Czech University of Life Sciences Prague

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Diploma Thesis

Computer Implemented Inventions and Software Patents

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Declaration

I declare that I have worked on my diploma thesis titled Computer Implemented Inventions and Software Patens by myself and I have used only the sources mentioned at the end of the thesis.

In Prague on 31 March _____

Michal Verner

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Počítačem implementované vynálezy a softwarové patenty

Computer Implemented Inventions and Software Patents

Počítačem implementované vynálezy a softwarové patenty

Souhrn

Práce se zabývá problematikou ochrany softwaru, především ochranou patentoprávní. Nabízí pohled na vývoj v oblasti průmyslového vlastnictví a na vývoj v oblasti ochrany softwaru v posledních desetiletích. Dále porovnává právní podmínky ochrany softwaru v Evropě a v USA a poukazuje na rozdílné výklady těchto podmínek v Evropě. Věnuje se také návrhu evropské směrnice o patentování počítačem implementovaných vynálezů a sporům kolem softwarových patentů.

Klíčová slova

Softwarový patent, počítačem implementovaný vynález, licence, autorské právo, svobodný software, GNU.

Computer- implemented Inventions and Software Patents

Summary

This thesis deals with question of protection of software, especially patent protection. It shows development in industrial property protection and software protection in last decades. It compares rules of law for protection of software in Europe and USA and shows differences in interpretation of these rules. It also deals with proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions and litigations about software patents.

Keywords

Software patent, computer-implemented invention, license, copyright, free software, GNU.

Content:

1 Introduction

Development in all fields of human knowledge and activities has been dependent on capabilities of extraordinary people since ever. Success of these people and their ideas eminently depend on ability of government to support and protect their inventions. The emperors were conscious of that since ancient era and that is why the first endeavors of protection began to occur during these times. The inventors got kind of privilege, which had very important influence on development of whole society. These first simple regulations and ordinances became the foundations of patent law and later developed into a complex law system as we know it nowadays; industrial and intellectual property.

The system of industrial and intellectual property protection nowadays provides not only protection of inventions but also artifacts in field of literature, art and business. We have developed other legal institutions for these purposes like copyright for protection of literary works, industrial designs for aesthetic pieces and trademarks for know-how and reputation of our business.

Development of intellectual property protection system has been very inconsistent. As a result of this we have many systems in the world, which markedly differ. This was not very important in past but it is becoming fundamental now. Present globalized world requires unification of legal systems in this field at least in key matters.

Unification of the system is quite successful on European level thanks to European Union. This process in global view is not so successful but fundamental matters are unified thanks to multilateral international

treaties. The main treaties are Paris Convention for the Protection of Industrial Property or Patent Cooperation Treaty.

The dynamic development in computer science in last few years has brought huge complications in matters of protection of inventions in this very specific field. As for every written text it is also possible to protect source code of programs by copyright but this protection doesn't seem to be satisfactory. As a result of this, many endeavours for another way of protection started to occur, for example patent protection. Experts and wide public lead many discussions about patenting of software having many arguments for and against. It is not easy to decide whether to allow this kind of protection or not. All arguments have their sense and we will examine them later.

2 Objectives of thesis and methodology

Objective of this thesis is to introduce a reader into theoretical and practical issues of patent protection of software and consequently computer-implemented inventions. Problem of this patent protection is uncertainty and divergence of decisive practice.

Firstly, we will introduce ourselves into patent protection system generally. It will be very helpful to further examination of protection of software. We will briefly go through history of patent law, more detailed through patent law system of the United States of America, Europe and the Czech Republic. These systems will be compared with support of theoretical comparison (examination of legal norms) and practical comparison (examples of granted, refused patents and court decisions). We will compare different explanation of European legal norms related to software patents and examine different approaches in decisive procedure. We will also slightly open issues of copyright and relevant licensing of software products.

Finally, we will examine the Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions. This document was supposed to define clear rules for patent protection of computer-implemented inventions. We will examine adoption procedure of this document chronologically and disputes about this topic. That includes arguments of opponents and proponents of mentioned proposal for directive and software patents generally, evaluation of these arguments, statements of Parliament of the Czech Republic and Senate of the Czech Republic. We will also

introduce organizations fighting against software patents like Free software foundation and related GNU project.

3 Literature research

3.1 History of patent law

The patent law has its foundations in ancient era. The first attempts to protect new technical solutions started to occur in ancient Egypt and Babylon. It is proper to mention a provision published in 2nd century B.C. in republic of Sybaris: "encouragement was held out to all who should discover any new refinement in luxury, the profits arising from which were secured to the inventor by patent for the space of a year".[1]

Next important legal form was patent system in England in 13th and 14th century. This system granted patents to people who brought something new from abroad to England. This system was involved in English patent law until 1977.[2]

Next remarkable step in patent law historical development was passing the law for protection of inventions on March 19th 1474 in Venice. The inventors were guaranteed a legal protection of their invention for a period of 10 years by passing this law. That was very attractive for many qualified inventors from the whole Europe so they began to arrive in Venice. The protection last only for 10 years and then the invention could be used at large. That had a huge contribution to development of this small state. This legislative act was very progressive and didn't have analogy in whole Europe at the

[1] Wikipedia [online]. <http://en.wikipedia.org/wiki/History_of_patent_law> [cit. 12.8.2009]
[2] HORÁČEK, Roman, ČADA, Karel, HAJN, Petr. *Práva k průmyslovému vlastnictví*. 2005. pub. Praha : C.H. Beck, 2005. 448 p. ISBN 80-7179-879-7.

time. It included patent granting condition and also penalties for breaking this law. The statutory text was following:

"Any person in this city who makes any new and ingenious contrivance, not made heretofore in our dominion, shall, as soon as it is perfected so that it can be used and exercised, give notice of the same to our office of Provveditori de Comun [State Judicial Office], it being forbidden up to 10 years for any other person in any territory and place of ours to make a contrivance in the form and resemblance thereof, without the consent and license of the author.[3]

Henry IV in England granted first known patent (monopoly) in 1449 to University of Eton. Subject of this patent was way of production of coloured glass and the protection lasted for 12 years. During the 15th century, there were granted monopolies not only for inventions but also for production and trading which was not very wise decision. Granting of such monopolies led to retarding of development in whole society. Fortunately Jacob I came to realize this harmful influence and all patents except monopolies for inventions were prohibited. Parliament of England ratified the Statute of Monopolies in 1623. This act of law was a reaction on changes in society and strengthening impact of bourgeoisie. All monopolies granted before were invalidated. There is the first presence of technical term “patent” in this document. The word comes from Latin “litterae patentes“which means “an open document” because patent was a public unsealed announcement

[3] Wired [online].<http://www.wired.com/science/discoveries/news/2008/03/dayintech_0319> [cit. 12.8.2009]

addressed to liege people.[4] This legislative act became a template for further regulation in field of invention protection.

In 1791, the patent act was passed into law also in France. This act was passed thanks to French revolution and newly established National Assembly and provided protection for 5, 10 or 15 years. The protection was very expensive and patents were granted without examination.

The first patent act of United States was passed in 1790, which accrued from the US Constitution. Inventors and authors had exclusive right for their inventions and works for a limited time period. This act was revised in 1793 and included modern definition of patentable invention. Patentable invention had to be a new useful product, machine, art or formulization or a useful improvement of previous.

The previously mentioned are only the fundamental acts of law in field of industrial and intellectual property. We will go through the history of patent law systems of separate regions later.

[4] HORÁČEK, Roman, ČADA, Karel, HAJN, Petr. *Práva k průmyslovému vlastnictví*. 2005. pub. Praha : C.H. Beck, 2005. 448 p. ISBN 80-7179-879-7.

3.2 Consolidation of patent law

Many European countries had its own patent law systems at the half of the 19th century. These systems were very various, so the first attempts to consolidate invention protection systems started to occur. First and one of the most important documents was the Paris Convention for the Protection of Industrial Property. Representatives of Belgium, Brazil, France, Guatemala, Italy, Nederland, Portugal, Salvador, Serbia, Spain and Switzerland ratified this document in 1883. Another states acceded to the convention later; in 1884 Great Britain, 1887 USA, 1889 Japan, 1903 Germany, 1909 Austria-Hungary, 1919 Czechoslovakia followed by other states. There were 168 states involved in 2003. Each state had its own system of protection so it needed to be harmonized.

It was very important to find a balance between the right of inventor for protection of his invention and technical development. Experts held long discussions about this balance, which froze the progress in consolidation for a long time. They had many objections based on economic theories, which told that monopolising was retarding the development process. It is interesting that very similar discussions and arguments occur nowadays regarding the software patents. We will deal with this topic later in separate chapter.

A crucial turnover came on October 5th 1973 with ratification of Convention on the Grant of European Patents. This convention was valid since 1978. In 1975, the Convention for the European Patent for the common market was signed at the Luxembourg Conference on the Community Patent but this document never entered into force.

