letter. This IP confers the author the power to impede the recipient from copying the content or from posting it on the internet.8

This division might be hard to grasp at first, but what must be clear is the situation of the person that possesses rights over intangibles (IPR). He or she is entitled to limit what the owners of personal property can do with the things they own, because it contains intangible property. For example, the author of a book has an intangible right over its content (creative expression). In this situation the main question that arises in determining the boundaries between intangible property and personal property is: how was the object of the property to be identified and its limits to be defined? This question is easy to answer when we deal with personal and real property because the limits are defined by the physical objects over which the right holder exercises his property. While the physical barriers of intangible property do not exist, an alternative system was created to establish parameters for the property in question. This system contains certain deposit and registration techniques of representation, legal concepts and requirements, depending on the nature of the intangible property.9

Furthermore, an important aspect to consider is that the rights conferred to protect ideas and information that are created within an intellectual activity that are of commercial value.10 This is the principle motive why in the industrialized world exploitable ideas are becoming a sophisticated way for a successful economic future, relying on complex legal and political activities designed to strengthen the various types of protection for ideas of this nature.11 An additional feature is that the property rights granted are essentially negative; this means that they prevent others from doing certain things, e.g. regarding the actions of a counterfeiter, imitator or a pirate, from exploiting or using them without the permission (licence) of the owner. This does not imply that intellectual property does not

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8 Ibid 2
9 Ibid 2-3
11 Ibid
grant positive entitlements that permit the right owner to be granted a patent or register a trademark.\textsuperscript{12}

Another important aspect is the territorial nature that intellectual property rights possess. IPR only operate within the territory in which they are granted. Due to the increase in trade of goods that contained different kinds of intangible property, countries began to explore ways to protect their goods through IPR. At first it was done by bilateral treaties, but towards the nineteenth century, mostly European countries started to enter multilateral agreements. The two most important being the Paris Convention for the Protection of Industrial Property of 1883 and the Berne Convention for the Protection of Literary and Artistic Works of 1886.

During the twentieth century, the protection provided by these treaties became insufficient forcing developed countries to adopt stronger regulations in this matter. The World Intellectual Property Organization (WIPO) was created in 1967 by a Treaty signed in Stockholm the same year, replacing the United International Bureaux for the Protection of Intellectual Property (BIRPI).\textsuperscript{13} Following this process, a treaty called Trade Related Aspects of Intellectual Property Rights (TRIPS) was adopted and the product of a more aggressive stance led by the United States Government towards protection of IPR. This convention was signed in Marrakesh in April 1994 and it was incorporated into the legal framework of the General Agreement on Tariffs and Trade (GATT).\textsuperscript{14}

\section*{1.4 The Notion of Software}

In favour of establishing a common vision of the subject matter throughout this study and before entering the complex topic of software protection, there must be a significant analysis of what is understood by software.

\subsection*{1.5.1 Defining Software}

The term “software” will be utilized as an equivalent to the terms “computer programs” or “programs for computers”. As a starting point the definition of computer programs adopted by WIPO in its Model Provisions for the Protection of Computer Software is the following: “computer program” means a set of instructions capable, when incorporated in a

\begin{thebibliography}{9}
\bibitem{12} Ibid
\end{thebibliography}
machine-readable medium, of causing a machine having information-processing capabilities to indicate, perform or achieve a particular function, task or result.

With respect to the concept of computer programs, Hansen states that a distinction was made in the Model Provision regarding computer programs and software. This distinction relates to the broadness of the term “software” because it includes the concepts of program descriptions and supporting material all in one.

During the first session held in Geneva by the expert group in 1978, the notion of program description and supporting material is defined reaffirming the concept established in the Model Provision; “Program description” means a complete procedural presentation in verbal, schematic or other form, in sufficient detail to determine a set of instruction constituting a corresponding computer program. On the other hand, supporting material comprises any material, other than a computer program or a program description, created for aiding the understanding or application of a computer program, for example descriptions or user instructions.

Important national legislations such as the one of United States and Japan, establish a definition of computer program following the one given in the Model Provisions, for example Section 101 of the US Copyright Act defines computer program as: is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result. The Japanese Copyright Act under Article 2 (x-2) defines it as: an expression of a combination of instructions to cause a computer to function in order to be able to obtain a certain result.

The adoption of a broader concept of computer program, which comprises the preparatory material utilized in the process of designing the program, has been enshrined within a wide range of legislations and conventions around the world. This is the case of Article 1.1 of the Computer Programs Directive of the European Community, which establishes the

15 World Intellectual Property Organization, Model Provision on the Protection of Computer Software, Section 1 (i)
17 This expert session held in Geneva had the objective of enhancing international cooperation in the field of protection of computer programs.
19 Ibid
20 Copyright Law of the United States of America, 1976, chapter 1, Section 101 http://www.copyright.gov/title17/
21 Copyright Act of Japan, No. 48 of 1970, Article 2(x-2) http://www.jpaineselawtranslation.go.jp
following notion: the term “computer programs” shall include their preparatory design material.\textsuperscript{22} To understand what is meant by design material we must extract this concept from the seventh recital of this Council Directive, it indicates the following notion for preparatory design material; [...] whereas the term (the word term relates to computer programs) also includes preparatory design work leading to the development of a computer program provided that the nature of the preparatory work is such that a computer program can result it at a later stage.\textsuperscript{23}

Important international conventions such as the TRIPS Agreement adopted in 1994 and the WIPO Copyright Treaty adopted in Geneva 1996 do not contain definitions of computer programs or software whatsoever.

1.5.2 Essential Terminology

The definitions expressed will be used continuously throughout the thesis and will aid in the understanding of the subject matter.

**Computer:** a machine that can follow instructions to alter data in a desirable way and to perform at least some operations without human intervention. Computers represent and manipulate text, graphics, symbols and music, as well as numbers.\textsuperscript{24}

**Source code:** is the symbolic code that is written by a programmer in a computer language, such as C or BASIC, and is generally decipherable by humans.\textsuperscript{25}

**Object code:** is the executable machine language, consisting of binary strings (zeros and ones), that the computer actually uses to perform its actions.\textsuperscript{26}

**Algorithm:** as a prescribed set of well defined, unambiguous rules or processes for the solution of a problem in a finite number of steps.\textsuperscript{27}

1.5.3 Functionality and Composition of Software

In order to understand how software functions, it is necessary to distinguish two entities that are involved in the operation of a computer apart from the hardware itself. The first entity relates to a “program”, which can be described as a set of control signals that enable

\textsuperscript{23} Ibid
\textsuperscript{24} Ibid 350
\textsuperscript{25} Ibid 258
\textsuperscript{26} Ibid 17
the hardware to perform certain functions. Secondly, the other entity is called “data,” which is to be processed in accordance with the program. Data can be defined as a set of input signals supplied from outside of the computer or from part of the computer to another, consequently to be processed accordingly to the control signals given by the program. This process can be comparable to the operation of electronic systems, for example: the software is analogous to the processing circuits of a television receiver.28

Furthermore, to describe how a computer program enables computer hardware to perform computational or control functions, the behaviour of a computer program will be explained. Computer software is composed of two different types of code, a source code and object code. The source code contains the programmer’s instructions in a programming language. This code normally resembles English and is readable by humans. Nevertheless, for this source code to be able to instruct the hardware to execute a function, it first must be translated into a machine-readable instruction. This translation is executed by a special program called a “complier” or by an “interpreter”. The specific function of the complier is to produce an object code of the program in a machine-readable language, while the interpreter translates the set of instructions dictated by the source code while the computer is running.

The object code is expressed in an executable machine language consisting of binary strings,29 which is a series of bits and therefore not readable by humans. Certainly not all software is compiled, thus not always the source and object code appear to be distinct. When the software is only interpreted rather than compiled, the distinction between source and object code is not possible to make. Even though compiling and interpreting are the two principal techniques of carrying out programing languages, they are not always coexistent in every programing situation. Actually, most of the interpreting programs perform the translation of the code in an identical manner as the compiler systems.30

The basic description of the functionality and composition of a computer program now will allow us to comprehend the subject matter of protection by different types of IP. Before entering the analysis of the different methods of protection, there are two characteristics of software that are important to mention. Computer programs are simultaneously literary and

29 See definition of object code in the previous title
functional works. The literary nature relates to the fact that the source code of a program is expressed in writing. The functional aspect materializes when the code is processed by a machine and has given the instructions to the hardware, the code can be viewed as utilitarian because it executes a determined function and has a mechanical aspect.\footnote{Ibid 12}
2. SOFTWARE PROTECTION

This chapter will examine protection granted to software by three different IP regimes, namely, trade secrets, copyright and patents. Furthermore, the discussion will centre on the way by which software protection evolves from only comprising trade secret protection, by then including copyright and finally, encompassing patent protection. Since the 1960s the software industry has relied on these three forms of protection against third party appropriation. The reliance of the software industry regarding these forms of protection has varied over time. The first phase relates to trade secret protection of software, which was the preferred protection in the 1950s until the late 1960s. The second phase, occurring post-1960s comprises the copyright era in software.\textsuperscript{32} During the 1980s patent protection gained great importance until the present date.

2.1 Trade Secret Protection of Software

Under this title a general concept of trade secrets will be given in order to understand its role in the protection of software. Trade secrets possess a very wide scope of protection, but it can be easily lost when the confidential information is exposed to public knowledge.

2.1.1 What is a Trade Secret?

In general terms, any kind of secret business information or technological know-how which gives an enterprise a competitive advantage over other enterprises, can fall within this category.\textsuperscript{33} These types of secrets encompass ideas for new products, inventions and markets, commercial information about customers, finance, employment, and other type of industrial secrets.\textsuperscript{34} In certain jurisdictions the term “confidential information” is considered to be broader, encompassing “trade secrets” and also other kinds of secrets such as governmental and personal information. The protection granted to trade secrets will vary depending on the legal system, in some jurisdictions the general concept of protection will be considered to be an act against unfair competition, conceived on specific provisions or case law on the protection of confidential information.\textsuperscript{35}

\textsuperscript{33} W R Cornish, Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights (4\textsuperscript{th} edn Sweet & Maxwell, London 1999) 10
\textsuperscript{34} Ibid
information in general, do not need any kind of registration, or to comply with any other sort of formality for e.g. disclosure.\textsuperscript{36} The enterprise or owner of the secret or confidential information must take efficient measures to protect the information.

The TRIPS Agreement requires the signatories to provide protection to those who lawfully control undisclosed information and establishes requirements by which the information must comply with to be considered confidential. These requirements are contained within Article 39.2 of the TRIPS. This norm prescribes that natural and legal persons have the possibility of preventing the disclosure, acquisition and utilization of their information by third parties. In order to prevent any of the aforementioned conducts, two conditions must be met: firstly, there must be no consent from the owner and secondly, the information must be used in a manner contrary to honest commercial practices. Additionally, for the secret to enjoy trade secret protection it must comply with three requirements: \textit{(a) is secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question; (b) has commercial value because it is secret; and (c) has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret.}\textsuperscript{37}

\textbf{2.1.2 Protection of Software}

In the field of software trade secrets there are two main scopes where trade secret protection is employed. The first scope relates to the employer-employee relationship and protects company software trade secrets from employees. The second scope of protection is present by protecting software secrets in licensee and vendor relationships. With regard to the first procedure, the employer, as stated in the TRIPS agreement, must take reasonable steps to protect this kind of information. A reasonable step the employer must adopt is to require each employee to enter an employment contract which contains nondisclosure clauses\textsuperscript{38} or a separate nondisclosure agreement. In the United States in absence of a non-disclosure agreement or clause, case law has found that a common law duty may exist for an employee not to reveal an employer’s trade secrets. Other necessary measures are internal control programs to notify employees that they might be dealing with

\textsuperscript{36} Ibid
\textsuperscript{37} TRIPS, Section 7, Protection of Undisclosed Information, Art.39
\textsuperscript{38} A C Keays, ‘Software Trade Secret Protection’ (1990-1991) 4 Software LJ 577, 581
confidential information and mediums that contain this kind of information must be kept in safe storage.  

Further measures that companies implement are the maintenance of computer security, the physical destruction of confidential documents if not stored and physically restricting access to trade secrets.  

Regarding the second scope of application, a software company might engage in commercial relations with potential licensees, which possibly include competitors, commercial customers and governmental entities. In the situation encountered when licensing software, the developer is advised to include in the licensing agreement nondisclosure clauses to protect all aspects of software that are not protected by copyright or patents. In addition, provisions that prohibit reverse engineering, decompiling, or disassembling are valuable additions.

In particular, the program code and other functionalities of the program are protected through a trade secret, but the scope of protection is very narrow due to the fact that it only applies to the group of people that have confidential access to this information and are obliged to not disclose it. Once the trade secret is diffused or becomes public it no longer enjoys the protection. Furthermore, there is no protection from independent invention and the secret might still be lost or exposed when it is obtained by reverse engineering the software. The main advantage is that the duration of the protection is unlimited.

The deciding factor by which an inventor or the right holder of an invention chooses to patent an invention or keep it a secret surely depends on the nature of the invention. Certain inventions are susceptible to exploitation in the market without disclosing them. For example, a product that is hard to distinguish in the market from any other competing product that can be manufactured cheaper through an innovative process. This innovative process can receive more effective protection through secrecy than through a limited term of protection offered by a patent. This also applies for certain technologies that have a short duration in the market and can become obsolete before the patent is issued by the corresponding authority, thus making trade secrets an appealing option. Within the non-disclosure agreement, the ownership of the trade secrets will be defined, following the

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39 Ibid, 581-583
44 L B Burgunder, Legal Aspects of Technology Managing Technology (2nd edn West Legal Studies in Business, Ohio 2001) 194
obligations of confidentiality, limitations and sometimes, a damages clause can be negotiated in case of breach.

2.1.3 The Trade Secret Era

In the United States during 1950s until at least the 1970s, the development of commercial software was in the hands of large hardware manufacturers. The custom-built software sold by these enterprises was designed to run on massive mainframe machines tailor made for their customers. Software developers had a direct contractual relationship with their customers, making it difficult for competing firms to offer complementary products or services. Most of these IT firms viewed secrecy as the most efficient way to protect their software from unauthorized copying. Even though the Copyright Office of the US announced in 1964 that it would accept claims to computer programs to be registered. Apparently the conditions set for registration of software made copyright protection less appealing. Between 1964 and January 1, 1977, only 1205 software programs were registered under the Copyright Act, and over 80 per cent of this software was registered by IBM and Burroughs.45

In Europe, the strengthening in general of computer software protection was experienced during the 1980s through legislation and court decisions, following closely the main developments in the United States.46 During this decade no Western European country had a homogenous trade secret law. Software secrets were protected by a variety of methods: unfair competition, breach of confidence, torts, unjust enrichment, passing off, marketing control acts, criminal statutes, or as an industrial or commercial secret.47 This is currently the situation still in Europe, where in different jurisdictions confidential information is protected by diversity of juridical figures. In the United Kingdom the action for breach of confidence protects various types of information relating to personal, commercial, technical information, as well as trade secrets, know-how and government information.48 For there to be a breach of confidence, certain elements must be fulfilled; these elements are determined by case law in Britain.49

47 Ibid, 333
49 Ibid, 1008
2.2 Copyright Protection of Software

In this section copyright will be defined and its essential characteristics analysed briefly. Subsequently, we will examine the shift from copyright protection for software to patent protection. However this deviation does not exclude in anyway the availability of copyright protection for software, it merely reflects a preference of the software industry to protect determined features of software through patenting.

2.2.1 What is Copyright?

Copyright is a right given to creators in order to control the distribution of their original literary or artistic works. The owner of these rights is called the “creator”, “owner of rights” or the “author”. In similar words, copyright is a right conferred against the copying of determined types of cultural, informational and entertainment productions. The only requirement for the subject matter of copyright to be eligible for protection is that the work must be an original creation. This does not imply that the ideas of the work must be novel, but the manner they are expressed, be an original expression of the author. This requirement is often referred to as authorship or originality.

The subject matter covered by copyright regarding literary works, without making this an exhaustive list, includes novels, poems, plays, reference works, newspapers and computer programs; databases; films, musical compositions, and choreography. Concerning artistic works the following can be mentioned: paintings, drawings, photographs and sculpture; architecture; advertisements, maps and technical drawings. The protection granted by copyright to the owner of a creation is very extensive, in many jurisdictions and depending on the case, lasts for 70 years after the death of the author of the work. Copyright gives the owner the exclusive right to do certain things in relation to his creation, which includes the right to issue copies, to broadcast, to create a derivative work or to give a public performance.

The basis of copyright is found in the personal character of the subject matter in issue, the
importance lies in the expression of the subject matter, rather than the idea per se. In simple words copyright does not protect the idea, but the expression of the idea embodied in the subject matter. As a result of this, others are able to create similar or even identical works, as long as they have created them independently and by their own efforts. This kind of IP does not create a monopoly in favour of a determined artist or creator. In addition, there are certain permissible acts that do not need the authorization of the copyright owner. These acts are called “permitted acts;” for example, a person can make a copy of his work for study, criticism, review or non-commercial research. Consequently, within copyright two forms of rights can be identified; the first being the proprietary or economic rights in the work, i.e. the right to permit or prohibit copying. On the other hand, moral rights, which can be defined as the control on the manner the work will be exploited or used in the future, even if the author is no longer owner of the copyright.

It is important to make a distinction when speaking of copyright, between author’s rights and neighbouring or entrepreneurial rights, in spite of not portraying any difference in the protection granted by copyright. Author’s rights refer to expressions or works created by authors such as literary, artistic, dramatic and musical works. Contrary to, neighbouring rights are defined, as works created by entrepreneurs such as films, sound recordings, broadcasts and typographical format of published editions. The basic rationale for this distinction is that neighbouring rights are derivative, because they utilize or develop existing authorial works and that mainly they are a product of technical skill more than authorial skill. These rights are not initially given to the author that created the work, but to the organization or person that was financially responsible for the production of it.

International treaties that regulate copyright are the Berne Convention on the Protection of Literary and Artistic Works, the Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations; the TRIPS Agreement, the WIPO Copyright Treaty and the WIPO Performances and Phonograms Treaty.

2.2.2 Copyright Protection of Software

As previously explicated, copyright provides protection to the computer program’s expression and not the functional aspects of the software, though sometimes copyright could extend its protection to the internal structure of the program.\(^\text{59}\) Computer programs are not ordinary literary works due to their authentic nature. A unique characteristic of computer programs that differentiate them from other literary works is their dynamic essence. Literary works are passive or static waiting to be read, seen, played or listened. Computer programs are of an opposite nature, they manipulate symbols producing certain virtual or physical effects, for instance controlling industrial processes, making calculations, portraying graphics on a screen, etc.\(^\text{60}\) Hence, computer programs differ from other copyrightable subject matter, in the sense that the text is not the most important aspect; rather the importance lies in the functions established by the program code.\(^\text{61}\)

Copyright protects computer programs by preventing two major forms of copying. The first is called literal copying; the second form is known as non-literal copying of the program. Literal copying occurs, where the program code is copied meaning that the two programs are written in an identical programming language. The second type occurs where copying is done of elements belonging to the program as its structure, sequence of operations, functions, interfaces and methodologies but not a textual copy of the program itself.\(^\text{62}\) In some situations issues may arise considering the protection of the object code due to the fact that it does not comply with the originality requirement. Nevertheless, even though the object code is reputed not to be original it will be protected as an adaptation of the source code program.\(^\text{63}\)

Computer programs under the TRIPS Agreement and the WIPO Copyright Treaty are protected as literary works. This same principle is enshrined in the Computer Program Directive, making the protection inclusive for preparatory design material.\(^\text{64}\) The protection under the TRIPS encompasses the source and object code of the program.\(^\text{65}\) This is also seems to be the intention endorsed in recital number 7 of Directive 2009/24/EC, which

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\(^\text{60}\) D Bainbridge, *Legal Protection of Computer Software* (5\(^\text{th}\) edn Tottel, Haywards Heath West Sussex 2008) 53-54
\(^\text{63}\) D Bainbridge, *Legal Protection of Computer Software* (5\(^\text{th}\) edn Tottel, Haywards Heath, West Sussex 2008) 57
\(^\text{64}\) The Directive on the Legal Protection of Computer Programs 2009/24/EC, Art.1.1
\(^\text{65}\) TRIPS Agreement, Art.10
states that the term “computer program” shall include programs in any form, including those which are incorporated into hardware. The only requirement for software under the Computer Program Directive to be eligible for copyright protection is for the subject matter to be the author’s own intellectual creation. This Directive clearly states: […] No other criteria shall be applied to determine the eligibility for protection.66

2.2.3 Idea-Expression Dichotomy

This fundamental principal developed in the United States establishes that copyright does not protect ideas, but the expression of an idea in some tangible form. The main situation that this principle avoids is that if copyright were extended to ideas, it would give the first in the field a monopoly that would last a considerable period of time. This would have negative effects on competition and innovation. In order to establish the scope of protection of copyright, it is essential to distinguish between unprotected idea and protected expression in real cases. In practice, this distinction has not always been easy to determine in copyright software cases. This situation produces uncertainty for the software author because it impedes him to foresee in advance what he is permitted to do or not regarding software.67

The scope of protection given by copyright and explained through the idea-expression dichotomy is enshrined in the Computer Program Directive. Article 1.2 declares that […] ideas and principles which underlie any element of a computer program, including those which underlie its interfaces, are not protected by copyright under this Directive.68 Furthermore, this criterion is also prescribed within the TRIPS Agreement.69 The idea-expression dichotomy becomes difficult to apply to software because of its complex and dynamic nature, where it is necessary to determine the literary expressions from the non-literary expressions of the software which will receive protection. Its presence is essential in determining when copying a computer program is unlawful, and it is closely related to the distinction between literal and non-literal copying of software. This topic concerning the application of this principle is of a very complex nature, which is not the objective of this thesis.