Very important milestone in global point of view came in 1970. Attorneys of many states from all over the world subscribed the Patent Cooperation Treaty (PCT). The treaty entered into force in 1978 and it ensures priority of inventor for patent protection in all countries of the treaty by arrangement of one international application. The Czech Republic has been member of this treaty since 1991. In 1967, the World Intellectual Property Organisation (WIPO) was established by the WIPO Convention. It had 153 member states in 2009. This organisation promotes the protection of intellectual property and develops and consolidates intellectual property law. The World Trade Organisation (WTO) is another institution that operates in field of intellectual property protection.

Innovation process in Europe fell behind the development in Japan and USA. In reaction to this, an intergovernmental conference of European states took place in Paris in 1999. Many wide-ranging changes in European patent system were accepted there, e.g. to decrease of costs of gaining the European patent, to reduce the average administrative procedure time for European patent application down to 3 years and to establish an integrated judicial system with unified process rules and common court of appeal.

Czech patent law was based on continuation development of patent protection system in Austria-Hungary after establishment of autonomous Czechoslovakia. There were 3 patent acts valid in this state because of present territorial arrangement. It was act number 30/1897 in territories of Bohemia and Moravia, Hungarian patent act from year 1895 in territories of Slovakia and Ruthenia and German patent act in Silesia. In 1919, the Patent Office and the Patent Court

were established in Prague. The Patent Court was an appeal court against Patent Office's decisions.

During the twenties and the thirties, the patent protection system passed through important development. This era was disrupted by the Second World War when the whole agenda moved in Berlin. Following of Soviet model and absence of free market economy after the war caused further damages of the system. The inventor's certificates were initiated and the authorities directly planned the number of invention applications. This era is characterised more by quantity rather than quality.[5] However, many very important inventions were invented during this difficult period.

The Czech Republic returned to market economy after the Velvet revolution in 1989 and the importance of intellectual and industrial property grew rapidly. Act N. 527/1990 Coll. initiated new modern norms into our legal system. This act was amended by Act N. 116/2000 Coll.

[5] HORÁČEK, Roman, ČADA, Karel, HAJN, Petr. *Práva k průmyslovému vlastnictví*. 2005. pub. Praha : C.H. Beck, 2005. 448 s. ISBN 80-7179-879-7.

3.3 Patenting generally

3.3.1 Granting a patent

A patent is a set of exclusive rights granted by a state (national government) to an inventor or their assignee for a limited period of time in exchange for a public disclosure of an invention.[6] Granting a patent comes within the provision of the Act N. 527/1990 Coll., as amended. This act doesn't define an invention. It just defines the conditions of granting a patent.

3.3.2 Subject of the protection

Granting a patent is possible for invention, which is new, is result of an inventive activity and is industrially applicable. An invention is considered as a technical solution; let us say an instruction for a technical solution, which is achieved with usage of technical means of production. There are four conditions for the grant of the patent: the subject matter of the patent, the novelty, inventive activity and industrial applicability. It is necessary to fulfill all the conditions in order to obtain the patent. Every condition is considered separately and the result has to testify which condition was fulfilled and which was not.

The first condition of patentability is the subject matter of the patent application. It has to be a patentable technical solution. On the other hand, it must not be one of the solutions that are excluded from patentability. We will deal with these exceptions further.

[6] Wikipedia [online]. <http://en.wikipedia.org/wiki/Patent> [cit. 17.8.2009].

The second condition is the novelty. A technical solution is new, if it is not the contemporary state of art. The contemporary state of art are covers solutions published before the date of invention application or before the date of priority of the applicant even in Czech Republic or abroad.

The other two conditions for patentability (inventive activity and industrial applicability) are meaningful and it is not necessary to describe them in details.

There are other formal conditions for the grant of the patent. It is necessary to fill the application including all prescribed matters at the Industrial Property Office of the Czech Republic, to pay the fee etc.

3.3.3 Exclusions from patentability

The term "patent" is not unambiguously defined. That is the reason why the exclusions from patentability were described within the patent act. These exceptions represent demonstrative but not absolute enumeration of cases of solutions, which are not patentable.

The first group excluded from patentability consists of *discoveries, scientific theories and mathematical methods*. These discoveries used to be patentable in Czech Republic but it was very unusual in the world so this kind of protection was cancelled. Such discovery does not have technical effect so it cannot be patented. Appreciation of the inventor is achieved with publishing of the discovery in professional journals. Such discovery could be patented in case of its practical application and reaching the technical effect, not the discovery as such. The discoverer and the author are usually different people. This

causes very complicated legal relations and frequently is also subject of litigations.

Aesthetics creations are the second group of exclusions. It is possible to protect the aesthetics creations by industrial design. The main reason is that there is mainly aesthetic effect, not technical. This means that the external design of products based on appearance, shape, outline, sketch, colour layout and combination is capable of legal protection by industrial design, not patent.

Schemes, rules and methods for performing mental acts, playing games or doing business and programs for computers are also group of solutions that do not have the technical effect or that are not solved with use of technical means. The following also belong to this group: organization measures, training plans, accounting rules, teaching aids and others.

Providing of information reduced to its content also cannot be patented. This group consists of sound records, content of books, classification systems and others. Providing of information as such has non-technical characteristics so the exclusion is justified. It is possible to grant a patent in case of connection with information carrier, reading device or device for sharing and storing of information, which has technical characteristics.

Next group of exclusions is represented by business methods, also in case of usage of technical means. These are inventions that have solely administrative, financial or accounting characteristics. If it is invention represented by device or computer system programmed for usage in this field, it is possible to provide patent protection. This

group of exclusion is very relevant to the problems of computer implemented inventions and we will deal with it further.

Methods for surgery or therapy treatment also cannot be considered as industrially applicable invention. Methods for treatment of human or animal body are included in this group, even if they have technical characteristics. This exclusion is based on political decision, which should make these treatment and diagnostic methods available to public. According to European Patent Organization (EPO), these methods are divided into two groups; therapeutic and non-therapeutic. Non-therapeutic methods could be patentable on certain conditions. Classification into these groups is very complicated and is frequently subject of litigations. This is very complicated and delicate topic, which does not have a big meaning for this thesis so we will not deal with it in detail.

There are also other exclusions from patentability in Act N. 527/1990 Coll. formulated as follows.

"Patents shall not be granted in respect of:

a) inventions the exploitation of which would be contrary to public order or morality; this fact may not be concluded merely because the exploitation of invention is prohibited by law;

b) plant or animal varieties or essentially biological processes for the production of plants or animals; this provision shall not apply to microbiological processes and the products thereof."[7]

[7] Act N. 527/1990 Coll.

3.4 Protection of computer implemented inventions

Problem of software patents has become very actual and disputable. In spite of that, this problem is still very indistinct. Importance of computers is growing continually and following this trend, the profits in this branch are growing as well. It is not surprising, that authors of computer programs want to protect their products. Present patent law could not be applied in this so specific branch and appropriate legal acts regarding this problem have not been approved yet.

Computer programs are excluded from patentability in Czech Republic and also in European Union. But there is a big problem with declaration of term "computer program" because this term has not been clearly declared yet. According to ČSN 369 001, software facility (software) is considered as programs and associated documentation supplementing technical facility of the computer (hardware), allowing its utilization.[8] There are many others interpretation of this term.

3.4.1 Patenting of trivialities

We already know the exclusion from patentability as mentioned in previous chapter. Regarding the computer implemented inventions; we have to distinguish whether it is triviality or complex invention. Trivialities (algorithms, mathematical procedures) are not patentable but the situation is more complicated in case of more complex invention. We have to consider all characteristics of such invention in decisive procedure. There are many attempts to approve patenting of

[8] HORÁČEK, Roman, ČADA, Karel, HAJN, Petr. *Práva k průmyslovému vlastnictví*. 2005. pub. Praha: C.H. Beck, 2005. 448 s. ISBN 80-7179-879-7.

algorithms as such but this has a lot of opponents with very strong arguments.

One of general conditions of patentability is inventive step. The inventor obtains patent protection as a reward for his inventive work and also to cover the costs of this work. It has simple justification; such invention could not be utilized, if the inventor did not put it in action. Why is it not the same for inventors of algorithms? Opponents of software patents say that solution by an algorithm is logical solution of given problem. If this solution was patented, it would cause retardation of development in this field and that is not the purpose of patent protection.

Allowing the software patent protection may result in number of litigations and big troubles for software developers. They would have to check all the software patents during the software development. If the algorithm was patented, they would not be able to use it even it was their own algorithm (self invented) coming from the logical solution of the problem. There are many others arguments for and against. We will deal with these arguments later in chapter about integration of European law for protection of software.

3.4.2 Copyright

Program as a whole is also not patentable just like particular algorithms. Program is considered as an author craft and could be protected by copyright. Theoretical statement of the reason of copyright protection for software is very similar as it is for technical drawing- such work is capable of copyright protection regardless of its

aesthetic qualities.[9] This kind of protection was used not because it is absolutely satisfying but it is properly functioning system that is able to be applied in field of software. Copyright in Europe comes within the provision of the Council Directive 91/250 of the European Economic Community (EEC) on the legal protection of computer programs approved on May 14, 1991. This directive is included also in Czech copyright act (Act No. 121/2000 on Copyright and Rights Related to Copyright and on Amendment to Certain Acts, as amended by Act No. 81/2005, Act No. 61/2006 and Act No. 216/2006).

Software was supposed to use so called "strong" copyright. It means that the protection covers not only the source code of the program but also its design and functions. This was not included into the Directive on legal protection of computer programs. The Directive declares: "Protection in accordance with this Directive shall apply to the expression in any form of a computer program. 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".[10] It is obvious that the copyright covers only the source code, not particular functions, design and principles. Even the Czech copyright act mentions the declaration of computer program: "A computer program shall also be considered a work if it is original in the sense that it is the author's own intellectual creation. A database which by the way of the selection or arrangement of its content is the author's own intellectual creation, and in which the individual parts are arranged in a systematic or methodical way and are individually

[9] HAVLÍK, Michal. Patentovatelnost počítačových programů ve Spojených státech a v Evropě. *Průmyslové vlastnictví*. 2003, roč. 13, č. 1-2/2003, s. 29-40.
[10] COUNCIL DIRECTIVE of 14 May 1991 on the legal protection of computer programs (91/250/EEC)

accessible by electronic or other means, is a collection of works. No other criteria shall be applied to determine their eligibility for that protection. The ideas and principles which underlie any element of a computer program, including those which underlie its interfaces, are not protected under this Act. ".[11] This definition proves integration of the Directive on the legal protection of computer programs into Czech legal system.

Copyright protection has many advantages in comparison to patent protection. It is cheaper, not time limited and the work is protected automatically without any time consuming bureaucratic procedure. This is declared in copyright act: "The copyright in a work shall arise at the moment when the work is expressed in any objectively perceivable form".[12] On the other hand, the copyright law enforcement could be very difficult. The law is proposed to protect against copying of the work, which may be applied for example in cases of piracy. This law is not broken, if a software developer just copy the idea of any solution and program it his own way. Copyright cannot be applied in this case because the source code was not copied. The example shows that this way of protection is insufficient, which brings us to the core of the problem. Software developers are trying to come up with another way of protection, for example patent protection or confidentiality with help of competition law.

[11] Act No. 121/2000 on Copyright and Rights Related to Copyright and on Amendment to Certain Acts, as amended by Act No. 81/2005, Act No. 61/2006 and Act No. 216/2006

[12] Act No. 121/2000 on Copyright and Rights Related to Copyright and on Amendment to Certain Acts, as amended by Act No. 81/2005, Act No. 61/2006 and Act No. 216/2006

3.4.3 Computer implemented inventions

Czech Republic approved the European Patent Convention (EPC), which exclude software from patentable inventions in Article 52, Paragraph 2. Paragraph 3 of this article specifies this exclusion as follows: "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."[13] This signifies that software is excluded from patentability only as such. Computer implemented invention are patentable under the same circumstances as any other invention. The solution (invention) shall be new, industrially applicable and containing inventive step.

Computer implemented inventions were subject-matter of Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions in 2002. A "computer-implemented invention" is stated to mean any invention implemented on a computer or similar apparatus, which is realised by a computer program.[14] Regarding the novelty, it is possible to patent a solution that has technical characteristics contributing to the contemporary state of art. If non-technical characteristics are also involved in the invention, the ratio of participation of technical components will be examined. The matter of technical and non-technical characteristics is crucial, regarding computer-implemented inventions.

Computer-implemented invention has a technical characteristic, if the computer program running on computer (hardware) has a technical

[13] Convention on the Grant of European Patents (European Patent Convention).
[14] Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the patentability of computer-implemented inventions, 2002/0047 (COD).

effect, which is outside the scope of normal physical interaction between software and hardware. This condition is ambiguous. The term “normal physical interaction” is not defined anywhere. That is the reason of granting tens of thousands software patent in the European Union.

3.5 Licensing

As it was mentioned before, computer programs are protectable by copyright. It is necessary to have a license to enable authorized usage of the software. The license ensures you the owner's right to the copy of the program. Different producers of the software have different conceptions of distribution of their product. This resulted into developing of many different types of licenses. Further you can find a brief introduction to software licensing.

The following picture shows the basic classification of software. An unambiguous classification is impossible. It is obvious that the groups of software have fuzzy border and blend together. There are not all types of software, only the basic ones. In general, the software may be divided into two groups: commercial and non-commercial software.

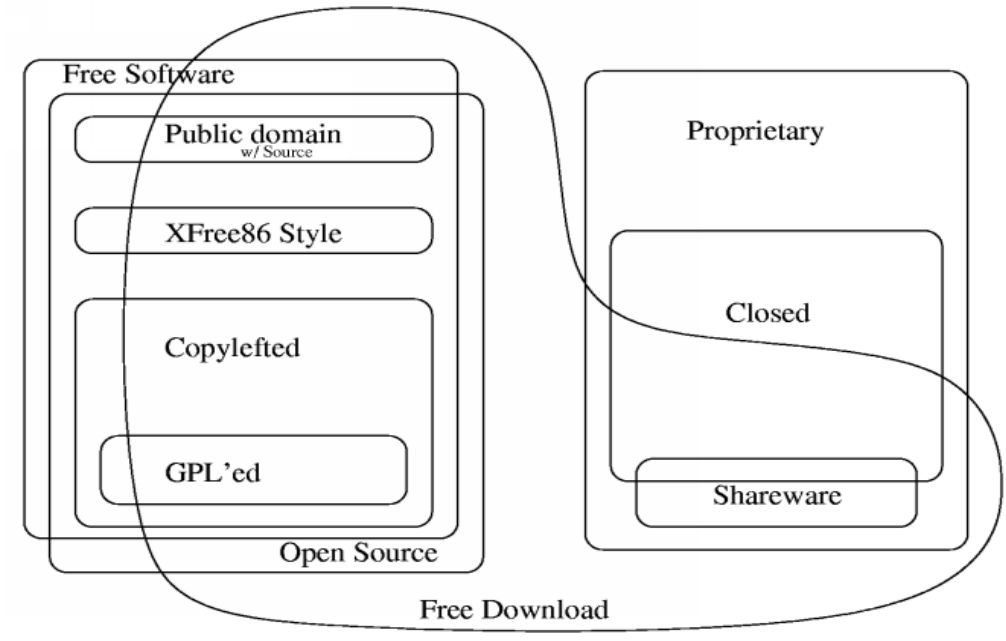

Fig. 1 - Classification of software[15]

[15] GNU [online]. <http://www.gnu.org/philosophy/category.png>

3.5.1 Non-commercial software

This group of software contains generally two subgroups. It is open source software and free software. Although there is no legal norm that would define these two groups, they are commonly known and widely used.

These two groups are very often considered to by synonyms but there are some differences between them even they are very closely connected to each other. Both of the groups have something common. Their source code is opened and available to anyone. This source code may be modified and further redistributed. There are first small differences in distribution of programs. While the Free software may be modified and distributed only for free (without any fee), the Open Source software license could contain some restriction for the benefit of original author. These restrictions could be related to unavailability of distribution of modified program or necessity of original author's approval of distribution. Several licenses belong to this group, for example Open Public License, Artistic License, Apple Public Source License and others. Free software may be considered as a subset of Open Source because it has further demands for the software.

Basic conditions of non-commercial software are:

freedom of using the software for any purpose,

freedom of examining software's functions and adjusting them to user's needs,

freedom of redistribution of copies and

freedom of improving the software and publishing of these improvements, so the whole community may benefit from it.

The most widely known license of Free Software is GNU General Public License (GNU GPL). This license confirms to all conditions of

Free Software and it is a base of GNU project. GNU project will be introduced further in chapter about Integration of European law for protection of software.

3.5.2 Commercial software

Commercial software usually does not have open source code (source code is not accessible for users or developers) and thus the source code cannot be modified and redistributed. This kind of software is often called proprietary software, although proprietary software is subset of commercial software. Usage of such software is conditioned by a license, typically EULA (End User License Agreement). Typical examples of commercial software are software products of Microsoft (Windows, Office), Adobe (Photoshop, Premiere etc.) and others. Sometimes, an open source programs can also belong to this group. Those are programs with public source code but the code must not be modified or redistributed. An example of such software is Mozilla Firefox.

There are versions of programs that are available for free, so called Shareware. These are free of charge versions of commercial programs, which have e.g. time limitation (trial versions), limited functionality (demo versions), cautions about program registration possibility (nagware), advertising messages (adware) and others. Full version of such software is available after registration or purchase of full version.