66 Directive 2009/24/EC, Art.1.3
68 Directive 2009/24/ EC, Art.1.2
69 TRIPS Agreement, Art. 9.2; WIPO Copyright Treaty Art.2
2.2.4 The Copyright Era of Software

Under this chapter we will briefly discuss the developments and the reasons why copyright was selected to protect computer programs. The analysis will be made from three different perspectives, the first relating to the developments in the United States, secondly, analysing the European perspective; and finally concluding with worldwide developments.

2.2.4.1 Developments in the U.S.A

In the United States during the 1950s and early 1960s the form of protection in use was trade secret licensing agreements, which the software company negotiated individually with every customer. The reason being that computer manufacturers distributed and associated software with their hardware products, often referred as the “bundling” practice.\(^{70}\) In the mid-1960s, as programs reached higher complexity levels, software firms started to invest in their development. Therefore, the software market started to experiment an important growth. According to the situation, a public dialogue was initiated to find out what kind of intellectual property would be suitable to protect programs. Copyright was chosen to protect software, and already in 1966 the US Copyright Office decided to accept the registration of Computer programs under their “rule of doubt”. Due to other factors relatively few programs were registered in the Copyright office during the 1960s and 1970s. Despite the fact that copyright was available as a means of protection the software industry still preferred confidentiality agreements and licensing agreements as their main source of protection.\(^{71}\)

Due to the introduction of the personal computer during the 1980s, the landscape of the software industry experienced an important shift.\(^{72}\) This created the need to introduce effective laws protecting computer programs from unauthorized copying making the software industry demand more efficient protection.\(^{73}\) After the important events described previously, the National Commission on New Technological Uses of Copyrighted Works (CONTU) decided through its recommendation, that the scope of protection conferred by copyright would be the most suitable option for computer software. Following this


\(^{72}\) Ibid

recommendation the U.S Copyright Act was amended to include software as subject matter officially protected by copyright.\footnote{P Samuelson., A Case Study on Computer Software (1993) in Global Dimensions of Intellectual Property Rights in Science and Technology, 1993, Office of International Affairs, National Research Council, National Academy Press Washington D.C. 289-290.}

\subsection*{2.2.4.2 Developments in Europe}

In Europe before the adoption in May 1991 of the Directive on the Legal Protection of Computer Programs,\footnote{Note that Council Directive 91/250/EEC was replaced by Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the Legal Protection of Computer Programs} there had been individual amendments of copyright acts in different countries to include the protection of computer programs. During the 1980s countries like France, the Federal Republic of Germany, Spain and the United Kingdom included amendments in their acts to recognize computer software as copyrightable. On the contrary, countries such as Belgium, Denmark, Ireland and Norway, possessed no specific norms in their copyright acts that protected software and no published court decisions.\footnote{J P Sumner and D Plunkett, ‘Copyright, Patent, and Trade Secret Protection for Computer Software in Western Europe’ (1987-1988) 8 Computer L J 327, 330}

This situation reflected a lack of harmonization with respect of copyright protection of software.

The Directive 91/250/EEC on the Legal Protection of Computer Programs was the European Union’s (former EC) first directive concerning copyright protection of software.

It was enacted more than 30 years after the adoption of the Treaty of Rome, which vaguely stated the respect for industrial and commercial property within the community in Article 36.\footnote{Treaty of Rome, 1957, Article 36} Vital steps were taken before the enactment of this Directive which comprised the elaboration of the White Paper of 1985, the adoption of the Single European Act of 1986 and the Green Paper of 1988 on Copyright and Challenge of Technology.\footnote{J Huet and J C Ginsburg, ‘Computer Programs in Europe: A Comparative Analysis of the 1991 EC Software Directive’ (1992) 30 Colum J Transnat’l L 327, 329-330}

The main objectives of the Directive on the Legal Protection of Computer Programs was to harmonize the laws of the European Member States, support the development of the computer software industry, and also, in part to harmonize European law with the position of the United States on legal protection of software.\footnote{P Samuelson, ‘Comparing U.S. and EC Copyright Protection for Computer Programs: Are They More Different Than They Seem?’ (1993) 13 JL & Com 279-300}
2.2.4.3 Worldwide Perspective

During the 1970s the United Nations requested the WIPO to prepare a study on the appropriate form of protection for computer programs. This study later resulted in the Model Provisions on the Protection of Computer Programs produced by the International Bureau and adopted by WIPO in 1977. In 1979 there was further intent of producing a treaty under an Expert Group on the Legal Protection of Computer Software convened by WIPO. This failed to materialize in 1983 due to the lack of support within the Committee of Experts on the Legal Protection of Computer Software. The reasons being, that the contents of this draft treaty aimed at sui generis protection for computer software and that the participants of the Committee recognized the increasing trend of certain countries to grant protection under copyright. This decision was influenced by CONTU’s final report and the amendment of the U.S Copyright act in 1980.80

After the failure of the draft treaty, in 1985 the WIPO and the United Nations Educational, Scientific and Cultural Organization (UNESCO), undertook this topic and convened a meeting of a group of experts.81 The Committee of experts82 determined that copyright would be the appropriate protection to be applied to computer programs, assimilating the protection of computer programs to literary works. Following this decision, many countries created legislation that recognized that computer programs would be considered works protected by copyright.83 Important further developments in this area were the adoption of two important conventions; the TRIPS of 1994 and the WIPO Copyright Treaty of 1996. Both agreements state that computer programs should be protected as literary works under the Berne Convention, Article 10 and Article 4 respectively.

2.2.6 Why Choose Copyright Protection

A computer program is considered to be a set of instructions capable of causing hardware to perform certain functions; these instructions are expressed through a source code in written form. This notion convinced authorities that software should be logically placed under copyright protection and defined as a literary work.84 Nonetheless, computer programs are more than just literary expressions possessing functional elements in their

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81 Ibid
82 Group of Experts on the Copyright Aspects of the Protection of Computer Software
nature. The functionality of software will be the motive why patent protection can be seen as a third means of protection in this particular field.

As explained in the previous section the motive that led various nations to adopt copyright protection for software was due to a series of events. The first event being the expansion of the software industry, especially in the United States which required more efficient protection from piracy of their programs. Therefore, trade secret was no longer sufficient as the only means of protection, authorities started to take this situation into consideration. Subsequently, the CONTU report persuaded the United States Congress to amend the Copyright Act in order to include software as protectable subject matter. This had worldwide repercussion influencing institutions like WIPO and countries in Europe. The main conclusions taken by CONTU can be surmised into three assertions: a) computer programs were regarded as forms of expression, thus proper subject matter protectable under copyright; b) computer programs should be granted the same bundle of exclusive rights given to other types of works under copyright; c) the idea-expression dichotomy (principle of protectable expressions and unprotectable ideas) must be applied to computer programs.  

85 It was acknowledged in the CONTU report that the cost invested in the development of computer programs is much greater than the cost of their duplication. Furthermore, CONTU stated that: computer programs are the product of great intellectual effort and there utility unquestionable. 86 Therefore, to be able to encourage the creation and distribution of computer programs some form of protection is required in order for the creator to recover all the costs invested. For these main reasons the Commission stated that protection of computer programs was desirable. The Commission also stated that copyright protection would be appropriate to protect computer programs and that this would be aligned with the perspective adopted by other expert groups studying this in the U.K and in WIPO. 87 CONTU determined that in order for copyright to be a successful option the following statements must be met: - Copyright should proscribe the unauthorized copying of these works; - Copyright should in no way inhibit the rightful use of these works; - Copyright should not block the development and dissemination of these works; - Copyright should not grant anyone more economic power than is necessary to achieve the incentive to

86 CONTU final report, chapter 3, 10-11 http://digital-law-online.info/CONTU/contu1.html  
87 Ibid
create. It also acknowledged that few changes to the Copyright Act of 1976 were needed to obtain these goals.\textsuperscript{88}

The expert group also made a comparison with three other types of IP. Regarding patents it was found that this kind of protection gave a powerful monopoly of the invention and it also prevents the use of the patented subject matter, even if they are developed independently by third parties. It was also held that the U.S. Supreme Court had not made it clear if computer program patents would ever be granted.\textsuperscript{89} Regarding trade secret protection the Commission regarded that it was inappropriate to protect works that are designed to be widely distributed and that there was much human effort wasted when the process or information protected is kept secret and this knowledge is not shared.\textsuperscript{90} As previously mentioned, the Copyright Office was already accepting the registration of computer programs. All these reasons made copyright more attractive for it to be adopted as the means of protection for software. The system was already working and no new legislation had to be enacted for it to be adopted, this would not be the case if sui generis protection would have been embraced. A further aspect is that Copyright does not act as an exclusive means of protection permitting other supplementary protection available such as patent or trade secret protection to also intervene.

While in Europe copyright protection of computer programs was not in any way harmonized until the adoption in 1991 of the Directive on the Legal Protection of Computer Software. Copyright protection was sought following the trend imposed by the United States and the direction taken by organizations like WIPO. The Directive recognized computer programs also as literary works within the meaning of the Berne Convention.\textsuperscript{91} This was a strategy that was adopted and held in common with the copyright laws, notably those of France and the United States. Furthermore, the Commission determined that copyright was fit to protect software based on two main reasons: first, that computer programs are exploited by means of copies, and the right of reproduction is an essential right under copyright. The second main reason expressed was that copyright by

\textsuperscript{88} Ibid, 12
\textsuperscript{89} This situation has changed in the United States now making it a very liberal jurisdiction regarding patentability of Software.
\textsuperscript{90} CONTU final report, chapter 3, 16-18
\textsuperscript{91} Directive 2009/24/ EC, art.1.2
nature protects expressions without privatising the underlying ideas and concepts expressed.\textsuperscript{92} In the words of the Commission the following was said:

Copyright offers a balanced solution between inadequate and excessive protection. Its flexibility is sufficient to permit a compromise between the divergent interests of producers and distributors on the one hand and computer program users on the other. This form of intellectual property protection has the principal advantage of covering only the individual expression of the work, and thus leaving the latitude desired by other authors to create similar programs [...] so long as they refrain from copying.\textsuperscript{93}

The strong support of the European Commission regarding software copyright also found its roots in the recent UK legislation, which adopted most of the advice fed by the software industry and led to the adoption of the Copyright, Designs and Patents Act of 1988.\textsuperscript{94} The Directive also influenced article 10.1 of the TRIPS Agreement when prescribing that the object code and source code will be protected as literary works within the Berne Convention.\textsuperscript{95} With regards to the European position it can affirmed that it followed and supported the adoption of copyright as the main means of protection preferred by other member states and influenced by the United States.\textsuperscript{96} The Directive complied with harmonizing the interpretation of software protection within copyright that existed in different member states.

\textbf{2.2.5 Patent Protection a Serious Option}

In principle as already discussed, copyright protection is designed to protect the expression of a work but not the functional aspects as stated by the idea-expression dichotomy. This is one of the shortcomings concerning copyright protection of software because the most valuable aspect of a computer program lies within the function it performs.\textsuperscript{97} Due to the fact that computer programs are not only literary works, but also perform determined functions, copyright has experienced difficulties setting the limits of protection regarding these two areas. Moreover, this does not necessarily always imply that functional

\begin{itemize}
  \item \textsuperscript{93} Ibid, 334-335
  \item \textsuperscript{94} G Dworkin, ‘Copyright, Patents and/or Sui Generis: What Regime Best Suits Computer Programs?’ (1996) 1 Int’l Intell Prop L & Pol’y 165, 167
  \item \textsuperscript{95} Ibid, 168
  \item \textsuperscript{96} R M Ballardini, ‘Intellectual Property Protection for Computer Programs, Developments, Challenges, and Pressures for Change’ (DPhil thesis, Hanken School of Economics Edita Prima Ltd Helsinki 2012) 13-14
  \item \textsuperscript{97} P Samuelson and others, ‘A Manifesto Concerning the Legal Protection of Computer Programs’ (1994) 94 Colum L Rev 2308, 2318
\end{itemize}
behaviour never can be protected by copyright. In specific cases the behaviour of a computer program can be considered as expressive, therefore copyright protection would apply.\textsuperscript{98} But applying the idea-expression dichotomy has proven challenging in practice and reflected in the diverse court rulings in United States and Europe.\textsuperscript{99} Furthermore, because copyright does not in theory extend to functional aspects of computer software, non-literal copying of the program text is possible by copying the behaviour of a program. Hence, even though the source codes of two programs are different, the codes can perform the identical functions or similar functions.\textsuperscript{100} Another shortcoming is the diverse interpretations of the scope of protection of software copyright through the different approaches taken by courts. In the United States a well-established interpretation through case law exists concerning the idea-expression dichotomy, with some shortcomings of course. On the contrary, in Europe the case law on this subject is far less abundant and has not yet given a clear answer regarding the scope of protection granted by copyright.\textsuperscript{101} The most complicated subject regarding case law on copyright software has to do with non-literal infringement and if copyright is infringed where functional aspects are imitated.\textsuperscript{102}

The difficulty in protecting literal and non-literal elements of computer programs created the necessity in the software industry to look for patent protection of software. In patent law there is no idea-expression dichotomy and as long as the claimed invention complies with the requirements of patentability, protection will be granted.\textsuperscript{103} The software industry invests a significant amount of resources in Research and Innovation (R&D) and the production of software, hence in order to protect what is most valuable the industry sought patent protection. The risks of over protection due to the extension of copyright protection to non-literal aspects of software has led to proposals of limiting the scopes of copyright to literal aspects of software. Simultaneously, patent protection should be maintained to protect the functional elements of software to be able to find a proper balance between

\textsuperscript{98} Ibid, 2351
\textsuperscript{99} R M Ballardini, ‘Scope of IP Protection for the Functional Elements of Software’ (2010) In Search of New IP Regimes, IPR University Center 27
\textsuperscript{101} R M Ballardini, ‘Scope of IP Protection for the Functional Elements of Software’ (2010) In Search of New IP Regimes, IPR University Center 27
\textsuperscript{103} Ibid, 198
these two means. It is important to understand that trade secrets, copyright and patents still coexist in the world of software and being part of the contemporaneous debate on the manner they should limit the scope of their coexistence.

2.3 Patent Protection of Software

Patent protection is the strongest of all three IP regimes which has been dealt with in this study. The monopoly granted to the inventor or right holder of the patent allows him to have direct control over all the functionalities that his invention performs, giving him the right to preclude others from inventing similar products or processes that perform similar or identical functions.

2.3.1 What is a Patent?

A patent can be described as an exclusive right granted for an invention, which can be comprised by a product or process, which can be novel or confers a new solution to a technical problem. A more tangible definition of a patent is: a patent is a document, issued, upon application, by a government office (or by a regional office acting for several countries), which describes an invention and creates a legal situation in which the patented invention can normally only be exploited (manufactured, used, sold, imported) with the authorization of the owner of the patent. The term “Invention” is a solution to a specific problem in the field of technology. An invention may relate to a product or a process. The protection conferred by the patent is limited in time, generally 20 years since the granting of the patent.

As a common rule, in order for an invention to be patentable, it must comply with certain minimum conditions established by national legislation. The conditions for patentability are comprised by four main requirements: the invention must consist of patentable subject matter, the invention must be industrially applicable, it must be new (novel), and it must contain an inventive step. Moreover, the disclosure of the invention in the patent application should comply with certain standards established by the respective patent

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104 R M Ballardini, ‘Scope of IP Protection for the Functional Elements of Software’ (2010) In Search of New IP Regimes, IPR University Center 27
The conditions for patentability are established in Article 27 of the TRIPS Agreement. A similar norm is enshrined in Article 52 (1) of the European Patent Convention (EPC); it reads as follows: *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.* Following the EPC, analogous conditions are established in Title 35 of the United States Code under Sections 101-103.

### 2.3.2 Software Patent Protection

The perspectives of the United States and Europe will be taken into account in order to illustrate the main developments regarding patentability of software.

#### 2.3.2.1 Patentability in the U.S.

In the United States patent protection of computer programs has been held to be controversial patentable subject matter and the centre of various debates. Taking a first glance of what is set out under 35 U.S. Code § 101, a program can be considered a process, thus classifying as patentable subject matter under the said norm. Historically, this has not always been the case, computer programs before the 1980s were considered to be mathematical methods or algorithms, which were considered not to be patentable subject matter. At first, the institution in charge of deciding the fate of software patents in the U.S was the US Supreme Court since 1972. Then this role was taken over by the Court of Appeals for the Federal Circuit ten years later.

There are two land mark decisions that were the contributors of the history of computer program patents in the United States. These Supreme Court decisions are *Gottschalk v. Benson* of 1972 and *Diamond v. Diehr* of 1981. The claimed invention in the first decision was a method for converting binary coded decimals into binary numbers. One of

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109 EPC, 14th edn, 2010, Article 52 (1)
110 35 United States Code, § 101. This section states: *Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.* The conditions of patentability are set within Sections 102 and 103 of the Code.
111 This norm establishes: “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”
114 Gottschalk v. Benson 409 U.S. 63 (1972)
the claims related to an algorithm itself. The Court held the process of conversion of coded decimals was not a patentable process, because it was equivalent to a mathematical formula and would mean to patent an algorithm itself. The main effect of this decision was to discourage the applications for pure software inventions, independent of a particular hardware configuration, during the 1970s. The invention in Diehr involved a process for transforming rubber inside a moulding press. A computer was used to calculate the temperature through an equation. The Court reasoned that they claimed the rubber transformation process was patentable. It found that the claimed invention was a method for transforming rubber, rather than patenting a mathematical formula. Although this decision left many questions unresolved it was clearly favourable to software patentability.