4 Protection of software products in the USA

Fundamental legal norm on patent protection in the USA may be found in §101 of the Title 35 of United States Code from the year 1952. This act does not contain a precise definition of patentable invention. The definition of patentable invention is following: "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 [35 USC § §1 et seq.].[16] This uncertainty allows patenting almost everything and the decision is on the court. US legal system is based on case law. There have been many court decisions related to software patents, which determined further development in this field. There were two basic aspects during the examination of patentability: whether the patent claim contains mathematical algorithm and in case it does, whether the invention is only an applied algorithm. These two conditions led to rejection of number of patent applications of programs as such. We will examine some of the court trial in detail.

4.1 Case law

4.1.1 Gottschalk v. Benson

This court trial dealt with computer invention and became a case law. The Supreme Court rejected a patent on computer program for conversion of binary code to decimal code with help of mathematical algorithm. The decision was following: "Respondents' method for

[16] Patent Act (35 U.S.C.).

converting numerical information from binary-coded decimal numbers into pure binary numbers, for use in programming conventional general-purpose digital computers is merely a series of mathematical calculations or mental steps and does not constitute a patentable process within the meaning of the Patent Act, 35 U.S.C. 100 (b). Pp. 64-73".[17] After that, many of software patent were rejected based on this decision and this practise last till the nineties.

4.1.2 Diamond v. Chakrabarty

This court trial does not directly correspond with software patents but it is fundamental for our topic. Many lawyers use the court decision in this case so it is important to mention it. It was not about software patens but it dealt with genetically modified micro-organisms. It could seem to be absolutely irrelevant but it is not. There is very important sentence in the court decision: "Under section 101, a person may have invented a machine or a manufacture, which may include anything under the sun that is made by man".[18] This decision contains also many other interesting statements in field of biotechnology but those are irrelevant for our purpose.

4.1.3 In re Alappat

The turnover in granting of software patents came during the early nineties. There was a breakthrough decision in case of In re Alappat, the U.S. Court of Appeals granted a patent on a computer system for creating a smooth waveform display in a digital oscilloscope (raster screen). Granting the patent was justified as follows: "A programmed digital computer becomes a special purpose digital computer to

[17] GOTTSCHALK v. BENSON, 409 U.S. 63 (1972)
[18] Diamond v. Chakrabarty, 447 U.S. 303 (1980)

perform the function specified by the software. The special purpose computer can be implemented likewise by digital components, or even by analog components. The majority casually agrees that a general purpose computer *in effect* becomes a special purpose computer once it is programmed to perform particular functions from program software."[19] In another words, the software is patentable in case that it turns a computer into a special purpose computer. Basically, it means that every program is patentable because the hardware as such can provide only limited functions. Every program turns the computer into a special purpose computer because the software gives some functions (purpose) to the computer. This is idea is very debatable and brings us to the core of software patents problem.

Let us set a situation. We have a piece of hardware (i.e. personal computer, screen, keyboard and mouse). There is no software except BIOS. It is obvious that this machine is just a "computer", not a "special purpose computer". Let us go further and install an operating system on it (Unix, Linux, Dos, Windows- it does not matter). What is this machine now? Is it still a "computer" or is it a "special purpose computer" now? That is the right question. Generally, a computer equipped with an operating system is considered as a "computer" but there is absolutely no reason for it. We can accept this and go further. Now we have a computer with operating system and then we install a program i.e. for word processing. Is this machine a "special purpose computer" now? Again, it is impossible to clearly decide. There are absolutely no rules and no borders between a "computer" and a "special purpose computer". Which program makes the "special

[19] In re Alappat, U.S. Court of Appeals Federal Circuit, July 29, 1994; 33 F.3d 1526, 31 USPQ2d 1545.

purpose" and which not? This has resulted into granting many and many patents in the USA.

4.1.4 Re Beauregard

Similar court decision was also made in case Re Beauregard in 1995. The applicant demanded patent protection for programmed computer but also for a floppy diskette with a computer program on it. The applicant claimed that such a floppy diskette is exactly the same thing as a special purpose computer system in case of In re Alappat. The Court of Appeals decided that "that computer programs embodied in a tangible medium, such as floppy diskettes, are patentable subject matter under *35 U.S.C. § 101*".[20] Many similar court decisions were made after this, which practically means that software is patentable in the USA, if it is useful.

[20] In re Beauregard, 53 F.3d 1583 (Fed. Cir. 1995).

4.2 Granted software patents

As it was mentioned before, many software patents have been granted in the USA. Here are some examples of them. Most of these software patents are at least debatable and for someone, they could be also unacceptable.

4.2.1 Information handling system and terminal apparatus therefore

Although the name of this patent sounds complicated, it is widely used and well known technology, hyperlink. This patent was granted in 1989 (US Patent 4,873,662).

4.2.2 Audio and video transmission and receiving system

US Patent 5132992 - Audio and video transmission and receiving system (granted in 1992) is another widely used technology nowadays. It is streaming of audio and video files. A system of distributing video and/or audio information employs digital signal processing to achieve high rates of data compression. The compressed and encoded audio and/or video information is sent over standard telephone, cable or satellite broadcast channels to a receiver specified by a subscriber of the service, preferably in less than real time, for later playback and optional recording on standard audio and/or video tape.[21]

4.2.3 Network sales system

This patented method (US Patent 5,715,314) allows the usage of virtual shopping cart. The system is composed at least from three computers interconnected via network. There is customer computer that demands some product, merchant computer receives customer's request and generates payment information. This payment information is sent to payment computer, which generates payment

[21] US Patent 5,132,992.

confirmation and sends it back to merchant computer. The product is then sent to the customer. The communication is based on cryptographic key to ensure security. Again, it is familiar method widely used everywhere throughout the Internet.

4.2.4 Method and system for placing a purchase order via a communications network

This patent was granted in 1999 to Amazon.com, Inc. and is closely connected to business methods. The order is placed by a purchaser at a client system and received by a server system. The server system receives purchaser information including identification of the purchaser, payment information, and shipment information from the client system. The server system then assigns a client identifier to the client system and associates the assigned client identifier with the received purchaser information. The server system sends to the client system the assigned client identifier and an HTML document identifying the item and including an order button. The client system receives and stores the assigned client identifier and receives and displays the HTML document. In response to the selection of the order button, the client system sends to the server system a request to purchase the identified item. The server system receives the request and combines the purchaser information associated with the client identifier of the client system to generate an order to purchase the item in accordance with the billing and shipment information whereby the purchaser effects the ordering of the product by selection of the order button.[22] In other words, the method is based on user registration, storing information about him and purchasing via this

[22] US Patent 5,960,411.

previously created account. The patent was granted in spite of that it was previously used and so it was the state of art and also it is obvious solution of the situation.

4.2.5 Method and system for internationalizing domain names

Method and system for internationalizing domain names (US Patent 6,182,148) was patented in 2001 and allows using of any language (national alphabet) for typing domain names.

This system transforms strings with non-English characters (any UNICODE character) into standard format (RFC1035 compliant format). Redirector information is then appended to the compliant string which identifies the delegation of authoritative root servers and/or domain name servers responsible for the domain name. The compliant domain string is then resolved by the authoritative domain name server just as any English domain name.[23]

4.2.6 Automatic business and financial transaction processing system

Automatic business and financial transaction processing system (US Patent 6,289,319) is a system for filing applications with an institution from a plurality of remote sites, and for automatically processing said applications in response to each applicant's credit rating obtained from a credit reporting service comprising a series of self-service terminals remotely linked via a telephone line to a first computer at the institution and to a second computer at the credit reporting service headquarters. Each remote terminal comprises a video screen and a video memory which holds image-and-sound-generating information arranged to simulate the aspect and speech of

[23] US Patent 6,182,148.

an application loan officer on the video screen. The simulated loan officer is used to acquire loan request data from the applicant by guiding him through an interactive sequence of inquiries and answers. The terminal is programmed to acquire credit rating data relating to the applicant from the credit rating service, and to use the data to compute the credit worthiness of the applicant and the amount which may be loaned to him. The approved loan information is then transmitted to the first computer for further processing by the financial institution.[24] The scheme of the system is illustrated in the following figure.