In 1998, a Federal Circuit Court decision in the case State Street Bank & Trust Co. v. Signature Financial Group started shifting the law and determined that a computer system for administrating mutual funds was patentable. The Court held that the software implemented method constituted a practical application of a mathematical algorithm because it produced a “useful, concrete and tangible result”. The Court also held that the “useful, concrete and tangible result” test was the appropriate standard for determining patentable subject matter. In the In Re Bilski case of 2008 which also involved a business method, the Court of Appeal of the Federal Circuit held that the “useful, concrete and tangible result” test was insufficient to determine whether a claim is patent-eligible under § 101 of U.S.C. The Court embraced the so called “machine or transformation” test as the adequate test to apply. In rejecting the claims under § 101, the Court held that the applicant claimed a non-transformative process that includes a purely mental process of

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117 Gottschalk v. Benson 409 U.S. 63 (1972) at 71-72
119 Diamond v. Diehr 450 U.S
120 Ibid 184
121 Ibid 191
125 State Street Bank & Trust Co v. Signature Financial Group Inc 149 F.3d 1373
126 Ibid 1374
127 In Re Bilski 545 F.3d 943 (2008)
128 Ibid 959-960
performing mathematical calculations. The process of performing these calculations was done without the aid of a computer or any sort of device and the way of mentally identifying those transactions that the calculations have revealed would hedge each other’s risks, and performing the post-solution step of consummating those transactions.\textsuperscript{129}

Consequently, this case reaches the Supreme Court through a writ of certiorari and the decision was issued on 28 June 2010. In \textit{Bilski v. Kappos}\textsuperscript{130} the Court unanimously held that the “machine or transformation” test was an important and investigative tool in order to determine whether claimed inventions are processes under § 101. However, it was not the sole test to be applied for deciding if an invention is a patent-eligible process.\textsuperscript{131} Regarding the claimed invention it was reputed to be an abstract idea, hence the claim was invalid and not patentable.\textsuperscript{132}

The effects of the criteria established in the \textit{Bilski} case have yet to be seen in the long run. The only thing sure is that both the “useful, concrete and tangible result” test and the “machine or transformation” test may be used to determine whether certain subject matter is patentable. What the appropriate test will be will have to be determined at a later stage.\textsuperscript{133}

\textbf{2.3.2.2 Patentability in Europe}

In Europe the term software patents is considered to be misleading although frequently utilized. According the EPO the correct term is computer-implemented inventions (CII) and the following definition is given: \textit{A computer-implemented invention is one which involves the use of a computer, computer network or other programmable apparatus, where one or more features are realised wholly or partly by means of a computer program.}\textsuperscript{134}

Unlike the patent regimes of U.S.A and Japan, in Europe, computer programs are explicitly incorporated as excluded subject matter within the EPC. This exclusion emerged during a period of legal instability regarding patent system integration.\textsuperscript{135} Patent eligibility is

\begin{flushright}
\textsuperscript{129} Ibid 965-966
\textsuperscript{130} Bilski v. Kappos 130 S.Ct 3218 (2010)
\textsuperscript{131} Ibid 3227
\textsuperscript{132} Ibid 3229-3230
\textsuperscript{135} M Kikuchi, ‘Patent Eligibility of Computer Software Patents in the United States, Europe and Japan’ (2009) 16.3 CASRIP Newsletter
\end{flushright}
governed by the European Patent Convention within Article 52, 56 and 83. These three Articles establish the patentability requirements of novelty, inventive step, industrial applicability and sufficient disclosure. These requirements will be studied under chapter 3.

The developments in Europe regarding patentability in general can be divided into three different stages. The first stage is prior to the 60s and its main characteristic is that each European country possessed its proper legal patent frameworks. The nations that served as the core for the establishment of the future European patent system were the United Kingdom, Germany and France. The systems adopted in the UK and Germany used different criteria to assess patent eligibility. The UK construed it around its concept of “manner of new manufacture”, this meant that the invention had to result in the production of some “vendible product”. In addition, utility and inventive step was required. On the other hand, in Germany courts determined that for a claimed subject matter to become a patentable invention, a technical effect bringing an advance on the art must be required. Therefore, an advance of technical nature was necessary, despite the requirement of inventive height.136

During the 1960s, Europe began harmonizing its patent systems and the Patent Cooperation Treaty was adopted in 1970. Before the adoption of the European Patent Convention, software was patentable in the UK under the 1949 Patent Act. This was reflected in the Nymeyer case.137 Germany also adopted a liberal stance, in 1973 before the signing of the EPC the German Federal Patent Court issued a decision regarding patentability of computer programs.138 The case related to an invention that converted decimal numerals to binary numerals, identical to what was held un-patentable a year before by Gottschalk v. Benson in the U.S. The German decision held that the invention possessed technical character because it was an application of technical means to accomplish a technical purpose.139 With regards to the French position the Cour d’ Appel de Paris applied the same criteria but came to an opposite conclusion.140

The last stage begins after the European Patent Convention in 1973 was signed and became effective in 1977. Before 1977 both the U.K and Germany revised and adapted their patent

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136 Ibid
139 Ibid
140 Ibid 99
laws to match the substantive provisions of the EPC. As of 1981 both countries contained substantially identical provisions to Article 52 of the EPC.\footnote{Ibid 103} During this process, Germany accepted the UK’s “inventive step approach” and discarded its “technical character approach”. Meanwhile, the patentability of computer-implemented inventions was still problematic; this triggered the establishment of a working group in 1984 to study this problem. The working group came to the conclusion that the EPO should consider the inclusion of technical character to determine whether a claimed invention falls within excluded subject matter under Article 52(2) EPC. Shortly, the Guidelines for Examination were amended to include the “technical character approach.”\footnote{M Kikuchi, ‘Patent Eligibility of Computer Software Patents in the United States, Europe and Japan’ (2009) 16.3 CASRIP Newsletter}

The notion of technical character has also been enshrined in the Rules 27 (1) and 29 (1) of the EPO.\footnote{E Szattler, ‘Patentability of Computer Programs’ (2007) 1 Masaryk U J L & Tech 97, 100} The expression technical character and technical effect has been left to the EPO Boards of Appeal to construe. A great variety of decisions have been reached considering the interpretation and application of the requirement of technical character. The first case that deals with this is VICOM of 1987. This decision will be part of the case study analysis under chapter 4. According to decisions T 1173/97 and T 935/97 the Board held that the technical character of an invention was generally accepted as an essential requirement for its patentability.

\subsection*{2.3.3 To Patent or Not to Patent?}

Arguments in favour and against the patentability of software will be discussed within this chapter. Presently, it is an on-going debate and its true effects are still to be analysed in the future. Many of these arguments take into consideration the unique characteristics of the software market, the special features of software itself and policies considerations.

\subsubsection*{2.3.3.1 Arguments in Favour of Patentability of Software}

There are many arguments in favour of the patent system, but the following are the most relevant concerning the software industry.

The first position consists in asserting that if software contains features that meet the patentability requirements, it should be awarded protection.\footnote{A Guadamuz, ‘The Software Patent Debate’ (2006) 1.3 Jnl Intellectual Property Law and Practice 196, 202} This argument should be understood under the justification of the patent system in general. The traditional
explanation for this is that the patent system awards the inventor with a monopoly over the claimed subject matter, in exchange of disclosing the technology in the application of the patent. This position finds its basis in the requirement of disclosure that is not demanded under the copyright and trade secrets regimes, hence disabling the openness that the software market requires for development. As a counterargument, the market openness can be obtained through the utilization of alternative models such as open source software and non-proprietary standard setting.\textsuperscript{145}

The second position consists of the main premise that justifies the existence of the patent system. It states that the monopoly awarded to the inventor enhances the inventor’s chances of profitable exploitation of his invention. If this would not exist, the inventors would be discouraged to invest further effort in creating new inventions if they can be easily appropriated by imitators.\textsuperscript{146} This is one of the main justifications employed by large software companies regarding that the cost and marketing of software is escalating, making investments in this field result in millions. If there would be no patent protection the investment would be in vain.\textsuperscript{147} This argument cannot be regarded as invulnerable due to the fact that patents in some areas of the technological field act as incentives for innovation, this not always being the case in the software industry (open source software).\textsuperscript{148}

As a general acceptance of the abovementioned argument states utilize the patent system in order to encourage innovation and protect their industry utilizing this within a policy framework. Through the patent system governments can encourage and foster innovation without adopting measures or policies that would be considered to directly tamper within the private sector, keeping the state at arm’s length. This is done by keeping the costs of development and patent administration upon the innovator but the state benefits from that innovation. These policies have been utilized all over the world, especially in Europe.\textsuperscript{149}

Finally, patents enable orderly development of broad prospects, blocking “over fishing” by preventing skilled innovators to be drawn to new prospects and thus precluding them to attend more socially desirable activities. This is ensured by not allowing merely cloning a

\textsuperscript{145} Ibid, 203
\textsuperscript{146} M Campbell-Kelly, ‘Not All Bad: An Historical Perspective on Software Patents’ (2004-2005) 11 Mich Telecomm & Tech L Rev 191, 196
\textsuperscript{147} N Chabchoub and J Niosi, ‘Explaining the Propensity of Patent Computer Software’ (2005) 24 Technovation 971, 973
\textsuperscript{149} P Leith, \textit{Software and Patents in Europe} (CUP, Cambridge, 2011) 79-82
successful product, but it motivates and obliges the innovator to devise a totally new solution that does not infringe the current patent.150

2.3.3.2 Arguments Against Patent Protection of Software

A strong argument in this category relates to the situation that software patents encourage the creation of so called “patent thickets”.151 A patent thicket can be described when a product may involve many patents, in contrast with the one-to-one correspondence between products and patents that is assumed in the patent race literature.152 In practice, this phenomenon refers to situations in which companies obtain a large number of patents in the market. The patents may restrict market entry of other competitors and can be utilized to obtain revenues from other companies beyond the rents to encourage innovation.153 The main problem with these thickets is that a company that wants to commercialize a certain product or technology must “hack” through this thicket in order to gain access to the market. Hence, stronger patent rights can have a negative effect on innovation by stifling it. This situation encourages the creation of restrictive cross licensing and the appearance of patent pools that can have damaging effect on competition.154

Another compelling argument is that software patents instead of really acting like an incentive of R&D, it actually decreases it. Empirical data demonstrated that during the 90s after software patents were becoming widely granted, R&D suffered a decline in the software development firms. If the “incentive hypothesis” by which R&D and patents act as compliments and are directly proportional, then R&D should not suffered a decline but a increment. Instead software organizations were increasing their patent portfolios while reducing their R&D investment. Although the exact causes could not be traced, the study implies that software patent owners found it more beneficial (cost effective) to generate revenue from their existing patent portfolios than invest in R&D.155 This tendency was reaffirmed by a later empirical study coming to the conclusion that the increase in

154 C Shapiro, ‘Navigating the patent thicket: Cross licenses, patent pools, and standard setting’ (2001) 1 Innovation Policy and the Economy, MIT Press 119-150
software patenting could not be explained by the growth in aggregate investment in software, R&D, employment of programmers etc. The main reason is that patents became more cost effective over time. Consequently, it was found that software patent growth and propensity was not dominated by the software publishing industry.  

A further negative aspect with respect to patenting is the increase in litigation and risks in the patent software arena is another important argument. This increase is due to the fact that patent premium derives from the rights of exclusion. This premium has three sources of profit. The first relates to the profit that arises when the patentee excludes competitors from practicing the patented invention or obliges the competitor to accept a license under threat of an infringement suit. The second source emanates when a patentee assigns or licenses a technology to a firm or firms outside of the patentees industry.

Finally the last source derives from a wide variety of strategic use in patent litigation. This source is the most important regarding the aforementioned argument, occasionally the risks of litigation arise from anticompetitive practices in order to block or exclude potential competitors. Moreover, increased threats of patent litigation from patent infringement claims contribute to decreased R&D spending, higher market-entry costs, uncertainties in business and a negative impact on venture capital. A certain study found that the more R&D a firm invests in, the more likely the firm is to be sued. Therefore it could lead to a possible discouragement in R&D expenditure.

Last but not least, patent litigation is very costly, especially with regards to jurisdictions such as the United States and the United Kingdom. Subsequently, this situation causes difficulties regarding sustainability regarding an open source project or SMEs to defend themselves against patent claims.

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2.3.4 Coexistence of Patent, Copyright and Trade Secret Protection

As previously studied, software can be described as a hybrid subject matter because it possesses characteristics that qualify for protection under multiple IP schemes. Software can be conceived both as a literary and functional work. Literary work due to that it is expressed in code and functional work (utilitarian work) because it causes something or does something to the hardware or computer. The analysis within this chapter has demonstrated that the scope of protection of IP has broadened and comprises three main sources of IPR.

Computer program protection has gone through different stages; firstly by being subject matter of trade secret protection, passing through copyright protection and also by protection of functional aspects through patent protection. These stages solely demonstrate that the understanding of software as subject matter of IP has evolved and its nature does not permit it to fall within the protective scope of only one type of intellectual property. In order to broaden the understanding of how these three different intellectual property regimes coexist regarding software protection, the scope of protection of each regime must be understood.

In practice this might not be presented as clear as in theory, but the scope of protection granted by each regime can be defined theoretically. In summary, patent protection is sought to protect the functional aspects and the manner software operates. In principle, this may be applied to software; however, all the other requirements of patentability must be met in order to be granted this protection. Non-functional aspects which include the source and object code are in principal protected by copyright, hence preventing the copying and distribution of the computer program. Notwithstanding, the scope of patent protection is much broader due to the fact that it will prevent the use, manufacturing and selling of the claimed software, granting a monopoly to the inventor. Copyright does not protect against independent development something that patent protection also tackles.

Concerning trade secret protection, it can be described as the broadest type of protection that exists. This IP covers both functional and non-functional aspects of software. The code, structure and the manner software internally operates can be kept secret. This is an excellent option in small scale markets (limited distribution) or for software developed by

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companies for internal use. In large scale production trade secret protection is inefficient
due to impossibility of maintaining an adequate degree of secrecy required.\textsuperscript{163}

Some authors are more sceptical about the efficient functionality of these three types of IP
and propose a new framework in order to tackle the deficiencies of the current software IP
regime. They explain that copyright is an inappropriate mechanism because it does not
protect the behaviour of the program. Patent protection is also conceived as ineffective due
to the fact that software is innovative rather inventive, most of the software cannot be
protected by this method (despite the large quantity of software patents granted by patents
offices a significant amount does not pass the non-obviousness assessment). Finally
software bears much of its know-how on its “face”, meaning that its functional know-how
is accessible to any skilled observer. This diminishes the possibilities of trade secret
protection in the modern software market.\textsuperscript{164}

To tackle these deficiencies proposals for a new framework consisted in maintaining
copyright for protecting the literal code of the computer program. With regard to the
utilitarian aspects of the program the proposal implied applying a new mechanism for
protecting the innovative behaviour of software. This new mechanism would take into
consideration the life span of software in the market in order to not precipitate market
failure and hinder innovation. The protection of this new mechanism would be about 2 to 5
years, a brief period compared to the period granted by copyright and patents.\textsuperscript{165} It would
give out similar rights as the actual patent regime but be less crippling with respect to the
long lasting period granted by the actual patent system. This new framework equals a sui
generis IP regimen for software protection. This option could materialize in the near future
if the position of the software industry changes, concerning the effects of patents on
software. This is an option that can take a long to occur because software patents are
mainly in the hands of large firms (patent trolls) other than software developing
companies.

Trademark Off Soc’y 151
\textsuperscript{164} R Davis and others, ‘A New View of Intellectual Property and Software’ (1996) 39.3 Communications of
the ACM 21, 24
\textsuperscript{165} Ibid 24-29
3. PATENTABILITY UNDER THE EUROPEAN PATENT CONVENTION

The objective of this chapter will be to study the substantive requirements enshrined within Article 52 of the EPC. These prescribed conditions lay down the criterion in order to determine the patentability of a claimed invention.

Article 52 (1) states:

*European patents shall be granted for any inventions, in all fields of technology, provided that they are*

1) *new*;

2) *involve an inventive step* and;

3) *are susceptible of industrial application.*

Paragraph (2) establishes certain categories of subject matter that are excluded from patent protection and paragraph (3) of the same Article contains the “as such” clause. Both of these norms will be dealt within the requirement of patentable subject matter.

3.1 Requirement of Novelty

Novelty is an essential requirement for every patentable invention to comply with. An invention is considered to be novel when it has not already been available to the public\(^\text{166}\) by forming part of the state of the art, as it is established in Article 54 (1) of the EPC.\(^\text{167}\) It is considered that an invention is available to the public when all the technical features of the claimed invention in combination must have been communicated to the public, or laid open for inspection.\(^\text{168}\) In certain circumstances it might be doubtful as to whether there has been a disclosure to the public. This was taken care of by the Board of Appeals of the EPO by stating that “public” in this context refers to a “skilled person”. It states in the decision T 0877/90 that: *had the oral disclosure taken place before a circle of persons, all of whom were unable to understand its technical teaching, it could be argued that the disclosure*

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\(^{167}\) EPC, 14th edn, 2010, Article 54 (1)

\(^{168}\) Case G 0002/88 Mobil/Friction reducing additive [1989] E.P.O. reasons par. 24
had not been made available to the public because the teaching would not have been understood by the audience.\textsuperscript{169,170}

An identical norm establishing the requirement of novelty is found in Section 2 (1) of the UK Patents Act of 1977.\textsuperscript{171} Prior art is comprised by all the knowledge that existed prior to the patent filing or priority date of a patent application, whether it was performed through an oral or written disclosure.\textsuperscript{172} This same idea is repeated in Article 54 (2) EPC: \textit{The state of the art shall be held to comprise everything made available to the public by means of a written or oral description, by use, or in any other way, before the date of filing of the European patent application.}\textsuperscript{173} The state of the art available during the examination phase before the EPO will mainly consist of the documents listed in the search report as stated by the proper patent office.\textsuperscript{174} Therefore the examination for novelty of an invention will take into account the prior art and general knowledge at the moment of the filing. The examiners cannot take into use their own general knowledge unless it can be proven.\textsuperscript{175} Common general knowledge is the body of knowledge which the person skilled in the art is deemed to know as part of the background of a certain field of technology.

Common general knowledge is comprised by:\textsuperscript{176}

a) Basic general knowledge as well as the information contained in basic handbooks, monographs and textbooks on the subject in question. As an exception it can also be the information contained in patent specifications or scientific publications.\textsuperscript{177,178}

b) It cannot be expected for a skilled man to perform a comprehensive search of the literature covering the whole state of the art.\textsuperscript{179} Subject matter does not necessarily belong to the common general knowledge because it has been disclosed in the state of the art, especially in the particular case when the skilled man has to carry out a comprehensive search to obtain the information, it cannot be considered to belong to common general knowledge.\textsuperscript{180}

\textsuperscript{169} Case T 0877/90 T-cell growth factor/HOOPER \{1992\} E.P.O reasons par. 11
\textsuperscript{170} G Tritton and others, \textit{Intellectual Property in Europe} (3\textsuperscript{rd} edn, Sweet & Maxwell, London 2008) 92
\textsuperscript{171} United Kingdom Patents Act, Section 2 (1)
\textsuperscript{173} The European Patent Convention, 14\textsuperscript{th} edn, 2010, Article 54 (2)
\textsuperscript{174} E.P.O, Guidelines for Examination, Part G Patentability, Chapter IV, Section 1
\textsuperscript{175} G Tritton and others, \textit{Intellectual Property in Europe} (3\textsuperscript{rd} edn Sweet & Maxwell, London 2008) 92
\textsuperscript{176} Case T 890/02 Bayer/Chimeric gene [2004] E.P.O. reasons par. 3
\textsuperscript{177} E.P.O., Guidelines for Examination, Part F, Chapter II, Section 4.1
\textsuperscript{178} Case T 890/02 Bayer/Chimeric gene [2004] E.P.O. reasons par. 3
\textsuperscript{179} G. Tritton and others, \textit{Intellectual Property in Europe} (3\textsuperscript{rd} edn Sweet & Maxwell, London 2008) 99
\textsuperscript{180} E.P.O., Guidelines for Examination, Part G, Chapter IV, Section 2.2.
c) The information found while performing the search must unambiguous and utilized in a
direct and straightforward manner without any further research work.