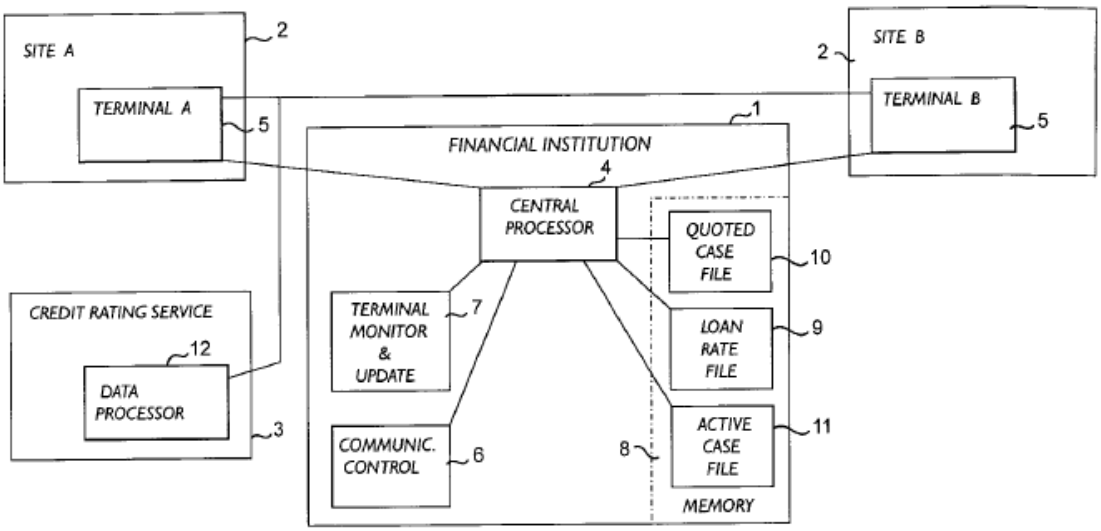

Fig. 2 - Scheme of the automatic business and financial transaction processing system[25]

This system is considered as fundamentals for e-commerce applications and thus there are many opponents of this patent, even in the USA.

[24] US Patent 6,289,319.
[25] US Patent 6,289,319.

4.2.7 Method, apparatus and system for directing access to content on a computer network

Method, apparatus and system for directing access to content on a computer network (US Patent 6,389,458) is very useful for online advertising but it is also useful for other purposes, especially for directing users to important messages etc. This method shows predefined content in user's web browser via pop-up window. The program controls network traffic between user's computer and server and further creates a modified set of rules for at least one of the browser functions. Upon query (or other interaction) by the browser prior to closing page, the traffic control program interacts with the browser software to modify or control one or more of the browser functions, such that the user computer is further directed to a predesignated site or page (and displays a predesignated frame) upon execution of a browser function, instead of accessing the site or page typically associated with the selected browser function.[26]

Patenting of software in the USA is crucial because most of software developing companies settle in this country. US software market is dominant in world comparison and so it has huge influence on the rest of the world. This influence is evident even in Europe as activities of special interest groups of big corporation.

From the previously mentioned granted software patents, it is obvious that software patents are closely connected to business methods. Granting of those patents is very controversial and is a subject of many debates. Recent strong expansion of internet technologies gives a really big importance to this topic. There are many disputes about

[26] US Patent 6,389,458.

these patents because it is not easy to distinguish what is state of art in this specific field of science. It is also not very easy to enforce the law regarding websites hosted outside the area of the USA. Practical experience speaks against patenting of software.

5 Protection of software products in Europe

Situation in Europe and also in the Czech Republic related to software patents is a little bit more complicated then in the USA. Although the computer programs are excluded from patentability according to EPC, decisive process shows that there is a possibility of software patenting. Decisive process in the field of software inventions according to EPC comes from decision in case of Vicom (T 208/84) from the year 1984 regarding method of image processing. The method consisted in scanning of an image and further modification using a mathematical algorithm. EPO boards of appeal decided that "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. A computer of known type set up to operate according to a new program cannot be considered as forming part of the state of the art. A claim directed to a technical process which process is carried out under the control of a program (whether by means of hardware or software), cannot be regarded as relating to a computer program as such.[27]

Many other cases similar to the previously mentioned Vicom case proves that patenting of software is allowed also in Europe. On the other hand, there are many cases that indicate opposite trend. Decisive practice in Europe regarding software patents is very

[27] Case T 0208/84, EPO boards of appeals decision.

complicated and uncertain. This situation is caused by uncertainty of jurisprudence and its different interpretation.

5.1 Current situation

The main reason of current ambiguousness is the formulation of exclusion of software from patentability. As it was mentioned before, computer programs are excluded from patentability only "as such". But what is "computer program as such"? Subject matter "as such" is usually defined as abstract work without any technical characteristic. Every computer program always has technical characteristics, even it is a "computer program as such". It means that it is not possible to examine only technical characteristics regarding the computer programs. We have to differentiate between technical characteristics and technical contribution.

5.1.1 Technical characteristics

It is necessary to define what technical characteristics are. An invention has technical characteristics:

- if an invention is discovered in a technical field,
- if an invention is a solution of technical problem,
- if an invention has a technical feature.

Non-technical features related to an invention are:

- abstract idea,
- sales, business, insurance,
- job candidates selection,
- investment allocation and management.

5.1.2 Technical contribution

Technical contribution is determined by the state of art. It is a difference between current state of art and patent claims as a whole. Process of technical contribution designation is following.

- Designation of current state of art.
- Designation of difference between current state of art and patent claims.
- Designation of objective technical problem. If this designation is not possible, it means that the inventive step is missing.
- Is the solution of problem an obvious solution coming from the nature of the problem?

Technical contribution consists in technical problem that is solved. It also consists in technical means that are used for the solution. Further, it consists in technical effect of the reached solution. Technical contribution is represented by features of the patent claims, which contains an inventive step. If the subject matter does not contain a technical contribution, it is excluded from patentability due to absence of novelty or inventive step.

5.1.3 Further technical effect

As it was mentioned before, a computer program always has a technical effect. Software invention may contain "further technical effect". It is an effect that is outside the scope of normal physical interaction between software and hardware. This further technical effect may be following:

- effect on physical data (not business data, text etc.),

- effect on computer functionality (i.e. extending of memory, speed etc.),
- implementation of a program or structure creation demands further technical deliberation,
- normal technical effect (i.e. behaviour of electric current) is not satisfactory.

Typical examples of further technical effect may be found i.e. at:

- break system control unit in a car,
- increase of speed of communication between cell phones,
- data storage in operation systems,
- ensuring of security during data transfer (coding) and others.

Typical examples of absence of further technical effect may be found i.e. at:

- aesthetic effect of music or video,
- rules for auctions, sales or ordering of assets,
- calculation of retirement funds and others.

5.2 Decisive procedure

The majority of national level jurisprudence so far in the field of computer-implemented inventions has been developed in the courts of only two Member States: Germany and the U.K. Interestingly, even these have decided differently on important questions touching on the requirements for obtaining a patent (definition of patentable matter). As to the specific differences, which exist between the case law of the U.K. courts and that of the EPO Board of Appeal, these concern the manner in which the law is interpreted in relation to excluded matter in general. Under U.K. jurisprudence (in contrast to that of the EPO), a computer program related invention that amounts to, for example, a method for doing business or a mental act, is considered unpatentable even if a technical contribution (in terms defined in this Directive) can be found. On the other hand, it had been thought that German jurisprudence did not exclude the possibility that business methods having a technical aspect could be patentable even if the only contribution that the invention makes is non-technical. Such an interpretation would open the door to significant extension of patentability into this field. [28]

Differences between these two approaches cause uncertainty that has very big influence on competition within the internal market because a computer-implemented may be granted in one member state and rejected in another one. That could also lead to relocation of software developing companies or influencing of companies entering the European market.

[28] Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the patentability of computer-implemented inventions, 2002/0047 (COD).

Decisive procedure is illustrated in the following figure.