Generally speaking there are two different criterions utilized by legislation to establish the
notion of prior art. The first viewpoint states that prior art shall be defined by what is
known in the country were the patent has been filed. This implies that excluding any
knowledge available in or from other countries, if it was not imported before the creation
of the invention. The second perspective defines prior art based on the discrimination
between printed publications and other types of disclosures such as oral and prior use, as
well as the location where they were disclosed. Regarding disclosure made by publication,
they must be made in a tangible medium, normally a document. This document must have
been made available to the public through publication and contain explicitly the subject
matter of the invention for it to destroy the novelty. Concerning oral disclosure, it is not
necessary for the disclosure of the subject matter to be recorded, but this method also
includes lectures and broadcasts. Disclosure by prior use is considered to be public and a
visual act, such as sale demonstration, visual display, unrecorded television broadcasts and
public use.\(^\text{181}\)

In the matter of novelty and determination of prior art, the EPO establishes in its
Guidelines for Examination that: \textit{There are no restrictions whatever as to the geographical
location where or the language or manner in which the relevant information was made
available to the public; also no age limit is stipulated for the documents or other sources of
the information.}\(^\text{182}\) The EPO follows the second criterion as to the fact that it establishes
that main mean of disclosure is through a document, but also recognizes when the state of
the art is made available to the public \textit{by use or any other way’ which includes, public, oral
and disclosures through the internet}.\(^\text{183}\)

\textbf{3.2 Requirement of an Inventive Step}

With respect to the requirement of inventive step (also referred to as “non-obviousness”), it
basically implies whether or not the invention is considered to be obvious in the eyes of a
person having ordinary skill in the art. Ordinary skill implies the exclusion of the best
expert that can be found, the level of skill that requires implementation is that of an

WIPO Publication, 2004) 19

\(^{182}\) E.P.O., Guidelines for Examination, Part G, Chapter IV, Section 1

\(^{183}\) Ibid, Section 7
average person with skills in the determined art. This makes it one of the most difficult conditions to determine in the substantial examination.\textsuperscript{184} Article 56 of the EPC establishes the norm when assessing the inventive step: \textit{An invention shall be considered as involving an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art.}\textsuperscript{185}

The EPO guidelines clearly state that the criteria employed to determine elements of novelty and inventive step are totally divergent from each other. Nevertheless, the question “is there an inventive step?” only arises if the invention is novel.\textsuperscript{186} Therefore it is not enough for the claimed invention to be novel, but it must possess two different characteristics. The first characteristic requires the idea or process to be “inventive”, meaning the result of a creative idea, and it must be materialized through a step, hence a noticeable one. This must portray a clear difference between the claimed invention and the state of the art. This difference in some jurisdictions is defined through the concept of an “advance” or “progress” over the prior art. This brings us to the second characteristic, consisting of a significant and essential advance to the claimed invention. The insertion of the inventive step requirement in patent legislation, no matter the country, assures that the protection will not be given to what is already known as part of prior art, or to any process or product that the skilled person in the art would consider as obvious.\textsuperscript{187}

So what is considered to be obvious to a person skilled in the art?

The EPO Guidelines clearly state that the question to consider once the claim is filed, taking into consideration the art know at the time, is whether before the filing or priority date, it would have been obvious for the person skilled in the art to arrive at \textit{something falling within the terms of the claim.}\textsuperscript{188} In this case it would mean that the skilled person would devise a similar or identical technical problem to be solved as the one portrayed in the terms of the claim. If this occurs the claim would be denied for lack of inventive step. The guidelines continue by saying: [...] \textit{The term “obvious” means that which does not go beyond the normal progress of technology but merely follows plainly or logically from the prior art, i.e. something which does not involve the exercise of any skill or ability beyond...}

\begin{footnotesize}
\textsuperscript{185} E.P.C., Art.56
\textsuperscript{186} E.P.O Guidelines for Examination, Part G, Chapter IV, Section 1
\textsuperscript{188} E.P.O Guidelines for Examination, Part G, Chapter VI, Section 2
\end{footnotesize}
that to be expected of the person skilled in the art. In considering inventive step, as distinct from novelty [...] it is fair to construe any published document in the light of knowledge up to and including the day before the filing or priority date valid for the claimed invention and to have regard to all the knowledge generally available to the person skilled in the art up to and including that day.\textsuperscript{189}

Furthermore, the concept of inventive step as in the case of novelty is an objective concept because once assessing the inventive step the case history is irrelevant and plays no part. This principle was established in various cases but the most important case was T 024/81 Basf/Metal Refining.\textsuperscript{190,191} In another decision T 248/85 BICC/Radiation Processing, the Technical Board emphasized the obligation of objectivity while assessing the inventive step. It prescribed that in order to achieve the objectivity by using the problem and solution method in assessing the inventive step, it must be assured by starting out from the objectively ruling state of the art, in the light of which the technical problem is determined which the invention addresses and solves.\textsuperscript{192}

\textbf{3.2.1 The Problem and Solution Approach}

The EPO established a specific approach towards the evaluation of obviousness called the “problem and solution” approach. This consists of determined steps through which the claimed invention must comply with for it to be declared non-obvious, as part of the assessment of the inventive step. The approach was developed to ensure objective evaluation of inventive step and avoid ex post facto analysis of the prior art.\textsuperscript{193} Moreover, the term “problem” indicates that the skilled person in the art is confronted with some task (German "Aufgabe"), not that the solution need necessarily involve great difficulty.\textsuperscript{194,195} The following relating to this approach is established by the EPO guidelines:\textsuperscript{196}

\textit{In order to assess inventive step in an objective and predictable manner, the so-called "problem-and-solution approach" should be applied. Thus deviation from this approach should be exceptional.}

\textsuperscript{189} Ibid Part G, Chapter VII, Section 4  
\textsuperscript{190} G. Tritton and others, \textit{Intellectual Property in Europe} (3\textsuperscript{rd} edn Sweet & Maxwell, London 2008) 99  
\textsuperscript{191} Case T 024/81 Basf/Metal Refining Official Journal E.P.O [1983] 133  
\textsuperscript{192} Case T 248/85 BICC/Radiation processing [1986] E.P.O. reasons para 9.1  
\textsuperscript{193} E.P.O., Case Law of the Boards of Appeal, 6\textsuperscript{th} edn, 2010, I.D.2, point 2, p.163.  
\textsuperscript{195} Case T 641/00 Comvik/Two identities [2002] E.P.O reasons par. 5  
\textsuperscript{196} E.P.O., Guidelines for Examination, Part G, Chapter VII, Section 5.
In the problem-and-solution approach, there are three main stages:

(i) determining the "closest prior art",
(ii) establishing the "objective technical problem" to be solved, and
(iii) considering whether or not the claimed invention, starting from the closest prior art and the objective technical problem, would have been obvious to the skilled person.

This approach has been applied in countless cases to eliminate the problem of hindsight; i.e. taking into consideration the issue of inventive step by reference to the invention itself rather than from the prior art.\textsuperscript{197} Despite that the correct application of the approach prevents an ex post facto analysis, which inadmissibly makes use of knowledge of the invention, it is not mandatory.\textsuperscript{198,199} In theory, the problem and solution approach is to be applied to assess the inventive step, exceptionally some alternative approach could be adopted, but the reasons for departing from this encouraged method should be stated.\textsuperscript{200} In order to apply this approach the problem must be of a technical character or based on actual knowledge of technical problems and ways to solve them technically that the skilled person would, at the priority date, be expected to possess objectively.\textsuperscript{201} In other words the inventive step has to be preceded by the determination of the technical problem which the invention addresses, and the technical problem must be assessed objectively in the light of the closest state of the art.\textsuperscript{202}

\subsection*{3.2.1.1 Determination of the Closest Prior Art}

It is important to note that Article 56 EPC indicates that the inventive step shall be assessed regarding the state of the art, this implies the whole ambit of documentation of the prior art. What normally happens is that one document is selected by the person skilled in the art because it is supposed to be nearer to the invention than any other cited piece of prior art. These documents is called closest prior art.\textsuperscript{203} The EPO Guidelines prescribe that in the process of selecting the closest prior art to the invention in question, the first consideration

\begin{footnotesize}
\textsuperscript{197} G. Tritton and others, \textit{Intellectual Property in Europe} (3rd edn Sweet & Maxwell, London 2008) 100
\textsuperscript{198} Case T 564/89 TORAY/Printing plates [1993] E.P.O point 4.3 & 5.5
\textsuperscript{199} See E.P.O cases: T 645/92, T 795/93, T 730/96 and T 631/00.
\textsuperscript{200} E.P.O., Case Law of the Boards of Appeal, 6\textsuperscript{th} edn, 2010, I.D.2, p.163
\textsuperscript{201} Ibid
\textsuperscript{202} Case T 606/89 Unilever/Detergent composition [1990] E.P.O reasons par. 2
\end{footnotesize}
is that it should be directed to a similar purpose or effect, or at least belong to an identical or closely related technical field as the claimed invention. Practically speaking, it will be generally required to determine the closest prior art that the claimed invention should be compared with the art concerned with a similar use which requires the minimum of structural and functional modifications.204

In the decision T 273/92 the Board of Appeal determined that according to the established case law, a document could not qualify as prior art simply because of its similar composition of the products. In this matter for it to qualify, its suitability for its desired use or purpose of the claimed invention shall also be described. From this similar purpose or identical technical field the starting point must be selected by which the skilled person could have determined at the claimed invention.205

According to Board of Appeals member Graham Ashley, the expression "appropriate starting point" is probably more suitable than the expression “closest prior art”. As the assessment of the inventive step could initiate from more than one piece of prior art or document. The problem and solution approach may need to be applied from different starting points, because there might be more than one highly relevant document that can provide suitable starting points for the assessment.206 This is also mentioned in the EPO guidelines: In some cases there are several equally valid starting points for the assessment of inventive step. If a patent is to be granted, it may be necessary to apply the problem-and-solution approach to each of these starting points in turn. In matter of refusal, it is sufficient to show, that the claimed subject-matter lacks an inventive step using one of the pieces of prior art.207

It has also been established by the Board of Appeals that for a piece of prior art to be considered an appropriate starting point, it must be publically available. Prior art that was 65 years old was considered to be an unrealistic starting point in the case T 479/00.208 In another case for example: T 1408/04; old prior art was taken into account because it was considered to be realistic regarding the facts of the particular case.209210

204 Case T 606/89 Unilever/Detergent composition, [1990] E.P.O reasons par. 2
206 Ibid. 3.00 to 5.00 minutes in
207 E.P.O., Guidelines for Examination, Part G, Chapter VII, Section 5.1
208 Case T 479/00 Viganali/Colouring ceramics [2002] E.P.O reasons par. 3.2
aspect concerns the period by which the closest prior art must be assessed by the skilled person. The guidelines dictate that the assessment must be done on the day before the filing or priority date valid for the claimed invention.  

### 3.2.1.2 Determination of the Objective Technical Problem

The second stage consists of determining the way the technical problem must be solved in light of the selected prior art or appropriate starting point. The first step regarding this stage is to examine the application and the closest prior art by comparing both of these two elements. The difference obtained between the claimed invention and the closest prior art also called the distinguishing feature(s) of the claimed invention, identifies the technical effect resulting from this difference, hence making it possible to formulate the technical problem. In simple words, the formulation of the technical problem is reached by subtracting the features in common of the claim (subject-matter) in question from the prior art.

The norm that has been cited in many cases regarding the determination of the technical problem is found in Rule 42(1)(c) EPC (former R. 27(1)(c) EPC 1973) which regulates the content of the patent description and prescribes that it must be disclosed [...] in such terms that the technical problem, even if not expressly stated as such, and its solution can be understood, and state any advantageous effects of the invention with reference to the background art. Since case T 26/81 in which this rule was clearly recognized being of mandatory nature and binding. The following case law produced by the Boards has recognized that the objective criteria must be utilized to formulate the technical problem, i.e. the problem which can be seen to have been actually solved in the light of the closest prior art which may be different from the art which was at the disposal of the

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accessed 2.8.2013


211 E.P.O., Guidelines for Examination, Part G, Chapter VII, Section 5.1

212 E.P.O., Guidelines for Examination, Part G, Chapter VII, Section 5.2


214 The European Patent Convention, 14th edn, 2010, Rule 42 (1)(c)

215 Case T 26/81 Imperial Chemical Industries/Containers [1981] E.P.O reasons par. 5

Please note that the decision speaks of Rule 27(1)(d) and not (c). According to EPC 1973 letter (d) establishes: briefly describe the figures in the drawings, if any. Letter (c) fits with the description stated in the case. It can be due to a typo error.
The objective criteria to formulate the technical problem shall always be taken in the light of the closest prior art from the perspective of the skilled man in the art, which can be different from the prior art that was available to the inventor.

When applying the “problem and solution” approach, the objective technical problem which is deduced through the analysis of the claimed invention and the closest prior art, can be defined in the following way: *the aim and task of modifying or adapting the closest prior art to provide the technical effects that the invention provides over the closest prior art.*

To help us apply this definition in practice a practical example given by Mr Graham Ashley will be used to illustrate a technical problem, it can be summarized in the following way:

“It is tempting to say that the problem is to actually create the difference, let’s suppose that the problem is feature x. It’s easy to say let’s formulate the problem to create feature x, but this is not the way to do it. The problem is to create the effect of feature x.” For example: How should the technical problem be described of a new golf club that is made of a determined alloy or shape? The technical objective problem to be solved is not to create the titanium head of a golf club or a particular shape. The problem to be solved is to hit the golf ball ten meters further than prior art golf clubs, because that is the effect of the new head. This objective problem must be formulated without hindsight and without specifically saying that it’s to create a different feature. The problem that is to be formulated must be a technical problem, hence one cannot take into account non-technical features in the formulation of the problem.”

**Reformulation of the Problem**

Frequently, what may happen is that the objective technical problem is not identical as the problem underlined in the claim by the inventor when assessing the inventive step. This may require for reformulation of the problem by the patentee. This occurs when the objective problem is based on facts extracted from the prior art revealed in the course of the proceedings, which can present differences from the prior art available to the applicant when the application was filed. This alters the perspective of the invention, hence allowing

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217 Case T 575/95 [1997] E.P.O point 3.2
218 E.P.O., Guidelines for Examination, Part G, Chapter VII, Section 5.2
220 Ibid, 6:00 to 6:12 minutes in. retrieved 6.8.2013
the coexistence two incompatible views. The EPO Guidelines declare that where the originally stated problem (comprise a product, process or method) shows some advance, but there is no evidence that the claimed advance of the subject matter is made over the closest prior art uncovered in the search; rather, there is only evidence with respect to a more distant related prior art (or none at all). The original problem must be reformulated. 221

The formulation of the objective technical problem must not contain any pointer to the technical solution. The inclusion of a part of the claimed technical solution described in the statement of the problem must, when the state of the art is evaluated in the light of the problem, necessarily result in an ex post facto view being taken of inventive activity (step). 222 This principle was established in cases T 229/85 and T 99/85. 223 That is to say, the inclusion of a portion of the technical solution as part of the problem will be subtracted from the inventive step and not be taken into consideration.

It is important to note that in case of reformulation of the problem Article 123(2) EPC will not preclude it, following what is established in decision T 13/84: A reformulation of the problem which then may become necessary is not precluded by Article 123(2) EPC if the problem could be deduced by the person skilled in the art from the application as filed when considered in the light of the prior art which is nearest to the invention. 224 The Article in question prohibits amending a patent application by containing subject-matter beyond the content of the application as filed, but the reformulation does not fall within its scope.

Concerning the interpretation of the term “technical problem” the Guidelines express that it must be taken in a broad manner. Meaning this does not always imply that the technical solution is a technical improvement over the prior art, because the problem can be to find a simple alternative solution to a known device or process, providing an identical or similar effect, or making it more cost effective. 225

221 E.P.O., Guidelines for Examination, Part G, Chapter VII, Section 5.2
222 Ibid
224 Case T 13/84 Sperry/Reformulation of the problem [1986] E.P.O reasons par. 11
225 E.P.O., Guidelines for Examination, Part G, Chapter VII, Section 5.2
3.2.1.3 Could/would Approach (Obviousness)

The third step consists of determining whether there is any teaching in the prior art as a whole, that would have prompted the skilled person to face the objective technical problem, to modify or adapt the closest prior art, while taking into consideration that teaching. Hence, as to arrive at something falling within the terms of the claims and coming to the same solution established by the invention. The fundamental aspect of this stage is whether the skilled person not just could have arrived at the invention by adaption or modification of the closest prior art, but would have no other option because the prior art incited him to reach the same solution to the objective problem or in expectation of some improvement or advantage. According to EPO case law implicit prompting or implicitly recognisable incentive is sufficient to determine that the skilled person would have combined the elements extracted from the prior art.  

In case T 301/01 the purpose of the “could/would approach” is described and also recognized that it is inherent to the problem-solution approach: The main purpose of the approach is to distinguish purely theoretical combinations of features from the prior art (the "could") from such combinations which are indicated to the skilled person on the basis of the technical result he had set out to achieve (the "would"). Seen in this light the "could/would approach" is nothing more than a re-statement of one aspect of the underlying guiding principle of the examination of inventive step in the European Patent Office, namely that of problem and solution.

This stage can be formulated through the following explanatory perspective:

The EPO when assessing must consider whether:

a) The skilled but uninventive person could have come up with the invention. Essentially considering the degree of cleverness of the invention;

b) The skilled but uninventive person would have come up with the invention. Essentially considering whether the skilled person would have been incited to have improved the prior art in expectation of some improvement or advantage.

This approach was first utilized in case Rider/Simethicone tablet. When applying the “would” test special attention should be taken regarding when there is no positive technical

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226 Ibid, Section 5.3  
227 Case T 301/01 [2003] E.P.O reasons par. 2  
contribution to the prior art. In T 273/02 it was held that the “could/would approach” only applies if the “would” only involves technical considerations. If this is not the case the claimed invention could be rendered obvious.231 232

This last stage of the problem solution approach completes the assessment of the inventive step, in which the non-obviousness of the claimed invention must be established for it to be considered an invention, as long as the other requirements are met.

**Ex Post Facto Analysis of Prior Art**

The Guidelines warn that an invention that can appear obvious at first sight might in fact involve an inventive step. Normally when a new idea has been formulated, it is presented theoretically through a description of apparently easy steps, from the basis of something known. The examiner should be aware of **ex post facto analysis** of this kind. The Guidelines make it clear that when collecting documents in a search report, the examiner must always consider that the documents produced in this search have been obtained with **foreknowledge of what matter constitutes the alleged invention**. The Guidelines continues saying that the examiner must visualise the overall state of the art in the eyes of the skilled person when assessing the applicant’s contribution, and **he should seek to make a “real life” assessment of this and other relevant factors**. Additionally, during the assessment the examiner should always take into consideration all that can be possibly known concerning the invention, this includes relevant arguments and evidence submitted by the applicant.233

The examiner should be aware when assessing the inventive step of this claimed invention, by interpreting and combining prior art documents that have been influenced by the problem solved by the invention (how the idea can be arrived at), where the problem was neither mentioned or suggested in those documents. This approach constitutes an ex post facto analysis that shall be avoided. Many Boards of appeal decisions have taken this situation into consideration warning of its inadmissibility.234

The Board of Appeal has stated that the principal purpose of the problem-solution approach is **the objective assessment of inventive step and consequently any ex-post facto analysis**. This decision clearly states that the correct application of the problem and

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229 Case T 002/83 Rider/ Simethicone Tablet [1984] E.P.O head note II
231 Ibid.
232 Case T 273/02 Toshiba/IC card [2005] E.P.O reasons par. 8.7
233 E.P.O., Guidelines for Examination, Part G, Chapter VII, Section 8.
solution approach avoids the use of hindsight knowledge of the invention for assessing the inventive step.235

**Person Skilled in the Art**

The skilled person is an ordinary practitioner having all the general knowledge, irrespective of language, having no inventive capacity, and is a completely fictitious person.236 *He should also be presumed to have had access to everything in the "state of the art", in particular the documents cited in the search report, and to have had at his disposal the means and capacity for routine work and experimentation which are normal for the field of technology in question.*237

### 3.3 Requirement of Industrial Applicability

The industrial applicability condition relates to the idea that the invention must have the ability to be applied for practical purposes, and not only be purely theoretical. If the invention is a product, any person should be able to make the product and if it is a process or part of a process, it should be possible to be carried out in practice. The term industrial must be interpreted in its broadest sense,238 meaning activities carried out continuously, independently and for financial gain.239 Article 57 of the EPC expresses: *An invention shall be considered as susceptible of industrial application if it can be made or used in any kind of industry, including agriculture.*

For an invention to possess industrial applicability the condition of being made or used in any kind of industry, with the inclusion of agriculture sector, must be met.240 The concept of industry signifies that an activity is conducted continuously, independently and for financial gain.241 Following this decision it was decided that enterprises in the cosmetic field, such as cosmetic salons and beauty parlours, form part of the “industry” encompassed in the sense of Article 57 EPC.242 The term "Industry" should be understood in its broad sense as including any physical activity of "technical character".243

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235 Case T 970/00 Murata Manufacturing/Acousto-optic deflector device [2004] E.P.O reasons par. 4.1.2
236 Graham Ashley (23-24 March 2011). Case law of the EPO boards of appeal: a review by internal and external experts, Inventive step, Part 4: Assessing the obviousness of the claimed solution. Munich, Germany: European Patent Office. 0:00 to 1:00 minutes in. (retrieved 8.8.2013)
237 E.P.O., Guidelines for Examination, Part G, Chapter III, Section 1
240 The European Patent Convention, 14th edn, 2010, article 57
241 Case T 144/83 Dupont/Appetite suppressant [1986] E.P.O reasons par. 6
242 Ibid, reasons par. 5
243 E.P.O., Guidelines for Examination, Part G, Chapter VII, Section 3
The application of Article 57 will not exclude many more inventions than those already considered as un-patentable subject-matter according to article 52 (2). Nevertheless it has been decided by the Technical Board that if a claimed invention does not comply with the generally accepted laws of physics, this situation would be in violation of Article 57 and 84 EPC 1973. This relates to the fact that it could not be utilized for a practical purpose and not complying with Article 83 EPC, hence lacking industrial applicability.\textsuperscript{244,245}

### 3.4 Patentable Subject-Matter (invention)

The EPC does not contain a definition of the term “invention”. For the claimed subject matter to be regarded as an invention it must simply fall within the patentable subject matter. The requirement of patentable subject-matter is established by law (convention) and it is usually defined in terms of exception to patentability, in other words by making list of non-patentable subject matter.\textsuperscript{246} Article 52(2) EPC prescribes that certain categories shall not be considered an invention; (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.\textsuperscript{247}

The exclusions made above are only in so far as the claimed invention relates to determined excluded subject matter “as such”.\textsuperscript{248} The excluded subject matter “as such” reinforces the fact that an invention that complies with the requirements of the EPC must be a technical invention.\textsuperscript{249} In the words of the EPO; an invention within the meaning of Article 52 can only be made up of those features which contribute to its technical character.\textsuperscript{250} The European Patent Convention (EPC) does not define what is understood by an invention or technical character, thus fore this function has been left to be established on a “case by case” basis by the courts, the different national patent offices, the EPO, and the national and EPO Board of Appeal.\textsuperscript{251}

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\textsuperscript{244} E.P.O., Case Law of the Boards of Appeal, 6th edn, 2010, Section I.E.1
\textsuperscript{245} Case T 541/96 [2001] E.P.O reason par. 6.1
\textsuperscript{247} EPC, Art. 52(2)
\textsuperscript{248} G. Tritton and others, Intellectual Property in Europe (3rd edn Sweet & Maxwell, London 2008) 91
\textsuperscript{249} Ibid
\textsuperscript{250} Case T 0641/00 Comvik/ Two identities [2006] E.P.O reasons par. 6
\end{flushleft}
3.4.1 Technical Character as an Inherent Requirement of Article 52

As mentioned above, the technical requirement prevents the patentability of claimed inventions that are not of a technical nature. Along these lines, the invention must be of “technical character”, meaning that it must reveal to be part of a technical field, must be involved with a technical problem and must present technical features, in terms of which the matter for which protection is required can be defined in the claim. The term “invention” enshrined in Article 52 (1) EPC together with Article 52 (2) and (3) of EPC, has been interpreted by the jurisprudence of the Boards as implying a requirement of technical character to be complied in order to be a patentable invention. Hence the term “invention” is to be construed as “subject-matter having technical character.” According to decisions T 1173/97 and T 935/97 the board established that within the EPC the technical character of an invention was generally accepted as an essential requirement for its patentability.

However, having regard to the case law of the boards of appeal and taking into account the frequent use of the term “technical” in the EPC and the Implementing Regulations, which are an integral part of the EPC, and having due regard to the context in which the term “technical” is used there, the board is of the opinion, contrary to the appellant's, that the requirement of technical character is inherent to the notion "invention" as it occurs in Article 52(1).

Thus the board concludes that:

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.

In favour of summarizing the main principles utilized by the boards in this matter, the technical board of appeal in T 154/04 stated the following:

- Having technical character is an implicit requisite of an "invention" within the meaning of Article 52(1) EPC (requirement of "technicality").

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253 E.P.O., Guidelines for Examination, Part G, Chapter I, Section 2.
This with regard of rule 42(1)(a), (c) & rule 43(1) of Implementing Regulations to the Convention on the Grant of European Patents.
254 Case T 258/03 Hitachi/Auction Method [2004] E.P.O reasons par. 3.1
257 Case T 931/95 PBS Partnership/ Controlling pension benefits system [2000] E.P.O reasons par. 6
• **Article 52(2) EPC does not exclude from patentability any subject matter or activity having technical character, even if it is related to the items listed in this provision since these items are only excluded “as such”.**

• **For examining patentability of an invention in respect of a claim, the claim must be construed to determine the technical features of the invention, i.e. the features which contribute to the technical character of the invention.**

The analysis of the requirement of technical character or technical effect in computer programs and computer implemented inventions (CII) will be dealt with in chapter 4. The study will be carried out through an analysis of European Patent Office case law. The particular study will include landmark decisions of the Technical Board of Appeal board that created the actual viewpoint of the EPO regarding this matter, reflecting the mutations of the different approached experienced during the past decade or so.

### 3.5 Further Requirements

The Guidelines for Examination of the European Patent Office explicitly mention in order to grant a patent the examiner must take into close consideration the following two requirements established within the EPC.

Art 83 EPC: *The European patent application shall disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.*

The most important effect of non-compliance with this requirement refers to the impossibility of carrying out the invention due to the fact that it is contrary to the established laws of physics. This norm interpreted in the light of Art. 52(1) EPC makes the claimed invention not susceptible of industrial application, as dealt with in chapter 5, regarding the requirement of industrial applicability of the invention.

The other requirements are dealt with in Rule 42(1)(a), (c) and Rule 43(1). In particular, rule 42(1)(a) determines that the invention must be of “technical character” to the extent that it must relate to a technical field. Regarding letter (c); the subject-matter must involve a technical problem, even if this technical problem is not stated explicitly (as such). As to rule 43(1), the invention must contain technical features that must be defined in the

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In this case there were 6 main principles summarized, but only three that relate to technical character have been transcribed.

259 E.P.O., Guidelines for Examination, Part G, Chapter I, Section 2.
As to this last requirement, the “technical features of the invention” shall not contain any statements of non-technical character, for example: commercial advantages of the invention. Nevertheless statements of this kind will be permitted, if they assist in defining the invention.

3.6. Article 52 (2) and (3) of the European Patent Convention

Under this title special attention to the exclusion clause within Article 52 (2) and the “as such” clause under Article 52 (3) will be studied. These clauses are essential and taking jointly into consideration while assessing the abovementioned patentability requirements. The role of the interpretation the “as such” clause has played regarding the patentability of computer software will be discussed in the approaches mentioned in the following chapter.

3.6.1 Background for the Exclusion of Software Patents under Article 52(2) & (3)

Now we will pay special attention to what Article 52 (2)(c) and (3) of the EPC:

(2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1:

(c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers;

(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.

According to Article 52 (2)(c) in combination with Article 52(3) implies that programs for computers are an excluded subject matter, but only to the extent to which a European patent application or patent relate to it “as such”. Given this apparently clear prohibition contrary to the patentability of computer programs in the European Patent Convention, it could be assumed that this prohibition would be an easy and clear legal prescription to apply in practice. But this assumption has proven to be harder to grasp, given the necessity of the judges in the EPO and in the members states of engaging in word gymnastics in order to reconcile the wording of the convention and the real life practicalities that software patents have acquired. This exclusion of computer programs can be explained

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260 Ibid
261 Ibid, Part F, Chapter IV, Section 2.1.
by a generally accepted view in practice at the moment of the adoption of the EPC in 1973, before the age of mass production of micro-processors. This prohibition stands along schemes, rules, and methods for performing mental acts, playing games or doing business, all of them should be precluded from patentability “as such”. The expression “as such” and the interpretation that have followed have been the essence of the litigation in this area.

This change of view has been pinned on the pressure from the computer industry and the liberal position adopted by the U.S patent system in granting patents for computer programs and business methods, where they are implemented by computer programs as their vital element. The reaction of the European Patent Office was materialized through the amendment of its Guidelines in 1985, making it clear that they would allow claims involving use of a computer program as long as the invention makes a technical contribution to the state of the art. This technical contribution, also called technical effect, is not defined in the EPC, but has become of vital importance in the field of software related inventions since it was introduced by the European Patent Office Guidelines for Examiners. The technical effect requirement has been held to be an implicit requirement by the case law of the EPO Boards of Appeal. This condition will be studied within the various approaches in the following chapter of the thesis.

The EPO Guidelines of 1978 concerning the patentability of computer software states: *If the contribution to the known art resides solely in a computer program then the subject matter is not patentable in whatever manner it may be presented in the claims. For example, a claim to a computer characterised by having the particular program stored in its memory or to a process for operating a computer under control of the program would be as objectionable as a claim to the program per se or the program when recorded on magnetic tape.*

The EPO in 1985 as mentioned previously considered amending its old Guidelines replacing them with a new version, in order to give clear guidance in this respect. This new version makes it clear that the requirement for a computer program to be patentable is that

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267 E.P.O Guidelines for Examination (1978), Part C, Chapter IV, Section 2.1
it must produce a technical effect or contribution. This statement following the idea that the patentability of an invention should be denied merely cause it involves a computer program in its implementation. This amendment followed the first pivotal decision made by the Technical Board of Appeal regarding computer programs VICOM/Computer Related Inventions. This decision and many others will be examined in chapter 4. It is unfortunate that case law that emanated from the EPO has not been clear with regards to the patentability of computer software. It is very irregular and the approaches have changed during the years since the VICOM case.

Presently, the Guidelines for Examination of the EPO of June 2012 determines that the technical character of a claimed program should be assessed without regard to the prior art. This means that it can only be assessed within Article 52 of the EPC and not within the inventive step. Furthermore, a computer program may be considered an invention under Article 52 (1) if it has the potential when running on a computer, to produce a further technical effect. This effect must go beyond the normal physical interactions between the program and the hardware. The Guidelines also state that the mere inclusion in a claim of a computer, a computer network, a readable medium carrying a program etc., will lend technical character to the claimed invention. This principal specifically follows the decision T 258/03 (Hitachi) which comprises the any hardware approach.

3.7 The Amendment of the EPC in 2000

In November of 2000 in the Conference of Contracting States the attempt proposed by some member states to delete computer programs from the excluded subject matter in Article 52(2) failed. Another important amendment that relates to this study is the rewording of Article 52(1) of the EPC, which contemplated adding the phrase “in all fields of technology”. This modification was to ensure the compliance with Article 27(1) of the

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269 The “further technical effect” principal was construed in decisions T 1173/97 and T 935/97 IBM/Computer Program I and II respectively. Please refer to chapter 4.
270 See the analysis of this decision in chapter 4. The “further technical effect” principal that requires for a computer program to comprise a further effect in order to produce a technical effect and the principal established in the Hitachi decision seem to differ. The Hitachi Board held the computer program to be an invention because it comprised technical features such as a server computer, client computer and a network etc. implicitly accepting the further technical effect of the abovementioned components. The Guidelines though utilize the expression “will lend” technical character.
TRIPS Agreement,\textsuperscript{272} which establishes; [...] \textit{patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application}.\textsuperscript{273}

Hence making a clear statement by which inventions will be granted in all fields of technology, even those excluded by Article 52 as it seems with computer programs. This apparently demonstrates the will to lean towards a more favourable position regarding patenting of software inventions and biotechnology patents.\textsuperscript{274} Nevertheless, the interpretation of the Technical Boards of Appeal has made it possible to circumvent the “as such” clause, as long as the computer program produces a technical effect.

\textbf{3.8 The Failed CII Directive}

The proposal by the European Commission in 2002 of the Directive on the patentability of computer-implemented inventions (the Directive)\textsuperscript{275} was due to the concern of possible divergences in EPC interpretation regarding computer-implemented inventions (CII).\textsuperscript{276} The main aim of the Directive was to harmonize the national patent legislation of the EU member states and codify EPO practice regarding CII.\textsuperscript{277} In order to reach its objective, the Directive required a CII to make a technical contribution in order to be patentable; it also precluded the patentability of “pure” business methods and social processes.\textsuperscript{278} Nevertheless, the proposed technical contribution approach was rejected by the PBS Partnership Board of Appeal by relocating the issue of technical contribution within the assessment of the inventive step.\textsuperscript{279} However, the proposed directive by adopting this approach may allow patent grants for business methods claims for which \textit{a non-obvious
Though according to the European Commission Article 4 of the Directive, would however, exclude business methods that possessed not technical contribution to the art.

The proposal of this Directive was done under the so called the co-decision legislative procedure. Three years after the proposal was presented by the European Commission and several versions later, the Council approved an amended version of this Directive and submitted it to the European Parliament for final approval. Meanwhile, interested groups both in favour and against software patents battled in the media, web and available political venues. In June 21, 2005 the European Parliament rejected the proposal by a majority of 648 out of 729 total members of the Parliament. This result is due to the failure of the European Institutions involved, in finding a final version that pleased all the parties. However the political pressure from several groups of both sides of the patent spectrum reflected that Europe was not ready for the adoption of a Directive on patentability of computer-implemented inventions.

The matter of patentability of computer programs has been left for the EPO to decide through the development of case law of the Technical Boards of Appeal. Nevertheless, a Directive in this matter would harmonize the positions of the European member states and deliver greater certainty regarding the limits of patentability of software in general.

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280 Supra note 270, 14
4. EPO CASE LAW ON COMPUTER PROGRAMS OR COMPUTER IMPLEMENTED INVENTIONS (SOFTWARE)

The analysis of case law emitted by the EPO Technical Board of Appeal will be divided into three categories comprising three different approaches. The first position is comprised by the “contribution approach”, the second relates to a more modern perspective called the “technical character approach”, and the last point of view constitutes the “any hardware approach”. The following case law empirically demonstrates the on-going interpretation of Article 52 of the EPC by the Boards of Appeal of the EPO, since 1987.

4.1 The Emergence of the Contribution Approach

The main question that this approach addresses is “what is the technical contribution the claimed invention makes to the known art?” If the invention as a whole makes a contribution to the known art and this contribution does not find itself in the excluded field, patentability will not be denied merely on the ground that the computer program is involved in its implementation. Hence an invention that included a computer program could be patentable so long as the invention as a whole was technical. This approach was initially established by the VICOM decision.

4.1.1 T 208/85 VICOM/Computer-Related Invention

This decision is important due to the fact that it was the first decision that established the manner in which the Board of Appeal interpreted the exclusion of software enshrined in the EPC. The claims that related to this particular case before the Board, referred to a method of digitally processing images and to an apparatus using a conventional computer for carrying out that method. The Examination Division of the EPO rejected the application made by VICOM, on the grounds that the method claim related to a mathematical method and this method running on a computer program was not patentable by virtue of article 52(2) and (3), in other words it related to a mathematical method and/or a computer program as such.

285 T 208/84 VICOM/Computer-Related Invention, [1986] E.P.O reasons para. 16
286 Ibid
288 T 208/84 VICOM/Computer-Related Invention, [1986] E.P.O
289 D Bainbridge, Legal Protection of Computer Software (5th edn Tottel Publishing, West Sussex 2008) 292
The Board of Appeals in order to decide the issue on whether the method claimed is excluded from patentability “as such” reasoned in the following way. The VICOM Board stated that the sole fact that a mathematical formula or algorithm is carried out in numbers and the result it creates is in a numerical form (abstract process), produces no direct technical effect by the method as such. In contrast, it was reasoned that if the algorithm is utilized in a technical process and the process carried out on a physical entity (which may be a material object but equally an image stored as an electric signal), by technical means, producing some kind of change in that entity. The technical means might include a computer comprising hardware or a general purpose computer. The Board continues by stating: “[...]even if the idea underlying an invention may be considered to reside in a mathematical method a claim directed to a technical process in which the method is used does not seek protection for the mathematical method as such.”

In summary, if a mathematical method or algorithm is utilized in a technical process, and through the use of this method by technical means it produces some sort of technical result, the claimed process can be reputed patentable subject matter. This situation would be admissible as long as the technical process in which the method is used does not seek protection for the algorithm as such. Following the logic established by the Board, it can be stated that the mathematical formula “as such” cannot be protected directly, thus allowing the free use by third parties for any purpose other than the specified form of image processing. This could be used to overcome the major concerns expressed by patent opponents who state that a patent could be infringed by a party working out calculations with pen and paper.

Regarding the apparatus claims the board of Appeal made a number of other important findings. The first relates to the point in which a computer of a known type set up to run according to a new program cannot be considered to be part of the state of the art, in accordance to article 52(2) EPC. The second finding points out that a computer set up in accordance with a specified computer program, in order to control or carry out a technical process cannot be considered a computer program “as such”, within Article 52(2)(c) and (3) EPC.

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290 Case T 208/84 VICOM/Computer-Related Invention, [1986] E.P.O reasons par. 5
291 Ibid, paragraph 6
293 Case T 208/84 VICOM/Computer-Related Invention, [1986] E.P.O reasons par. 14
294 Ibid, par. 16
The VICOM Board subsequently continues by affirming that it is not of essential nature when an invention is carried out in hardware or software, but the choice between these possibilities is due to technical and economical considerations. Hence it should not bear any relationship with the inventive concept of an invention. The Board recognizes that it is the developers technical alternative to choose a hardware or software implementation of an application. An example would be present in satellite navigation systems. At first, these systems were sold as stand-alone devices but with the emergence of smart phones, users can download a software application and use their phone as a navigation device.

Consequently, the main principal of the technical contribution approach is born: [...] 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. Finally, it would seem illogical to grant protection for a technical process controlled by a suitably programmed computer but not for the computer itself when set up to execute the control.

The program as such was not patentable but the claim which was implemented by a computer program could not be excluded from patentability just because a computer program was utilized. This is well regarded as the first pillar decision within the EPO’s first perspective on the patentability of computer programs. However the real problem is the framework of protection that was conceived in this case. This consisted of an attempt to locate a mathematical or algorithmic process utilized in a program by regarding it as a traditional model of a “machine”. Consequently, it attempted to distinguish between an abstract concept and technical signals (technical contribution).

In the view of the personal skilled in the art being the programmer, he would not perceive the method in the VICOM decision as an abstract method. He would not be concerned about a process carried out by electrical signals on a physical entity. But rather concentrate on the core of the invention, which is the processing of the data structure by an algorithm and comprises the essence of the invention.

295 Ibid
296 I J Lloyd, Information Technology Law (6th edn OUP, Oxford 2011) 313
297 P Leith, ‘Patenting Programs as Machines’ (2007) 4.2 Script-ed 214, 220
298 Ibid.
4.2 Contribution Approach Applied

Following the VICOM decision other EPO Board decisions continued applying this criterion, for example: T 22/85 IBM/Document abstracting and retrieving, T 854/90 IBM/Card Reader and T 26/86 Koch & Sterzel/X-Ray Apparatus. Nevertheless, concerning the contribution approach the next important decisions that will be analysed are T26/86 Koch & Sterzel and case T 38/86 IBM/Text processing.

4.2.1 T 26/86 Koch & Sterzel/X-ray Apparatus

In this case a patent was granted for an X-ray apparatus for radiological imaging device under the control of a computer program, to secure optimum exposure with sufficient protection against overloading of the X-ray tube. The computer program generates an X-ray beam to produce an image of the object through which the X-ray beam scans. The Board held that a computer program running on a conventional general purpose computer with the objective to technically alter its functioning, this unit that comprised the computer and the program combined together may be a patentable invention. The Board continues to establish that the EPC does not prohibit the patenting of inventions of a mix of technical and non-technical features and that the invention must be assessed as a whole, departing from a previous German Federal Court of Justice approach.

An important finding is that according to the Board the EPC does not prohibit the patenting of inventions consisting of a mix of technical and non-technical features. Additionally, the Board established a prohibition to weigh up between technical and non-technical features of a claim when assessing if the subject matter has a technical effect in order to escape the exclusion under Article 52 (2) and (3). In the words of the Board it said: “The Board therefore regards it as unnecessary to weigh up the technical and non-technical features in a claim in order to decide whether it relates to a computer program as such. [...]” It also held that if the claimed invention uses technical means, it can be awarded patent protection if its meets the requirements laid out in Articles 52 to 57 EPC.