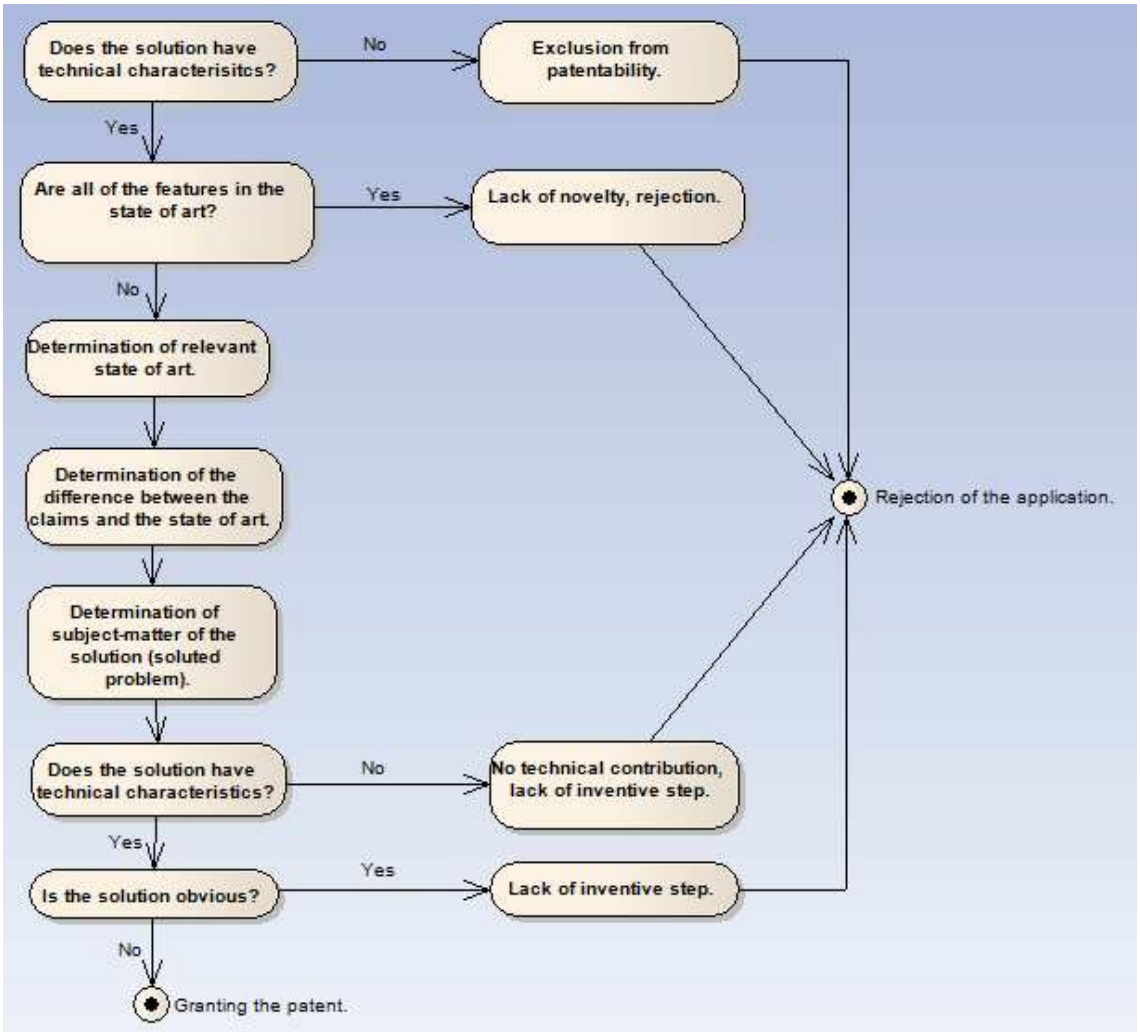

Fig. 3 - Examination of software inventions.

5.3 Examples of European patents

5.3.1 Apparatus for control of one computer system by another computer system

European patent EP0193933- Apparatus for control of one computer system by another computer system was granted in 1995 after 10 years of examination. Two computer systems are connected together via network. The first computer system constructs a call protocol containing routine to be called in the second computer. This protocol is sent through the network to the second computer that performs the routine. Return protocol is then sent back to the first computer. The variables of procedures are stored in the protocol.

This patented method covers most of remote call systems with variables stored in the protocol. Original claims also contained other remote call systems but these claims were reduced during the examination procedure.

5.3.2 Computer system and method for performing multiple tasks

European patent EP0644483- Computer system and method for performing multiple tasks was granted in 1995. A separate interface is inserted between various applications and the main terminal, so that the application and the user can communicate independently with this interface. This makes it possible to let processes run in the background. The computer system comprises a host, a communication subsystem, a plurality of application programs, virtual terminal manager, virtual terminals, an application programming interface, and a cross application program as well as a real terminal. The logical connections of the application programs to their associated virtual

terminals are independent from the logical connections of the respective virtual terminals to the real terminal.[29]

5.3.3 Graphical configuration of data processing networks

A computer system and method for configuring communication and database networks in a user-friendly graphical environment and automatically generating related configuration files. In a preferred practice, the user defines multiple network workstation nodes using icons, specifies the resources associated with each icon, and defines connections between icons using specified protocol constraints, and the computer validates the network so defined, and generates the associated configuration files for the respective workstation nodes. The workstations have requester/server capability for communication and database network operation. The configuration files for the respective workstations in the network are preferably distributed and installed using the network resources. The network topology information so created can be stored, retrieved and modified as necessary to suit the needs of an evolving network.[30] This patent covers almost all user-friendly network administration tools

5.3.4 A method of digitally processing images (VICOM)

A method of digitally processing images in the form of a two-dimensional data array having elements arranged in rows and columns in which an operator matrix of a size substantially smaller than the size of the data array is convolved with the data array, including sequentially scanning the elements of the data array with the operator matrix, characterized in that the method includes

[29] European Patent EP0644483.
[30] European Patent EP0490624.

repeated cycles of sequentially scanning the entire data array with a small generating kernel operator matrix to generate a convolved array and then replacing the data array as a new data array.[31]

5.3.5 Controlling pension benefit system

This patent application was refused by EPO boards of appeal. A feature of a method, which concerns the use of technical means for a purely non-technical purpose and/or for processing purely non-technical information, does not necessarily confer a technical character to such a method.[32]

[31] Case T 0208/84, EPO boards of appeals decision.
[32] Case T 0931/95, EPO boards of appeals decision.

6 Integration of European law for protection of software

6.1 Proposal for a Directive on the patentability of computer-implemented inventions

Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions (2002/0047/COD) came to the existence at the beginning of 21st century due to necessity of harmonization of decisive procedures of member states within the European Union. The proposal requests Member States to introduce "the patentability of computer-implemented inventions" into national legislation, either through statute law or case law, and thus oblige patent offices in all the Member States to grant patents for such inventions, as the EPO does, despite the exclusion allowed in the EPC, in order to "unify" the jurisprudence of the national courts.

Adoption of this document began in 2002 and last until year 2005.

Fig. 4 - Adoption of Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions- timeline.[33]

The adoption procedure consists of several steps, which are marked in the schedule and described chronologically as follows.

[33] EurLex[online]. <http://ec.europa.eu/prelex/detail_dossier_real.cfm?CL=en&DosId=172020>

6.1.1 Adoption by Commission

European Commission adopted the proposal on 20 February. With its proposal, the Commission aims to harmonise national patent laws with respect to the patentability of computer-implemented inventions and to make the conditions of patentability more transparent. On the basis of existing practice and to enable the authors of new (computer-implemented) inventions to profit from their creativity, the Commission introduces the concept of the 'technical contribution' as an essential criterion for the patentability of an invention. By codifying the requirement for a technical contribution, the directive should ensure that patents are not granted for creations in which the innovative element is not technical (i.e. makes no 'technical contribution'). Inventions requiring a computer program for their implementation may be patented provided that they make a 'technical contribution'.[34]

6.1.2 Economic and Social Committee opinion

Opinion of the Economic and Social Committee (EESC/2002/1031) on the Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions was delivered on 19 September 2002. The Economic and Social Committee did not agree with the proposal and suggested revision of the proposal. The EESC missed clear definition of computer program “as such” and “computer program producing technical result”. The EESC also stated that any innovation made in this way is automatically considered "to

[34] Bulletin EU 1/2-2002, 1.3.71.

belong to a field of technology", even if the result is derived entirely from software operations.[35]

6.1.3 Discussions at Council

The Council noted a broad degree of agreement on this text on 14 November 2002, whilst taking note of a reservation by the Commission and of scrutiny reservations by certain delegations. The Council agreed that work would be taken forward on the basis of this text once the Parliament has given its opinion in first reading.[36]

6.1.4 European Parliament 1st reading

The European Parliament endorsed the proposal with several amendments on 24 September 2003. The Commission partially agreed with amendments regarding technical requirements of patentability and interoperability of computer programs.

6.1.5 Political agreement Common position of the Council

The Council agreed Common position on 18 May 2004. Under the terms of the common position, the proposal contains provisions, in accordance with the practice developed within the European Patent Organisation, for patentability of computer-implemented inventions stipulating, *inter alia*, that a computer program as such cannot constitute a patentable invention. For a computer-implemented invention to be patentable it must be susceptible of industrial application and involve an inventive step.[37]

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[35] Opinion of the Economic and Social Committee on the Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions, (EESC/2002/1031).
[36] 2462nd Council meeting - Competitiveness (Internal Market, Industry, Research) - Brussels, 14 November 2002 (PRES/2002/344).
[37] Bulletin EU 5-2004, 1.3.27.

6.1.6 Adoption of Common position

The Council formally adopted the Common position on 7 March 2005. The Commission with that supported the Council's Common position on 9 March 2005.

6.1.7 European Parliament 2nd reading

The European Parliament received the Common position on 14 April 2005. The 2nd reading in the European Parliament was on 6 July 2005. The Common position of the Council was rejected with large majority of members. 648 members were for rejection of the Common position, 14 against and 18 absent.[38] This resulted into interruption of legislative procedure related to the Proposal for Directive on patentability of computer-implemented inventions and also of harmonization of European decisive procedure.

6.2 Statement of the Czech Republic

Parliament of the Czech Republic agreed with the amended proposal because it was in accordance to Czech legal norms, thus it would not change recent decisive process of the Czech Industrial Property Office. Senate of the Czech Republic also agreed with the amended proposal and suggested carriage of the motion to the government and Czech representatives in the European Parliament.

6.3 Disputes about software patents

Disputes about software patents have their foundations in the USA. Organisations fighting against software patents started to come up in consequence of rising number of granted software patents.