300 Case T 26/86 Koch & Sterzel/X-ray Apparatus E.P.O OJ 19
301 I J Lloyd, Information Technology Law (6th edn OUP, Oxford 2011) 313
302 Case T 26/86 Koch & Sterzel/X-ray Apparatus E.P.O OJ 19 reason par. 3.3
303 Ibid reasons par. 3.4
304 Case T 26/86 Koch & Sterzel/X-ray Apparatus E.P.O OJ 19 reason par. 3.4
Patent protection was awarded to the claimed invention. The result is more tangible than in the VICOM case, this because the result is a more efficient X-ray machine, and it is of little significance if the X-ray machine depended on a computer program to produce its technical contribution to the state of the art.\textsuperscript{305}

\textit{4.2.2 T 38/86 IBM/Text processing}

The IBM application in this case consisted of a text processing method by which a computer program would automatically detect and replace incomprehensible linguistic expressions.\textsuperscript{306}

The Board, as customary, sought if the claimed invention in the application contained a technical contribution. The Board first assimilated the implementation of this method for text processing to the mental acts performed by a human being.\textsuperscript{307} It goes on by considering and recognizing that: \textit{the use of technical means for carrying out a method, partly or entirely without human intervention, which method, if performed by a human being, would require him to perform mental acts, may, having regard to Article 52(3) EPC, render such a method a technical process or method and therefore an invention within the meaning of Article 52(1) EPC, i.e. one which is not excluded from patentability under Article 52(2) (C) EPC. This is because paragraph 3 of Article 52 EPC makes it clear that patentability is excluded only to the extent to which the patent application relates to excluded subject-matter or activities as such.}\textsuperscript{308}

In other words the Board came to recognize that a method that can be carried out by a human being entirely or partly by mental acts, can be reputed to be patentable subject matter if the same method is carried out by technical means, hence be rendered a technical process or method under Article 52 (2) (c). The Technical Board further acknowledges the acceptance of patenting of inventions consisting of a mix of excluded and non-excluded features,\textsuperscript{309} but stating that it did not necessarily imply that all such mixes are patentable.\textsuperscript{310}

Consequently, the Board applies the so called technical contribution approach in reasoning that: \textit{Since patentability is excluded only to the extent to which the patent application

\textsuperscript{305} I J Lloyd, Information Technology Law (6th edn OUP, Oxford 2011) 313
\textsuperscript{306} Case T 38/86 IBM/Text processing [1989] E.P.O
\textsuperscript{307} Ibid, reasons par.11
\textsuperscript{308} Case T 38/86 IBM/Text processing [1989] E.P.O reasons par.12
\textsuperscript{309} The non-prohibition of the so called "mixed media" features of a claimed invention was held in Case T 26/86 Koch & Sterzel/X-ray Apparatus E.P.O OJ 19. Please refer to headnote 1.
\textsuperscript{310} Case T 38/86 IBM/Text processing [1989] E.P.O reasons par.12
relates to excluded subject-matter or activities as such, it appears to be the intention of the EPC to permit patenting only in those cases in which the invention involves a contribution to the art in a field not excluded from patentability.\textsuperscript{311}

Nonetheless, it was held that the technical means utilized in implementing the mental acts in question were identified as no more than the straightforward application of standard techniques that were obvious to the person skilled in the technical art, denying any contribution to the state of the art, thus not involving an inventive step. It also held that even if there was no computer program expressly described in the claim it was obvious for the reader skilled in the art that a computer program was used in the process.\textsuperscript{312} The Board makes a parallel between the present case and two other previous cases namely VICOM and Koch & Sterzel, emphasising that the claimed inventions were held patentable in both cases due to the fact that they made a contribution to the field not excluded from patentability.\textsuperscript{313}

The Board refuses the application based on the operations performed by the claim are conventional from a technical point of view, and amounted to no more than the processing of abstract data, for a non-technical process, by utilizing a computer program. Accordingly it was held that it did not possess a technical purpose, and did not contribute to the state of the art, thus lacking an inventive step.

\subsection*{4.2.3 Software Conceived as a Machine}

Since the decision in VICOM and throughout the 1980s until the late 1990s a common fiction was imposed which consisted of viewing software as a machine, and not as software itself.\textsuperscript{314} In VICOM the Board tried to locate the mathematical formula or algorithmic process used in a computer program into a machine-like framework of protection, without first considering that Software was a new and radical form of technology. The Technical Board was more concerned in distinguishing between an abstract concept and technical signals creating a highly artificial distinction. The person skilled in the art (programmer) would of not of conceived the method as an abstract method, on the contrary, he would realize that the essence of the invention is the processing of the data structure by means of an algorithm, and picture nothing more to it.

\begin{footnotes}
\footnoteref{311} Ibid
\footnoteref{312} Ibid reasons par. 13–14
\footnoteref{313} Ibid reasons par. 17
\footnoteref{314} P Leith, ‘Patenting Programs as Machines’ (2007) 4.2 Script-ed 214, 220
\end{footnotes}
In summary, if the computer implemented invention was conceived as a machine, and functioned as one, it received the protection of the patent system. Meaning the patentable invention was in the machine that was part software and part hardware.315 This approach worked for many inventions but for those inventions based in software needed some manipulation of the described process was required. This machine-like vision of software was defeated in the late 1990s with two important decisions T 935/97 IBM/Computer program product II and T 1173/97 IBM/Computer program product.316 These two decisions will be dealt with under the technical character approach.

4.3 The Technical Character Approach and Departure from the Contribution Approach

The two aforementioned decisions regarding IBM clearly marked a considerable shift in the viewpoint of the EPO Board of Appeals presided by Van Den Berg. They established a distinction between an invention that can be protected in software/hardware terms or as software on its own.317 Hence, recognizing the patentability of software and delivering a new interpretation of Article 52 EPC and its exemptions.318 A possible cause for the abandoning of the contribution approach could be the lack of legitimacy and vagueness of this approach. In order for a claim to be considered an invention the examiner had to confirm the presence of an inventive step for it to qualify as an invention. This does not follow the logic dictated by the EPC, where the first step is to first establish if the claim is patentable subject matter and only then assess the novelty, inventive step and industrial applicability.319

4.3.1 T 935/97 IBM/Computer program product II

This decision related to the appeal against a decision of the Examining Division that rejected a patent application. This application referred to a data processing system for the display of information in the form of a window, in a way such that any information displayed in one window was configured to remain visible and not obscured when second

315 Ibid.
window is opened, thus moved automatically to a new position to avoid obscuring the initial window. \[320\]

The Board only takes into consideration claims 7 to 10 which referred to the computer program product. \[321\] \[322\] The Board in referral to the appellants argument by which the TRIPS agreement should be taken into account emphasized that the only substantive law that shall be considered binding is the EPC. Stating that the EPO is not a member of the WTO and it did not sign the TRIPS agreement. Notwithstanding, the Board recognized the importance of the TRIPS because it aimed at setting common standards and principles of intellectual property rights, and most importantly of patents rights. \[323\] It also held that the Guidelines for Examination are not binding for the Boards of Appeal in any way, and pointing out that according to Article 23(3) EPC the members of the Board are not bound by instructions and shall comply with the provision of the Convention. \[324\]

Turning to the substantive part of the decision that relates to the exclusions under Article 52(2) and (3) of the EPC, the IBM Board held that programs for computer were only excluded from patentability to the extent that the claimed invention related to the program as such. The reason being that the combination of provisions (2) and (3) of Article 52 implies that the legislators did not want to exclude computer programs from patentability. \[325\] Hence, [...] the fact that only patent applications relating to programs for computers as such are excluded from patentability means that patentability may be allowed for patent applications relating to programs for computers where the latter are not considered to be programs for computers as such. \[326\]

The Board then turned to interpret the meaning of “as such”, stressing the technical character or contribution of an invention under the EPC and explicitly mentioning Rules 27 and 29 EPC. It further acknowledged that the exclusion from patentability of computer programs as such was construed to signify that such programs are considered “to be mere abstract creations, lacking in technical character.” Basing this interpretation on the expression “shall not be regarded as inventions” as stated in Article 52 (2) EPC. \[327\]

\[320\] Case T 935/97 IBM/Computer program product E.P.O
\[321\] Ibid reasons par.1
\[322\] David Bainbridge, “Court of Appeal Parts Company with the EPO on Software Patents” (2007) 23 Computer Law & Security Report 199, 201
\[323\] Case T 935/97 IBM/Computer program product E.P.O reasons par.2,3
\[324\] Ibid reasons par. 3
\[325\] Ibid reasons par. 4.1
\[326\] Ibid
\[327\] Ibid reasons par. 5.2
Contrary to that, computer programs that possess technical character must be considered patentable subject matter.\textsuperscript{328}

The next step was to determine if the said computer program is more than an abstract creation, therefore having a technical character per se. The Board stated that the physical modifications produced by a computer program over the hardware (e.g. technical currents) deriving from the instructions executed by the program, could not be considered to constitute the technical character of the program.\textsuperscript{329} Hence these physical manifestations were interpreted as a common feature and could not be considered to have a technical effect, thus failing to avoid the exclusion. Moreover, these common features cannot be used to distinguish computer programs with a technical character from programs for computers as such.\textsuperscript{330}

Where do we find these further effects? The Board held that these further effects could be found in the execution by the hardware of the instructions embedded in the computer program. Consequently, it stated when the further effects have a technical character or when they cause the software to solve a technical problem, an invention that accomplishes either of these effects can be considered in principle, patentable subject matter.\textsuperscript{331}

Following the aforementioned, in order to look elsewhere for technical character it was found that a patent may be granted not only where software through a computer manages an industrial process, or the operation of a piece of machinery. The further effects were also found [...] in every case where a program for a computer is the only means, or one of the necessary means, of obtaining a technical effect within the meaning specified above, where, for instance, a technical effect of that kind is achieved by the internal functioning of a computer itself under the influence of said program.\textsuperscript{332}

By adopting this position the EPO recognizes that the technical effect can be found in the internal functions of the computer program itself when it is a necessary part of the invention sought to be protected. Therefore the Board distinguished two ways of portraying the technical character of a computer program, “the extrinsic effect” that must bring out a technical effect by managing some sort of external physical process through a computer under the control of software. On the other hand, “the intrinsic effect”, that can

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{328} Ibid reasons par. 5.3
\item \textsuperscript{329} Ibid reasons par. 6.2
\item \textsuperscript{330} Ibid reasons par. 6.3
\item \textsuperscript{331} Ibid reasons par.6.4
\item \textsuperscript{332} Ibid reasons par. 6.5
\end{itemize}
\end{footnotesize}
be found within the internal functioning of the software when it’s the main means of obtaining a technical effect.\textsuperscript{333}

In addition, it was held that as long as the computer program produces a technical effect (extrinsically or intrinsically), all computer programs must be considered inventions within Article 52(2) and considered subject matter of patent protection if the other requirements under the EPC are fulfilled.\textsuperscript{334}

The Board then sustained through a particular interpretation of different Board of Appeal case law, including VICOM, which the case law permitted an invention to be patentable \textit{when the basic idea underlying the invention resides in the computer program itself}.\textsuperscript{335}

Subsequently, “the further technical effect” if present in the invention, may lead to the subject matter not to be excluded. This is accomplished when the program is loaded on a computer, and instructs the hardware to carry out a specific result. Regarding this matter the Board found it self-evident that the basic idea underlying that invention resided in the computer program itself. Also, the hardware was considered to be outside the scope of the invention and only considered the material object on which the physical changes will be take place.\textsuperscript{336}

Moreover, the Board determined that it found illogical to grant a patent for both a method and the apparatus adapted for carrying out a method, but not for the computer program, which permits the implementation of the method when loaded into a computer.\textsuperscript{337} The Board subsequently makes an important finding stating that it does not make any difference whether a computer program is claimed \textit{by itself or as a record on a carrier} with regards to exclusions under Article 52(2) and (3) EPC.\textsuperscript{338} Reaffirming that claims for patentability of computer programs, considered as a product itself are allowable under the EPC regime whether they relate to a program itself or a program embedded in a record on a carrier. The IBM Board set aside the Examination Board’s decision, and remarked that a computer program product was not always excluded under all circumstances.\textsuperscript{339}

\textsuperscript{333} The extrinsic and intrinsic effects are terms applied in this thesis to explain the further effects that can be produced by a computer program.
\textsuperscript{334} Ibid reasons par. 6.5
\textsuperscript{335} Ibid reason par. 7.4.
\textsuperscript{336} Ibid reason par. 9.3
\textsuperscript{337} Ibid reasons par. 9.8
\textsuperscript{338} Ibid reason par. 14
\textsuperscript{339} Case T 935/97 IBM/Computer program product E.P.O
To summarize this analysis, the present decision departs totally from the view adopted before of software being a machine-like invention.\textsuperscript{340} This decision recognizes that software itself might be patented if it possesses a further technical effect beyond the normal interaction between software-hardware (i.e. technical currents) that can be found internally within the functions of the program when executed. It also abandons the fiction created by the VICOM case regarding the contribution approach by which for the invention to be patentable it must involve \textit{a contribution to the art in a field not excluded from patentability}. According to the “contribution approach” the contribution could never be held in the field of computer programs even if the computer program itself was reputed technical.

\textbf{4.3.2 T 1173/97 IBM/Computer program product I}

The reasoning applied in this decision presents a similar logic to the decision previously described. The present Board decision was about an appeal that was lodged against the refusal of a patent application by the Examining Division of the EPO. The patent application was for a patent regarding a method for resource recovery running an application through a computer program that implements and resynchronizes a commit procedure. The Examining Division rejected the application based on the rejection of the subject matter of claims two claims. These two claims were considered to be a computer program as such, hence excluded from patentability. They referred to a computer product directly loaded into the internal memory of a digital computer and a program product stored on a computer usable medium.\textsuperscript{341}

As already mentioned, the reasoning is manifestly identical to that which was applied in case T 935/97 so it will not be reanalysed. The Board held that the claimed computer program product was not excluded from patentability as such and that it complied with all the other patentability requirements. An interesting observation is that the approach portrayed within these two decisions could have further implications in other excluded “as such” subject matter. For instance, if a discovery or a mathematical formula would be able

\textsuperscript{341} Case T 1173/97 IBM/Computer program product E.P.O
to possess a technical effect when applied, it should not be excluded from patentability “as such”, hence a totally patentable invention.³⁴²

4.4 Any Hardware Approach

Surprisingly, the Technical Board of Appeals of the EPO deviates again from its previous position to what is known today as the “any hardware approach”. This approach was established in late 2000s by the decision T 0931/95 (Pension benefits). The basis of the approach declares that in order for a computer program to possess technical character, it must involve or is to a piece of physical hardware however mundane. If this is the case, then article 52(2) does not apply.³⁴³

4.4.1 T 931/95 PBS Partnership/Controlling pension benefits system

The subject matter which this case deals with is a method of controlling an employer’s pension benefits program through an apparatus comprising a programmed computer for processing data belonging to the pensioners. The application illustrated two different types of claims, the first claim relates to methods performing the calculations and estimations concerning the number, earnings, ages etc. of the employees. The second group relates to the apparatus claims that are considered a computer system programed to execute the method.³⁴⁴ The patent application was rejected by the Examining Division because it was considered to be a method for doing business. Thus, lacking any technical character, therefore excluded from patentability under article 52(2) and (3) EPC.³⁴⁵

The Boards reasoning begins by recognizing that according to the case law of the Boards of Appeal, in order for an invention to be patentable it implicitly must have a “technical character” or possess “technicality” following decisions T 1173/97 and T 935/97.³⁴⁶ Consequently, the Board held that the technical character is an implicit requirement within the meaning of article 52 (c) EPC.³⁴⁷ The Board found it necessary to determine if the

³⁴³ As stated in Aerotel/Macrossan [2006] EWCA Civ 1371 par. 26. Lord Justice Jacob establishes three different kinds of variants of the “any hardware” approach. Cases Controlling Pension Benefits, Hitachi and Microsoft/Data transfer correspond to these three variants respectively.
³⁴⁴ In the PBS Partnership and Hitachi decisions, it’s important to consider that the method and apparatus claims comprise different types of excluded subject matter. The method claim basically comprises a business method and the apparatus claim comprises a computer program in order to execute the said method.
³⁴⁵ Case T 931/95 PBS Partnership/Controlling pension benefits system [2000] E.P.O
³⁴⁶ Ibid, reasons par. 2
³⁴⁷ Ibid, reasons par. 6
claimed method qualified as a method for doing business, and if it was a technical method. According to this principle, if the method possessed technical character it could still be considered a method for doing business but not a method as such.\(^{348}\) The Board considered that the method claim was only utilized for data processing means for providing certain information of purely administrative and/or financial character, hence being a simple economic method. It found that even if technical features were used in the claim, this did not transform the subject matter of the claim into an invention within article 52(1). It held that: *A feature of a method which concerns the use of technical means for a purely nontechnical purpose and/or for processing purely non-technical information does not necessarily confer a technical character to such a method.*\(^{349}\) \(^{350}\) Therefore the methods claimed were reputed to be purely economic concepts and practices of doing business which were not inventions within the meaning of the said Article.

However, in the assessment of the apparatus claim the Board came to a different decision. It held that the apparatus is a suitably programmed computer for the use in a determined field, which in this case is the field of business and economy (business method). This apparatus was held to be a "physical entity", hence it was reputed to be sufficient to escape the exclusion of Article 52(2) and (3) even by carrying out an un-patentable method. The justification for this was found within Article 52(2) which under letter (c) excludes schemes, rules and methods for doing business, but the physical entity is not mentioned in Article 52(2). The Board reasoned: *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.*\(^{351}\)

The aforementioned statement established the basis for the first version of the “any hardware approach” by considering that as long as a physical entity exists, it was reputed enough for un-patentable subject matter not to be excluded under Article 52(2) EPC. Lord Justice Jacob clearly says concerning this variant of the “any hardware” approach, *that the claim must be as to the “concrete” apparatus itself, for it to escape the exclusion under article 52(2).*\(^{352}\)

\(^{348}\) Ibid, reasons par. 3
\(^{349}\) Ibid
\(^{350}\) This criterion will not be followed in the Case T 258/03 HITACHI/Auction method. The Board in Hitachi found that qualifying the relevance of technical aspects of the method claim is inappropriate for determining whether it is an invention under article 52(1).
\(^{351}\) Ibid reasons par. 5
\(^{352}\) Aerotel/Macrossan [2006] EWCA Civ 1371 par. 26
Furthermore, it is important to highlight that the Board of Appeal decided that the “contribution approach” was not appropriate for determining if certain subject matter qualified as an invention. The reason being that no basis was found in the EPC that permitted distinguishing between “new features” claimed by an invention and the features which are comprehended in the prior art within the examination of Article 52 (1) EPC.\textsuperscript{353} Although the Technical Board in this case held that even if the apparatus or programmed computer was considered to be an invention it did not involve an inventive step, because the application of computer systems in the economic sector would be obvious for the skilled person (i.e. computer programmer).\textsuperscript{354} This decision is essential because it determines the EPOs perspective regarding the patentability of business methods, which is also affected by the exclusion clause in Article 52(2) EPC. Even though business methods and computer programs are different subject matter, they have overlapped when business methods are implemented by computer programs and programmed computers.\textsuperscript{355}

4.4.2 T 258/03 HITACHI/Auction method

The decision in HITACHI/Auction Method followed the reasoning established by Pension Benefits, but it went on further by establishing that, \textit{a method involving technical character is to be considered an invention within Article 52(1) EPC}.\textsuperscript{356} Even though the reputed method is excluded subject matter under the EPC.\textsuperscript{357} The claimed invention was a method of conducting an auction via a computer program running on a network.\textsuperscript{358} The claims in this patent application were divided into method and apparatus claims. It was rejected by the Examining Division because the method claim was a business method as such, therefore not patentable. The apparatus claim was also denied to be patentable since the claim had an equivalent scope of protection to the method claim. The examining division held that even if the claimed subject matter were an invention within article 52(1) of the EPC, it did not involve the required inventive step.\textsuperscript{359}

\textsuperscript{353} Ibid, reasons par. 6
\textsuperscript{354} Ibid, reasons par. 8.
\textsuperscript{357} Aerotel/Macrossan [2006] EWCA Civ 1371 par. 26
\textsuperscript{358} Case T 258/03 HITACHI/Auction method [2004] E.P.O
\textsuperscript{359} Ibid.
The Board following the footsteps left by Pension Benefits clearly rejected the utility of the contribution approach.\textsuperscript{360} Consequently, as in the previous case, the apparatus claim, which was comprised by a computer program that conducted the auction method, was held to be an invention within the meaning of article 52(1) \textit{since it comprises clearly technical features such as a "server computer", "client computers" and a "network"}.\textsuperscript{361} With regard to this point, both the Pensions Benefits and Hitachi decisions differ from the criteria applied in VICOM and Koch & Sterzel. Instead of a program achieving technical character by making the computer run better or faster, the claimed inventions in Pension Benefits and Hitachi accomplished their technical character solely by being loaded onto the machine.\textsuperscript{362}

The Board went on by analysing the inventiveness of the method claim; it departed from Pension Benefits by establishing that the method claim was not excluded from patentability, thus not considered as a business method as such.\textsuperscript{363} The Pension Benefits Board decision established as already mentioned, that the utilization of technical means for purely non-technical purposes does not confer a technical character to a determined method.\textsuperscript{364} In contrast, the Board in Hitachi found that qualifying or weighting the relevance of technical aspects of the method claim is inappropriate for determining whether it is an invention under article 52(1).\textsuperscript{365} By doing this it will lead to \textit{necessarily including considerations on their technical relevance, in particular possible novel or inventive contributions, with respect to the prior art},\textsuperscript{366} which under Article 52 analysis of invention is not allowed.\textsuperscript{367}

The Hitachi Board then states that it is not convinced that the wording of Article 52(2)(c) in combination with article 52(1) EPC, should impose different treatment between method claims and apparatus claims, hence such a difference should not exist. The examination determines that what matters with regards to the concept of invention within Article 52(1) is \textit{the presence of technical character which may be implied by the physical features of an}\n
\begin{footnotes}
\item[360] Case T 258/03 HITACHI/Auction method [2004] E.P.O reasons par.3.3
\item[361] Ibid reasons par. 3.7
\item[363] Case T 258/03 HITACHI/Auction method [2004] E.P.O reasons par. 4.1
\item[364] See supra note 252
\item[365] Ibid reason par. 4.4
\item[366] Ibid
\end{footnotes}
entity or the nature of an activity, or may be conferred to a nontechnical activity by the use of technical means. According to this statement, because non-technical activity could now be granted technical character, it was in the Board’s opinion that non-technical activity cannot be considered to be a non-invention as such within the meaning of Article 52 EPC.