[38] Official Journal 157 E , 06/07/2006 P. 0265 – 0265.

6.3.1 GNU Project

GNU Project is best-known opponent of software patents. This project was founded in 1984 by an American programmer Richard Stallman. The main aim of this project was development of operating system with free license. Consequently, Richard Stallman established an organisation called Free Software Foundation. This organisation was founded as a support for development, modifications and distribution of free software. The first GNU operating system was finished in 1992, when the core of GNU/Linux operating system was created. Nowadays, GNU operating systems use also other cores i.e. Solaris or Hurd. Linux-based operating systems are still being developed thanks to open source code and GNU GPL license. Many modifications of this system are now available.

GNU project has many proponents, especially program writers, who are fighting against software patents not only in the USA but recently also in Europe. These proponents of GNU project stand out against previously mentioned Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions.

6.3.2 Pros and cons

The Proposal for directive mentioned before evokes many contradictory opinions. Opponents of the directive are warning against:

accession to American model,

retardation of software development,

consolidation of dominant position of big corporations,

handicap of small developing companies.

Their arguments are based on experience from the USA.

Most of big software developing companies settles in the USA. These companies are in possession of several software patents, which they make available to each other for free. Small companies are disadvantaged because they do not have any software patents available as an offset. European companies would be in the same situation because they do not dispose of any software patents. Research of granted patents is also very expensive and time consuming. It would advantage the big companies again. This would result into destabilization and distortion of competitive environment on the European market. However, all these threats are based on the fact that software will be patentable "as such".

Proponents of the directive have opposite opinion. Approval of the directive would not be accession to American model. On the contrary, it would result into unification of the system of patent granting on level of particular member states. In their opinion, retardation of development is not a threat because patent protection is motivating to innovation, which would accelerate the development.

7 Conclusion

Patent protection of inventions gives an exclusive right of usage of this invention to the author. There are certain demands on an invention to be able to obtain a patent protection. The invention may exist (subject matter), it may be contribution to the state of art (novelty), it may be a result of an inventive activity (inventive step) and it may also be industrially applicable (industrial applicability). All of these four conditions have to be fullfilled. If not, the patent cannot be granted.

Computer programs are excluded from patentability according to Czech legal norms. However, computer programs are excluded from patentability only "as such", which allows patenting of computer-implemented inventions. These computer-implemented inventions are patentable under the same conditions as other inventions. Computer programs "as such" may be protected by copyright.

Computer programs "as such" are also excluded from patentability according to the European Patent Convention (EPC). It is not allowed to patent trivialities or algorithms. However, it is possible to provide patent protection, if a program is creating a technical effect. Claims of the European Patent Convention are ambiguous and very uncertain. This resulted into different explanations of the EPC. Although patent protection of software is not allowed, tens of thousands software patents were granted by the European Patent Organisation (EPO). Some of these cases have been described in chapter 5.3 in detail.

Situation in the USA is a little bit different. There is no clearly defined exclusion of software from patentability. Decisive practice is

comes from the case law. There were several court decisions allowing software patents, which are bases of decisive practice in recent decades. This resulted into granting many software patents. Generally, software patents are allowed in the USA. The most important court decisions were described in chapter 4.2.

In 2002, the Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions (2002/0047/COD) came to existence. This document was supposed to abolish ambiguousness and uncertainty in explanation of European Patent Convention and unify decisive practice of member states of the European Union. In many opinions, the proposal of directive would lead to granting of software patents in Europe after the fashion of the USA. That is why many disputes occurred during its legislative procedure. This procedure took 3 years until year 2005. During this period, many amendments and notes were added to the original document. This amended proposal was rejected with large majority of members of European Parliament in the 2nd reading on 6 July 2005. The whole legislative procedure was described in more detail in chapter 6.1.

Problem of software patents is very debatable. Software patents have many proponents but also many opponents, thus there have been many disputes about this topic. These disputes are described in chapter 6.3. Opponents of the directive are warning against accession to American model, retardation of software development, consolidation of dominant position of big corporations, handicap of small developing companies. On the other hand, proponents of the proposal claim that patent protection is motivating to innovation, which would accelerate

the development. Field of computer programs development is so specific and differs from the other fields of inventive activities. That speaks for the opinion of opponents of the Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions.

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25) Act No. 121/2000 on Copyright and Rights Related to Copyright and on Amendment to Certain Acts, as amended by Act No. 81/2005, Act No. 61/2006 and Act No. 216/2006.

26) Convention on the Grant of European Patents (European Patent Convention).

27) Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the patentability of computer-implemented inventions, 2002/0047 (COD).

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32) In re Beauregard, 53 F.3d 1583 (Fed. Cir. 1995).

33) US Patent 5,132,992.

34) US Patent 5,960,411.

35) US Patent 6,182,148.

36) US Patent 6,289,319.

37) US Patent 6,389,458.

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40) European Patent EP0490624.

41) Case T 0208/84, EPO boards of appeals decision.

42) Case T 0931/95, EPO boards of appeals decision.

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44) Opinion of the Economic and Social Committee on the Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions, (EESC/2002/1031).

45) 2462nd Council meeting - Competitiveness (Internal Market, Industry, Research) - Brussels, 14 November 2002 (PRES/2002/344).

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8.1 List of figures

9 Supplements

9.1 Replies to the Consultation Paper on the Patentability of Computer-Implemented Inventions

9.1.1 Widenius, Michael[39]

From: Michael Widenius [monty@mysql.com]

Sent: mardi 5 décembre 2000 4:14

To: MARKT SOFTPAT

Subject: Patents

Hi!

I write this mail based on your requested on the following page:

http://europa.eu.int/comm/internal_market/en/intprop/indprop/softpaten.htm

You are free to use any of the following comments any way you want (including using my name).

My name is Michael Widenius and I am moderator for MySQL, one of the biggest Open Source applications from Europe (the biggest one is Linux). I have been developing software for the last 20 years and I have written about 95 % of the MySQL server.

We have about 2,000,000 installations of MySQL worldwide (of which half is in USA). We at MySQL AB take a very strong stand against patents as the US patent system already has shown that patents on computer programs doesn't work. Software patents prevent competition and make life harder for small and medium size companies.

Assuming Europe takes up patents in a similar way as the USA, you will soon run into the following problems:

- The patent offices are not capable to see if a patent is truly a new invention or something that is trivial for someone that is in the particular field.

[39] Reply of Michael Widenius [online] <http://ec.europa.eu/internal_market/indprop/docs/comp/replies/widenius_en.pdf> [cit. 12.2.2010].

- A patent doesn't protect a product, as it's impossible to write any big complicated piece of code (experts estimates about 10,000 lines) without conflicting with a patent. Even if you have a patent, someone else can very easily ensure that you will never be able to deliver the product to the end costumer.

- For small software companies it's impossible to guard that they are not accidently using a patent; If someone sues them for using a patent, they can't afford to defend themself but the only option is to go out of business. A big company can using patents force new companies out of business, just by accusing them of using a patent.

- Programs will be much more expensive for the end customer as it will be much more expensive to produce software. A current estimate is that it will be at least 30 % more expensive to guard against other patents.

- The notion that you can defend yourself by having patents against someone else doesn't work if the other part doesn't need your patents. It's also doesn't work against companies that doesn't have a product, but only takes obvious patents to force other people to pay.

- All software programs will have to work and look differently (because look-and-feel patents); This means that if a big company can ensure that their customers can't easily move between products as they have to re-train themself if they want to do that.

- Even if you get a patent for a software program, it's almost impossible to use it as you in most cases can't know if someone else is using it; The only programs you can check for patents are Open Source programs, but this is only useful for big companies that wants to kill off Open Source solutions.

- Open source programs like Linux and MySQL, which makes lives easier for ten of millions of people can much easier be stopped by using patents; Open source programs are in a very bad position because anyone can check what algorithms are used; Even if all code are self-invented, it's very likely that you are depending on some known axioms for which someone has been granted a patent.

- Very few companies has got rich on patents; All big widespread innovation in the software market (like the Internet, word processors, web browsers, spreadsheets) have been made possible just because the idea wasn't patented.

- It's very likely that if we change so that one can get software patents in Europe that USA will force Europe to accept all the software patents that the USA Patent Office has accepted in the USA.

If this happens, we may in Europe be forced to pay for patent infringements if we want to:

- Sell something over the internet.

- Use hyperlinks on our web pages

- Have a database as a backend for a web page

Other comments:

The time until a patent expires is way too long; If the idea of a patent is only to give the company a competitive edge, then a patent for 2-3 years would be more than enough for this (in the software business). Almost all well known software developers agree that patents are harmful and that copyright offer enough protection to satisfy their needs. (More about this at: http://www.freepatents.org/against/)

The major argument I have heard for software patents is that if you plan to merge your company with a big USA based company and they have a lot of patents, and you don't, then your company will be regarded as having less value. The easy solution for this is to just apply for the patent in USA. You can also ensure your position in USA by applying for your patents there; Europe doesn't need to allow software patents because of this!