Finally, the Board recognized that it broadened the interpretation of “invention” in Article 52(1) EPC. But this did not imply that all methods that accomplished technical character are patentable, therefore they would still have to comply with the requirement of novelty, inventive step and industrial application. However, when the Board evaluated the inventive step it came to the same conclusion pointed out in the Pension Benefits decision, that the method and apparatus claims did not involve an inventive step within the meaning of article 56 EPC.

The principal difference produced by the Hitachi reasoning in contrast with Pension Benefits, is that it leads to the conclusion that anything carried out by a programmed computer, whether claimed as a concrete entity, or as the activity carried out by the computer, possesses technical character, and therefore is considered an invention. The Pension Benefits Board centred its attention on the concrete entity rather than the method itself. As Lord Justice Jacob clearly illustrates in Aerotel: […] A claim to a method of using that hardware is likewise not excluded even if that method as such is excluded matter.

4.4.3 T 424/03 Microsoft/Clipboard formats I

We will focus on the analysis of the present decision without referring to case T 411/03 Microsoft/Clipboards formats II. The present case dealt with an appeal against the decision of the Examining Division that refused the patent application for the use of clipboard formats which enables non-file date to be transferred between different software applications in order to improve the appellant’s Windows 3.1 operating system.
refusal by the Examining Division was based on the lack of novelty and of inventive step of the subject matter.

The analysis begins with the eligibility for patent protection of the method implemented in a computer system. The reasoning made by the Board of Appeal follows the principle laid down in the Hitachi decision which states: *a method using technical means is an invention within the meaning of Article 52(1) EPC.*

Hence, the Board held that the clipboard method claim possessed technical character and was eligible for patent protection because a *computer system including a memory (clipboard) is a technical means.* Before assessing the inventive step, the Board wanted to distinguish a computer implemented method from a computer program as such (non-patentable program). It held: * [...] that a method implemented in a computer system represents a sequence of steps actually performed and achieving an effect, and not a sequence of computer-executable instructions (i.e. a computer program) which just have the potential of achieving such an effect when loaded into, and run on, a computer. Thus, the Board holds that the claim category of a computer-implemented method is distinguished from that of a computer program.* Moreover, it was held that even though a method of operating a computer is carried out by a computer program, a claim to the method cannot relate to a computer program as such.

Subsequently, the Microsoft Board recognized that the claim relating to a computer-readable medium having computer executable instructions (i.e. computer program), that was able to run the claimed method was held to be technical. It based its reasoning on the Hitachi decision and held that the subject matter of the computer program claim has technical character since it relates to a computer-readable medium (i.e. a technical product). The Board utilized the “further technical effect” principal enshrined in the IBM/Computer program product I to determine that the computer program produced a further technical effect, thus it could be considered a technical means and not considered to be a program as such.

The Board continues by assessing if the claimed method complies with the novelty requirement. It establishes that the closest prior art is the Windows 3.1 operating system jointly with the method utilized in Windows 3.1 that comprises clipboard formats called

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375 Ibid reasons par. 5.1
376 Ibid
377 Ibid
378 Ibid reasons par. 5.3
379 Ibid reasons par. 6.1
D2. The claimed method was found to be novel because it allowed non-file data to be transferred between applications; something not found in Windows 3.1 or performed by D2. Concerning the assessment of inventive step, the Board after a brief reasoning determined that the method met this requirement simply because it solves the problem of how to facilitate a data exchange across different data formats, in particular when transferring non-file data.

Although this decision is part of the “any hardware approach” it configures the third variety of this approach, thus departing from the assessment of the inventive step made in the two previous decisions Pension Benefits and Hitachi. The Board clearly assessed the question of technicality within Article 52(2) rather in relation to the inventive step, differing in this analysis from the previous Boards. The main contradiction in the Microsoft decision lays in the assessment of both method and apparatus claims, without excluding the contribution of un-patentable subject matter. The Board did not conceive the computer program as excluded prior art, as the business methods had been in the previous cases. In the previous two cases, the claimed invention did not pass the assessment of the inventive step, something that did not occur in Microsoft. In the latter case, the “as such” exclusion within article 52 EPC was circumvented though little reasoning was given, hence doing so opens the gate for patentability of software in Europe.

4.4.4 T 154/04 Duns Licensing Associates/Estimating Sales Activity

This decision reaffirms the EPOs position regarding patentability of software, making it clear that the technical character of an invention shall be assessed within Article 52 EPC, and not regarding the inventive step.

The decision dealt with an appeal launched against a decision of the Examining Division that refused the claimed invention because it’s subject matter was excluded from

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380 Ibid reasons par. 6.1–6.2
381 Ibid reasons par. 7
383 Aerotel/Macrossan [2006] EWCA Civ 1371 par. 26
385 C Reed and J Angel (eds), Computer Law, The Law and Regulation of Information Technology (6th edn OUP, Oxford 2007) 297
patentability under Articles 52(2)(c) and 3 EPC. The claimed invention was a method of estimating the distribution of a product by receiving data from a plurality of sales outlets, and an apparatus for maintaining inventory relying on the received data provided by the method, under the control of a computer program. The appellants referred five questions to the Enlarged Board of Appeal (EBA) concerning issue relating to the patentability of computer programs and the interpretation of certain norms. This referral found its basis under Article 112(1) (a) EPC in which it is stated that a party may request the referral to the EBA by which the Board of Appeal may reject, but this rejection shall be reasoned in the final decision. The Board of Appeal refused the referral because it considered that diverging opinions expressed in different Board opinions where part of the evolution of the jurisprudence under the EPC (should not be considered case law in the Anglo-Saxon meaning of the term). It also held that harmonized legal regulations did not impair the Boards to interpret and apply the EPC in an independent manner.

The Board of Appeal in this case before entering the substantial assessment it refers begins by laying down principles concerning the interpretation of Articles 52, 54 and 56 EPC. The Board states that Article 52(1) expresses the maxim of the general entitlement to patent protection for any inventions in all technical fields. It gained this status as a result of the modification that this article experienced under EPC 2000 amendment. It continues by acknowledging that Article 52(1) had interpretative problems due to the absence of a common concept for the term “invention”. But the absence of an explicit definition was done to permit Article 52 (2) and (3) to be interpreted jointly. The Duns Board declared that the negative and non-exhaustive list of excluded subject matter within Article 52(2) was clearly adopted by the contracting states to prevent a broad scope of application. Consequently, to prevent this broad interpretation Article 53 acts as a bar mechanism.

389 Some questions had sub questions included within, and the content varied, e.g.: Question 1 required the EBA to clarify what would be the correct approach to adopt regarding excluded subject matter under article 52 EPC; Question 2 required to clarify the manner by which certain elements of a claim that are excluded subject matter should be treated when assessing novelty and the inventive step etc. The first three questions were taken from the referral made in Aerotel/Macrossan judgment of the England and Wales Court of Appeal. For further reading on the questions see Case Duns Licensing
390 The referral can only be formulated in order to ensure uniform application of the law, or if a point of law of fundamental importance arises, according to article 112(1) EPC
392 Ibid reasons par. 6
393 The amendment concerning this Article was the inclusion of the term “in all fields of technology”.
The Panel emphasizes that the technical character or contribution of a claimed invention must be assessed as a general criterion within Article 52 (2) and (3), rejecting that it should be applied as a criterion to decide the requirement of invention. Subsequently, citing the proposal of the EPC 2000 amendment confirmed that the technical character of an invention was a legal requirement in the sense that technical character meant to involve a technical teaching. The Board asserts that the presence of technical character within an invention is taken as an absolute requirement that does not imply any contribution to the prior art, but if an invention complies with all the patentability criteria, it must provide a novel and inventive technical contribution to the prior art.

It was held that the patentability assessment within Article 52 should be strictly separate from the other three patentability requirements (novelty, inventive step and industrial applicability). The Board regarding this point utilizes U.K and German case law to fundament this finding. Subsequently, it comes to criticize the “technical character approach” endorsed by Lord Justice Jacob in the Aerotel/Macrossan judgement, by stating that this approach was not consistent with a good faith interpretation of the European Patent Convention [...] .

It further held that it is not permissible to make any reference to the prior art under Article 52 EPC, hence a reason why the contribution and technical effect approach was abandoned by the Boards. The Board then explained that the technical effect approach applied in the Aerotel/Macrossan judgement, presupposed that “novel and inventive purely excluded matter does not count as a ‘technical contribution.’” Regarding this point it established that a non-technical feature may interact with technical elements in order to produce a technical effect. Nevertheless, from the distinction between technical and non-technical features it must be inferred that if non-technical features do not interact with technical features to produce a technical effect, these cannot establish novelty or inventive step.

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395 Ibid
396 Ibid
397 Ibid
398 Ibid
399 Ibid
400 Ibid

Ibid

It held that the VICOM Board did not mean for the technical contribution the invention as a whole makes to the know art as a principle to be applied for deciding on the requirement of invention, but just within Article 52 determining the general requirement of patentable subject matter. See reasons paragraph 6 for the case law it cites.

Ibid

Citing document MR/2/00: In order to be patentable, the subject-matter claimed must therefore have a "technical character" or to be more precise - involve a "technical teaching", ie an instruction addressed to a skilled person as to how to solve a particular technical problem using particular technical means.

Ibid reason par.9
Ibid reasons par.10
See reasons paragraphs 10 and 11 for cited cases.
Ibid reasons par. 12
Ibid
Hence only technical features enter the assessment of novelty and inventive step. The Board acknowledges that a mix of technical and non-technical features is typically present in claims concerning computer implemented inventions.\textsuperscript{401}

Furthermore, the “problem and solution approach” was considered to be in line with previous EPO case law. This approach was first made explicit in the decision T 641/00 Comvik/Two identities.\textsuperscript{402}

With regard to substantial matters of the appeal, the Board concluded that the method claim was excluded subject matter under the assessment of Article 52 (2) (c) and (3) EPC. The Board determined that the method claim was a business research method and that the gathering and evaluation of data did not convey technical character to this \textit{method if such steps do not contribute to the technical solution of a technical problem.}\textsuperscript{403} It reasons as to business methods, that the interaction with and exploitation of information about the physical world belongs to the essence of any business related activity. Therefore, the acceptance of these features cannot be rendered sufficient to bypass the subject matter exclusion under Article 52(2) (c) EPC.\textsuperscript{404} Without any sort of analysis the Board following the Hitachi decision determined that the processor (apparatus) is an invention in terms of Article 52. While assessing the inventive step, the Board held that the new algorithm and the method for estimating sales activity were part of the business method. Due to this, they do not contribute in any way to the solution of a technical problem. Applying there current framework, these elements could not be utilized in the assessment of the inventive step.\textsuperscript{405}

The judgment finally concludes that the only technical aspect of the claimed system was the use of a processor to run a non-technical method. The Board reputed that this was an \textit{obvious consequence of using computer systems for market analysis}. The claim failed to pass the inventive step assessment.\textsuperscript{406} Thus, a business method claim implemented by a computer program was once again trapped within the assessment of the inventive step.

\textbf{4.5 Summary of the EPO Approaches}

Through this analysis, it can be concluded that the EPO has undergone three major approaches since the first decision VICOM in 1987. The first approach required a technical

\textsuperscript{401} Ibid reasons par. 15
\textsuperscript{402} Ibid reasons par. 16
\textsuperscript{403} Ibid reasons par. 20
\textsuperscript{404} Ibid
\textsuperscript{405} Ibid reasons par. 28
\textsuperscript{406} Ibid
contribution to the state of the art produced by the claimed subject matter (software) to be patentable, but did not recognize the patentability of software as such, only protected as part of a technical process. The second approach during the 90s, being the technical character approach, which stated that software, might be patented if it produces a further technical effect beyond the normal interaction between software-hardware. Hence recognizing the patentability of software as a product and not limiting to being part of a process in order to be patentable.

The last approach called the any hardware approach considers that for software to be considered technical, it must involve some sort of physical entity or hardware. In the Microsoft decision the computer program was not conceived as excludable prior art, as the business methods had been in the previous two cases. With the adoption of this view the technical contribution principle was abandoned and the decision contained in the Microsoft Clipboard case with its particular analysis of the inventive step, determined that both apparatus and method were non-obvious.

With this latest approach, the EPO seems to take a flexible stance towards patentability of software in Europe, hence permitting a circumvention of the exclusion enshrined in Article 52(2) regarding computer programs. Though the same cannot be stated regarding the patentability of business methods, where a much stricter approach is applied, the result is that business methods do not pass the inventive step assessment of Article 56.

5. FURTHER DEVELOPMENTS

Under this section the Opinion of the Large Board of Appeals of the EPO will be studied. This opinion fixated the position of the EPO regarding patentability of computer software, but did this opinion really clarify all the doubts regarding this subject matter?

5.1 Opinion of the Large Board of Appeal G0003/08

On the 22 of November 2008 the President of the EPO Ms Alison Brimelow\(^{408}\) exercised her power and referred four questions to the Enlarged Board of Appeals (EBA). This wasn’t the first request for clarification regarding software patentability issues. A previous attempt in the Aerotel/Macrossan case by Lord Justice Jacob of the English Court of Appeal had suggested certain issues to be clarified. Although national courts have no authority to refer to the EPO, an informal letter dated February 22 2007 by EPO President at the time Alain Pompidou criticized this referral and found it unnecessary.\(^{409}\) Subsequently, this then triggered the reaction of discontent of the Duns Licensing Board.

Article 112(1)(b) EPC provides the ability to the President to refer questions to the EBA if there is conflicting decisions given by two different Boards of Appeal.\(^{410}\) The EBA had to decide whether the stated referral was admissible under article 112, by first analysing if the questions needed to be answered in order to ensure uniform application of the law or they concern points of law of fundamental importance. The second requirement to be met is for two Boards of Appeal to give different decisions on the questions referred within Article 112 (1) (b).\(^{411}\) Regarding the first point, the EBA decided that it was a matter that concerned points of law of fundamental importance.\(^{412}\) With respect to the second requirement, the Board based its reasoning on the interpretation of the legal expressions; “different decisions”, “abweichende Entscheidungen” and “decisions divergentes” as expressed in the three official languages of the EPC.\(^{413}\) The meaning of the expressions

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\(^{410}\) Article 112(1)(b) EPC provides: the President of the European Patent Office may refer a point of law to the Enlarged Board of Appeal where two Boards of Appeal have given different decisions on that question. This with the objective of ensuring the uniform application of the law or if a point of law of fundamental importance arises as expressed in article 112(1) EPC

\(^{411}\) G 3/08 Opinion of the Enlarged Board of Appeal [2010] E.P.O par. 3

\(^{412}\) Ibid par. 4.2

\(^{413}\) Ibid par. 7
was considered ambiguous making it imperative to determine the meaning of the expression “different decisions”.

In order to interpret this expression the Board recurred to Article 31 of the Vienna Convention on the Law of Treaties, by which the interpretation must be done in the light of its object and purpose. The EBA assessed their reasoning on something they called “current constitutional thinking” which led to the conclusions concerning the current democratic legal order and the notion of legal development. Subsequently, it conceived the EPO as an organization modelled on a modern state order and based on the principle of separation of powers, by which the contracting states have entrusted powers in the field of patents. This then derived in the duty of the EPO to ensure predictability of jurisdiction and hence legal certainty. The aforementioned principles were claimed to be essential precepts for administration and jurisdiction in the European patent system. Therefore the application of these principles was left to the Boards. This notion led to a restrictive interpretation of Article 112(1)(b) limiting substantially the president’s power of referral, thereby increasing the judicial authority of the Boards of Appeals.

To continue with the admissibility of the questions, the EBA held that interpretation of the EPC is primarily the responsibility the Boards of Appeal. The interpretative supremacy is only under review within the conditions defined in Article 112 EPC. The EBA considered the notion of “different decisions” when there is a conflict in case law making it difficult if not impossible for the Office to bring its patent granting practice into line with the case law of the Boards of Appeal. This notion found its fundament within the principle of legal development by which two different decisions might be the product of the constant development of jurisprudence. Therefore it is not necessarily in conflict with the principle of legal uniformity. The EBA declared inadmissible the referral by not recognizing that the existence of conflicting decisions with the objective of re-establishing legal certainty.

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414 Ibid par. 7.2.1
415 Ibid par. 7.2.2
416 Ibid par. 7.2.3
418 G 3/08 Opinion of the Enlarged Board of Appeal [2010] E.P.O par. 7.2.7
419 Ibid par. 7.2.6
420 Ibid par. 7.3–7.3.8
1. Can a computer program only be excluded as a computer program as such if it is explicitly claimed as a computer program?"

With regards to this question, the referral found a divergence between cases T 1173/97 IBM/Computer program product I (IBM) and T 424/03 MICROSOFT/Clipboard Formats I (Microsoft). It explained that in the IBM decision the Board makes it clear that a claim to a computer program cannot escape the exclusions under Article 52(2) simply by comprising a computer-readable medium. The IBM Board regarded that the hardware was not part of the claimed computer program and conceived it as only the physical support where the program is stored. An important point was made by the EBA declaring that a computer program is patentable if it produces a “further technical effect” when run. This technical effect makes no reference to the state of the art, confirming whether a computer program evades exclusion under Article 52(2) and (3) is independent of the prior art. Hence the identified technical effect need not be new. The EBA recognized that the adoption of this position by the IBM Board, it abandoned the contribution approach deliberately. The EBA also stated that no other Board has deviated from the approach taken by this case.

Subsequently the Board analysed the T 931/97 (PBS) and T 258/03 (Hitachi) decisions. It recognizes that the PBS decision held that an apparatus (computer program) carrying out an excluded activity can be patentable. This logic was not made extensive to methods (business method) employing technical means. The EBA admitted that this logic was overturned by the Hitachi decision, in which it was stated that any claim involving technical means was not excluded from patentability, extending the logic to methods.

As to the Microsoft decision, the computer-readable medium avoided exclusion because it was found to have technical character. Therefore both the computer readable medium and the program itself granted technical character to the claimed subject matter as a whole, hence they should be considered in the assessment of the inventive step.

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421 Ibid par. 10.2.3 – 10.2.4
422 Ibid par. 10.3
423 Ibid par. 10.4 – 10.5
424 Ibid par. 10.7
425 Ibid par. 10.7.1

The EBA did not comment on the different approaches taken by PBS, Hitachi and Microsoft Boards, probably these approaches were conceived as the evolution of the EPO jurisprudence and not as contradictory decisions as such.
This divergence perceived between the IBM and the Microsoft decisions was found to be a product of development of case law under the EPO, and not different decisions that would provide the referral of questions under Article 112 (1)(b) EPC. This was based on the fact that from the EBA’s point of view, no other Board had followed the IBM decision since the Microsoft approach, together with the reason that the Microsoft decision had not been challenged in any later decisions.\textsuperscript{426} It also held that the position taken concerning the computer-readable medium was a consequence of the principles laid out in the IBM decision, even if the outcome was divergent, but the IBM approach had no support in general EPO case law.\textsuperscript{427}

2. (a) Can a claim in the area of computer programs avoid exclusion under Art. 52(2)(c) and (3) merely by explicitly mentioning the use of a computer or a computer-readable storage medium?
(b) If Question 2(a) is answered in the negative, is a further technical effect necessary to avoid exclusion, said effect going beyond those effects inherent in the use of a computer or data storage medium to respectively execute or store a computer program?

The EBA begins by reinterpreting the first part of the question by stating that the phrase “merely explicitly mentioning” would presume that the referral intends for there to be a functional relationship, such as, “Method of operating computer according to program X”.\textsuperscript{428} The reinterpretation of the first question led to imply that the claim for a computer program and a computer implemented method can be interpreted as having an identical scope and that the implemented method would encompass a computer program for carrying out the said method. Regarding the second part of the referral the EBA asserted a difference between decisions T 1173/97 (IBM) and T 258/03 (Hitachi). The IBM decision held that because computer programs are methods, in order for them to have a technical character they must show a “further technical effect”. To the contrary, the Hitachi decision states that any method involving technical means is not excluded from patentability. This case established that different treatment should not be imposed between method claims and computer claims in assessing the technical character.\textsuperscript{429} This divergence would be

\textsuperscript{426} ibid par 10.8 – 10.9
\textsuperscript{427} Ibid par. 10.8.8
\textsuperscript{428} Ibid par. 11.1
\textsuperscript{429} Ibid par. 11.2
apparently true if the equivalence of the computer implemented method claims and the computer program claims would have the same scope. The EBA argued the contrary.

The EBA identified a general misinterpretation generated due to confusion between a set of instructions for carrying out steps (computer program) and the steps themselves (method). It was held that the concepts of computer “loaded” with a method, or a computer-readable medium “storing” a method, can only mean a computer loaded with and a computer-readable medium storing instructions to carry out a method. Subsequently, the EBA explained that a person skilled in the art understands that the expression “program” to refer to a sequence of instructions specifying a method, rather than the method itself. The EBA established that by following the correct interpretation there is a distinction between a computer program and the corresponding computer-implemented method, moreover, the incorrect interpretation was due to a false usage by Boards of the word “program”. But this false usage was only apparent. Consequently, the EBA held that the question was inadmissible because there was no divergence in case law to fundament the referral.

3. (a) Must a claimed feature cause a technical effect on a physical entity in the real world in order to contribute to the technical character of the claim?
   (b) If Question 3(a) is answered in the positive, is it sufficient that the physical entity be an unspecified computer?
   (c) If Question 3(a) is answered in the negative, can features contribute to the technical character of the claim if the only effects to which they contribute are independent of any particular hardware that may be used?

Concerning the third question, the referral identified a divergence between two groups of decisions. On the one hand decisions T 163/85 (BBC) and T 190/94 (Mitsubishi), which require a technical effect on a physical entity in the real world. On the other hand, decisions T 125/01 (Henze) and T424/03 (Microsoft), in which the technical effects were confined to the computer programs. The EBA pinpointed two problems with the above
asserted divergence. The first, related to the problem that the question referred to individual features of the claim and not the subject matter as a whole. The EBA held that the jurisprudence of the Boards as a whole is consistent in considering all the features when assessing a claim. It further stated that the Boards avoided the *weighting of features or a decision which defines the “essence” of the invention*. Consequently, only once the determination of the features all together grant technical character to the subject matter, the Board can turn and consider the individual technical features in the assessment of the inventive step. It also alluded that features belonging to excluded subject matter can contribute to the technical character of an invention.

The Second problem dealt with the alleged divergence that the BBC and the Mitsubishi decision represented regarding the requirement of a technical effect on a physical entity in the real world. The EBA held that the Boards in these two cases *merely accepted this as something sufficient for avoiding exclusion from patentability; they did not state that it was necessary*. The EBA concluded that they did not find any passages requiring this effect and determined there was no divergence. Regarding the other group of decisions that required technical effects, whether they were produced on a physical entity was not found to be relevant. Therefore, the referral was rejected.

4. (a) Does the activity of programming a computer necessarily involve technical considerations?

(b) If Question 4(a) is answered in the positive, do all features resulting from programming thus contribute to the technical character of a claim?

(c) If Question 4(a) is answered in the negative, can features resulting from programming contribute to the technical character of a claim only when they contribute to a further technical effect when the program is executed?

The EBA concerning this referral considered giving an interpretation, it deliberated that “the activity of programing a computer” related to an intellectual activity based on the determining the instructions rather a physical activity of simply inserting a program into a computer. The referral stated again two groups of case law that were found to be divergent, the first encompassed decisions T 1177/97 (Systran) and T 172/03(RICOH) and secondly

435 Ibid par. 12.2
436 Ibid par. 12.2.2
437 Ibid par. 12.3
438 Ibid par. 12.4 – 12.5
decisions T 833/91 (IBM), T 204/93 (AT&T) and T 769/92 (Sohei). The first group considers programming to always involve technical considerations, at least implicitly. The latter, considers programming to be a mere mental act, and falling within the exclusion of Article 52 (2) EPC. 439 The EBA rapidly concluded that there was no divergence between the cited cases, because programming can involve technical and non-technical considerations. Nevertheless, programming can be seen as a process that can take place in the designer’s mind, therefore considered a mental act and to the extent that it is a mental act would be excluded from patentability. This was the position taken in the second group of decisions. Therefore, the question was declared inadmissible.440

5.1.2 Shortcomings of the EBA Opinion

Whether the dismissal of the EPO president’s referral was adjusted to law or not, on the basis that there was an inexistent divergence within the EPO case law, will not be the objective of this discussion. Nevertheless, to some the referral was incorrectly deemed inadmissible by the EBA. Pila states that the effect of this opinion restricts the scope of the EBA referrals and supports the approach of Technical Boards of Appeal that lack doctrinal and theoretical basis.441 The study of the different approaches taken by the Technical Boards seems to indicate clearly that different criterion is utilized in the three main approaches.

Instead of the EBA acting as an organ to ensure the uniform application of the EPC, it blindly held that there was no divergence by relying on apparent coherent interpretations. In order to illustrate an evident divergence we will use decisions T 1173/97 (IBM) and T 424/03 (Microsoft) as an example. The EBA did recognize a difference between these two cases but concluded that this discrepancy is a legitimate development of the case law and thus it would not qualify as an admissible referral.442 This meant that the EBA found the divergence between the “technical character approach” and the “any hardware approach” a legitimate development without taking into consideration possible outcomes.

If we apply these two approaches in practice, the divergence may have greater consequences. The main difference between the IBM and Microsoft decisions is the

439 Ibid par. 13.1 – 13.2
440 Ibid par. 13.3- 13.4
442 G 3/08 Opinion of the Enlarged Board of Appeal [2010] E.P.O par. 10.7.2
interpretation of the “as such” in combination with Article 52(2) EPC. The “technical effect” approach in the IBM decision held that some computer programs claimed by itself or on a carrier are excluded from patentability, under the said Article.\(^443\) On the other hand, the “any hardware” approach of the Microsoft decision, states that a computer program claimed alone or on a carrier did not need to have any technical effect to avoid the exclusion under Article 52(2) and (3).\(^444\)

In order to reconcile these two differences, the EBA held\(^445\) that the IBM Board did not realize the effect of its new technical character approach and failed to recognize that the carrier would have had technical character and the mixed media claim could not be rejected.\(^446\) The realization according to the EBA came with the Microsoft Board\(^447\). However, the EBA’s interpretation of the “any hardware” approach is not whether the claims is to something not listed within Article 52(2) EPC but to ask whether any feature of the claimed subject matter has technical character.\(^448\) The correct interpretation of the “any hardware approach” considers technical character as a separate matter from the assessment of whether the subject matter is excluded “as such” by Article 52(2) EPC.\(^449\)

The EBA’s interpretation of the “any hardware” approach was done through an extension of the “technical effect approach”, creating a unique approach which arises from its consideration of whether the additional presence of excluded subject matter in addition to a feature with technical character could render a claim rejectable under Article 52(2).

In this regard the EBA held that a claim to a technical feature alone was not excluded, neither would be the case of the accession of a further feature would make the claim rejectable.\(^450\) *In the words of the EBA: [...]"A computer-readable storage medium," is not excluded from patentability by Articles 52(2) and (3) EPC, neither is a claim, "A computer-readable storage medium storing computer program X," [...]*.\(^451\) The extension

\(^{443}\) Ibid par. 10.2.2–10.2.3  
\(^{444}\) Ibid par. 10.7 citing Case T 424/03 MICROSOFT/Clipboard Formats I [2006] E.P.O reasons par. 5.3  
\(^{445}\) Ibid par. 10.7  
\(^{447}\) G 3/08 Opinion of the Enlarged Board of Appeal [2010] E.P.O par. 10.7  
\(^{449}\) Ibid 260  
\(^{450}\) The authors consider the correct interpretation of this approach enshrined within the Case T 424/03 MICROSOFT/Clipboard Formats I, specifically citing reasons paragraph 5.1 and 5.2.  
\(^{451}\) G 3/08 Opinion of the Enlarged Board of Appeal [2010] E.P.O par. 10.8.6
made by the EBA of the IBM approach in order to reconcile it with the Microsoft approach has created the EBA’s proper approach (extended version of the technical character approach). The consequences are that the EBA has ended up misrepresenting both the IBM decision and the Microsoft decision.

In order to understand the difference these three approaches the following example will be illustrated: if we consider a claim to piece of paper carrying spots of dry ink to provide a set of names printed; the dry ink is known non-excluded subject matter that will comprise the first claim. The second claim will relate to the printed names; regarded as a presentation of information, thus excluded subject matter. (In assessing if a claimed invention is excluded under Article 52(2) and (3), the prior art shall not be taken into consideration).

Now by applying the technical character approach, the first of these claims is not rejectable under Article 52(2) because we suppose the cup has technical character. However the second claim, is rejected because the subject matter as a whole is considered to be excluded under the said Article (presentation of information). Under the “any hardware” approach, the first claim is not excluded because it is not to a presentation of information as such. With regards to the second claim, it should be excluded because it is not to the combination of excluded subject matter (computer program) and non-excluded matter (carrier), but it is to a whole to a presentation of information that has not technical character. Applying the same example to the EBA’s extended approach, since the claim to the cup cannot be rejected under Article 52(2) EPC, then neither must this rejection be extended to the second claim which is considered to be excluded subject matter under the said Article.\(^\text{452}\)

6. CONCLUSION

Presently, there is no doubt that the software patent debate is an on-going discussion in many fronts. The hybrid nature of software that is not obvious at first for an average person, but when analysed in depth reveals that software is expressed through a set of instructions, but its application within a technical process modifies its nature into a functional subject matter. Moreover, a computer program can be written in more than one programming language, providing similar or identical functions, and that this programming process is something trivial for any skilled person; creates scepticism whether programming should be considered innovative and not inventive at all.

The central reason behind the existence of a patent system is to encourage the invention process and the disclosure of inventions to the public knowledge. Having this in mind the patent system should serve the general interests of society and not a determined interest group. Software patents seem to serve big corporations rather than independent software developers. Many sectors are still doubtful whether patents for software are the appropriate way to go, because the software market possess unique characteristics and an excessive amount of patents could have a negative effect on market growth. This is still an on-going topic that must be resolved in the software community.

The requirements of patentability under the EPC were studied and portrayed within chapter 3 of this thesis. The main objective was to illustrate how these conditions are interpreted by the EPO. Essential requirements such as novelty, inventive step and industrial application are the core conditions that the claimed invention needs to comply to be able to qualify as an invention. The tricky part begins with the interpretation of Article 52(2) that comprises the excluded patentable subject matter, in combination with Article 52(3) that encompasses the “as such” clause. The interpretation of these two norms has led the EPO to come up with the requirement of technical character or technical effect.

The technical character requirement was elevated to an inherent requirement of the notion of invention. This prerequisite is established by developing case law, which some of these cases have been studied within this thesis, and not by statutory law. The interpretations of the technical character requirement regarding the specific topic of patentability of computer programs, a subject matter explicitly excluded by Article 52(2) EPC, has proven to be the corner stone of the debate in Europe. Furthermore, this implies whether the true intention of the legislator was to allow the patentability of programs for computers in the
first place.\textsuperscript{453} The impression that is left after performing the analysis within this study is that the granting of software patents under the current framework seems to involve more effort, than rejecting such claims. The reasoning materialized through the different approaches adopted by the EPO brings out ingenious, but inconsistent approaches. Nevertheless, these inconsistencies were not recognized as an issue by the EBA, but rather a normal consequence of the development of case law. Even though this would be the case, irregular interpretation in any technological field harvests uncertainty.

An important weakness that can be identified in the patent system under the EPC is the lack of a constant revision by a higher authority. In the United States the Federal Circuit Courts’ are subject to the revision of the Supreme Court. The highest Court will always have the last saying regarding controversial decisions. Under the European system, the lack of this kind of revision gives the EPO the power to decide on matter of patentability based on their political will. This deficiency could be tackled by creating a European Patent Court as proposed by Justine Pila.\textsuperscript{454}

The EPO has undergone three major approaches regarding patentability of computer programs. The first approach called the “technical contribution approach” mainly implied that a technical contribution to the state of the art must be produced by the claimed subject matter in order to be granted patentable. This contribution should also be made in a field not excluded from patentability. The aforementioned approach was criticized for confusing assessments of technicality, novelty and inventive step. This later led to its abandonment.\textsuperscript{455}

The “technical character approach” which is the second approach adopted, recognized that software is patentable subject if it contains or produces a “further technical effect” beyond the effect obtained within the normal interaction between software and hardware (i.e. electrical currents). The reasoning applied in this approach held that if the technical effect was present in the excluded subject matter (internal functions of a computer program) it was reputed technical, thus not excluded “as such”. This approach could have implications for other categories of subject matter excluded “as such”. If excluded subject matter like a discovery or a mathematical method were to be held to have the capability of producing a

\textsuperscript{453} The EPO utilizes the expression computer implemented inventions.
technical effect when applied, then it should be reputed to have technical character and escape the exclusion under Article 52(2) EPC.456

The latest position named the “any hardware approach” considers that for software to be considered technical, it must involve some sort of physical hardware or physical entity. This approach contained three important cases, but finally refined by case T 424/02 (Microsoft). The Microsoft decision held that the subject matter of claim 5 (computer readable medium carrying a computer program) has technical character since it relates to a computer readable medium, i.e. a technical product involving a carrier.457 This meant that the computer program is regarded patentable because it relates to a computer readable medium (physical entity).458 In other words a computer-reusable medium, including a program stored on it, has technical character because the computer-readable medium is a technical product.459

In the Microsoft decision the excluded subject matter comprised by a computer program was not barred from the inventive step analysis of Article 56 EPC, something that didn’t happen regarding the business methods in the Board decisions of PBS Pension Benefits, Hitachi and Duns Licensing. With this latest approach, the EPO seems to take a flexible stance towards patentability of software in Europe and has circumvented the exclusion enshrined in Article 52(2) and (3). This particular circumvention is apparently clear for excluded subject matter such as computer programs, but what about business methods and other matters? The “any hardware approach” varies depending if it is applied to a business method or computer program. Although, neither is excluded from patentability “as such” if they involve some sort of physical entity, it appears to be less hostility towards the patentability of software than to business methods.460

Taking into consideration the latest approach adopted by the EPO, we can now sustain that computer programs may be patented as long as they comply with all the general requirements of an invention, together with an inherent condition established by case law

457 Case T 424/03 MICROSOFT/Clipboard Formats I [2006] E.P.O reasons par. 5.3
460 Ibid 294
called, the technical character requirement. Furthermore, it can be asserted that the latest approach opens the way to the patentability of any computer program in Europe.\textsuperscript{461}

However, according to a recent case T 1225/10\textsuperscript{462} the Board held that the application (video game) involved technical means; hence it was regarded to be an invention curiously following the decisions in Pension Benefits and Hitachi.\textsuperscript{463} Concerning the assessment of the inventive step the Board focused on how the excluded subject matter was \textit{technically} implemented, and whether the implementation is obvious in the light of the prior art.\textsuperscript{464} It seems that what the Board looks for is a further technical effect, and it is not so concerned if the implementation of the invention includes excluded subject matter.\textsuperscript{465}

The aforementioned situation is a consequence of the fact that the Technical Boards of Appeal are not bound by previous case law. Therefore, the current position could keep evolving as it relies on the political stance the European Patent Office has on patentability of computer programs.

\textsuperscript{462} Case T 1225/10 Nintendo Co Ltd/ Game program and game apparatus [2011] E.P.O
\textsuperscript{463} Ibid reasons par. 4
\textsuperscript{464} Ibid reasons par. 6.1
\textsuperscript{465} A Freeman, ‘Patentable Subject Matter: The View from Europe’ (2011) 3 International Free and Opens Source Software Law Review 59
BIBLIOGRAPHY

Books


Bainbridge D, Legal Protection of Computer Software (5th edn Tottel Publishing, West Sussex 2008)


Burgunder L B, Legal Aspects of Managing Technology (2nd edn West Legal Studies in Business, Canada 2001)


Kur A and Dreier T, European Intellectual Property Law (Edward Elgar, Cheltenham UK 2013)


Reed C and Angel J (eds), Computer Law, The Law and Regulation of Information Technology (6th edn OUP, Oxford 2007)


**Publications**


Bainbridge D, ‘Court of Appeal Parts Company with the EPO on Software Patents’ (2007) 23.2 Computer Law & Security Review 199-204


Bessen J, ‘A generation of software patents’ (2011) Available at: http://works.bepress.com/james_bessen/1


Cases


Case T 024/81 Basf/Metal Refining 1983] Official Journal E.P.O


Case T 641/00 Comvik/Two identities [2002] E.P.O. Available at: 

Case T 258/03 Hitachi/Auction Method [2004] E.P.O. Available at: 

Case T 931/95 PBS Partnership/ Controlling pension benefits system [2000] E.P.O 


Case T 208/84 VICOM/Computer-Related Invention, [1986] E.P.O. Available at: 


Case T 26/86 Koch & Sterzel/X-ray apparatus E.P.O OJ 1989 19

Case T 935/97 IBM/Computer program II [1999] E.P.O. Available at: 

Case T 1173/97 IBM/Computer program product I [1998] E.P.O. Available at: 

Case T 931/95 PBS Partnership/Controlling pension benefits system [2000] E.P.O 

Case T 258/03 HITACHI/Auction method [2004] E.P.O Available at: 


Case Gottschalk v. Benson 409 U.S. 63 (1972)


Case Bilski v. Kappos 130 S.Ct 3218 (2010)

Case In Re Bilski 545 F.3d 943 (2008)

Websites

Retrieved 30.10.2012

British and Irish Legal Information Institute, at: http://www.bailii.org/


European Patent Office, Graham Ashley, E-Courses, at: https://e-courses.epo.org/wbts_int/caselaw_en/a001_popups_sub2_sub2_pres_a.html

EUPAT Working Group, at: http://eupat.ffii.org/papers/epo-gl78/#exc
Conventions, Legislation and other Sources


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