If we here in Europe can work without software patents, we will have a big competitive edge against business in USA. While they spend their money on keeping their attorneys happy, we can instead spend our money on developing better software. Software patents are only good for big companies that have a lot of money and can defend themselves. For the major part of the industry software patents are however very harmful.

It's ridiculous that someone can get a patent for something that you can easily come up with yourself, independent of the patent. If we are going to allow patents on computer programs, then we should also allow this for ideas in literature, like murdering someone with a drumstick. Most computer programmers agrees that writing a program is very similar to writing a book and if one can get a patent for a program, one should also be allowed to get this for a book, an email or a way to express oneself in speech!

As the above is very hard to do in practice, I propose that there should be no patents for any software ideas, user interfaces, standards or interoperability. The current copyright laws for the actual software code are good enough!

Regards,

Michael "Monty" Widenius

MySQL moderator

9.1.2 Geer, Benjamin[40]

This is a brief response to the consultation paper, `The Patentability Of Computer-Implemented Inventions'.

As a software developer, I find the idea of software patents abhorrent, for several reasons.

[40] Reply of Benjamin Geer [online]
< http://ec.europa.eu/internal_market/indprop/docs/comp/replies/geer_en.pdf>
[cit. 12.2.2010]

The global information infrastructure depends on the use of open standards. Patents might have made sense in the days when products from one vendor did not interact with products from another vendor. However, computer programs are increasingly interdependent. For example, TCP/IP, the network protocol on which the Internet is based, is in the public domain. If its authors had patented it, we can be sure that the Internet would not exist today. Similarly, the growth of electronic commerce has been made possible by the existence of open standards for secure electronic communication. If Netscape had chosen to charge royalties for the use of its patented SSL technology, it is doubtful that it would have attained its present widespread use in electronic commerce.

As software patents proliferate, it becomes increasingly difficult, if not impossible, for most software companies to determine whether any given piece of code that they are developing infringes on one of the multitude of software patents in existence. The legal risks of writing any computer program could well become prohibitive. This factor alone could cause innovation in the software industry to grind to a halt.

Software patents cause the industry to waste time and effort. In some cases, when a patent covers an algorithm which everyone desperately needs, the industry as a whole works around the problem by creating non-patented alternatives. This is what happened to the encryption algorithm, RSA. (As a result, RSA has not renewed its patent, which expired this year.) This process wastes time and money. Moreover, the result is that the patent does not benefit its owner.

However, it is possible that a patent may be issued for an algorithm that is universally needed, and for which no alternative can be devised. In this case, we can expect several harmful effects. Large companies, which can afford to pay the license fees, will flourish at the expense of smaller ones. Fewer applications will be developed using the algorithm in question, and they will cost more; it will therefore provide less benefit to society. Not only the software industry, but the world as a whole, will be held to ransom. That is precisely the sort of monopoly power that no company should have.

It is folly to think that software patents could be beneficial to the industry or to society at large. They can only result in hopeless legal quagmires, and in the stagnation of the software industry.

Yours sincerely,

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9.1.3 Business Software Alliance (BSA)[41]

December 2000

BSA Comments to the European Commission Consultation Paper on the Patentability of Computer-Implemented Inventions

The software industry depends on intellectual property laws for the indispensable legal protections and incentives to innovate and invest. The intellectual property rights most important to software innovation include copyrights, patents and trademarks. A sound and predictable legal framework is required for the continued growth of the industry as a key enabler of, and to ensure its continued contribution to, the Information Society. In recent years, patent protection has grown in importance as advances in technology allow many kinds of inventions to be implemented either in software or in hardware (including an integrated circuit).

BSA welcomes the European Commission's Consultation Paper and **supports harmonisation by the European Union on the basis of current European Patent Office practice** regarding computer-implemented inventions. BSA believes the approach articulated in the Consultation Paper will provide for continued innovation, investment and competition that have long been the hallmarks of software development.

1. BSA welcomes European Union action to clarify and harmonise patent law affecting computer-implemented inventions.

There currently is a lack of harmonisation within the European Union regarding the patentability of computer-implemented inventions. The European Patent Office and some EU Member State authorities are applying different standards, and the criteria for patent protection of software-related and computer-implemented inventions are frequently misunderstood.

BSA supports the European Commission's efforts to achieve a **clarification and harmonisation** of the law on patents for computer-related inventions. Such efforts can further the important goals of **predictability and consistency** in the internal market.

2. Current EPO practice, as articulated by the Commission's Consultation Paper, is a suitable benchmark for harmonisation by the European Union.

BSA does not seek any change in the standards for patentability of computer-related inventions in Europe. We believe the **current practice** of the European Patent Office (EPO) and its Technical Board of Appeals, as explained by the Consultation Paper, provides a **suitable benchmark** for EU harmonization efforts.

[41] Reply of Business Software Alliance (BSA) [online]
< http://ec.europa.eu/internal_market/indprop/docs/comp/replies/bsa_en.pdf>
[cit. 12.2.2010]

This includes continued application of the **technical effect** and **technical contribution** criteria for patentability, as reflected in current EPO practice and as explained in the Consultation Paper. These criteria are useful and appropriate in distinguishing patentable and non-patentable inventions, in compliance with the TRIPS Agreement and the European Patent Convention (as recently amended), and without unwarranted discrimination between different fields of technology.

3. BSA calls for the stringent application of the prerequisites for patentability for computer-implemented inventions.

BSA supports a stringent application of patent law standards to **ensure that patents granted** for computer-implemented inventions have the **appropriate scope**. Investment in the patent system, including careful training of patent law examiners and improved databases for computer-related inventions, can yield considerable benefits and should be a high priority.

4. BSA can support the Commission's explanation of the complementary, but fundamentally different, nature of copyright and patent protection.

BSA joins the European Commission in calling for **no "double banking"** of intellectual property protection for computer programs:

- Article 1 of the Software Directive 91/250 extends **copyright protection** to the **expression** of a computer program in any form, including object and source code. At the same time, Article 1 also makes clear that copyright protection does **not** extend to **ideas and principles** which underlie any element of a computer program.

- Patent protection covers inventions. **Patent protection** for a computer-related **inventions** shall **not** extend to the **expression**, in source code or object code or any other form, of a computer program based on such inventions.

BSA welcomes this explanation in the Consultation Paper regarding the complementary nature of copyright for software and patent protection for computer-related inventions.

In any legislation to be proposed by the European Commission on the patentability of computer-implemented inventions, BSA would welcome a further express clarification that patent rules are **without prejudice to copyright** rules for computer programs under the Software Directive 91/250.

5. Innovation and competition in the software industry is the goal.

Innovation and competition are the motors that have driven rapid advances in computer program development, and BSA shares the European Commission's goal of **fostering innovation, investment and competition, regardless of the development or business model** under which it takes place.

BSA members work under a variety of different development and business models. These include writing code, joining in the work of standards bodies around the world, and participating in a variety of open source initiatives. BSA believes the approach articulated by the Consultation Paper, setting forth **clear and harmonized**

standards based on **sound criteria** for distinguishing patentable and non-patentable inventions, provides a strong legal framework for further investment, innovation and competition in software, without favoring any particular development or business model that an individual programmer or software company chooses to pursue.

9.1.4 IT Services Association (EISA)[42]

EISA (European IT Services Association) Response to the European Commission Consultation on the Patentability of Software and Business Processes

Introduction

The European IT Services Association is the European Federation representing the computing services and software sector. We have 16 member associations who in turn represent over 2500 companies accounting for around € 100 Billion in turnover.

In developing this response EISA has promoted the consultation widely, has held discussions with members and received written responses with their national viewpoints. This document is a collation of that input and we put forward the following recommendations:

Remove the current exclusion of software from article 52(2) of the European Patents Convention, and support the granting of patent protection for software, provided the software concerned is a new and non-obvious idea which produces a technical effect.

Patenting is an effective way to protect an invention within a given technical field and help companies to develop and add value to the invention. European companies sometimes invest time and resources by first trying to get a US-patent, hoping that the granting of a US-patent will be an appropriate and better basis afterwards for getting an European patent. This impractical approach being adopted by some companies as well as the benefits afforded by software patenting provides the basis for the above clarification of the law.

Introduce a firm and strict European patentability system which should be inexpensive and simple enough to allow access to SME's. To support this we believe that significant additional resources need to be allocated to patent offices to recruit and train examiners with appropriate skills, and to support an extensive industry education programme.

As part of this programme the advantages and possibilities of patent law need to be effectively communicated to the industry as although a number of software patents have already been granted, many companies are not aware of the possibility.

Monitor closely the interpretations of the EPC at the national level.

There has been much disparity between the member states interpretation of the EPC to date and therefore the types of software which have been granted patents. While the introduction of an education programme as outlined above will help, it is important that national patent offices are monitored to ensure harmonization.

[42] Reply of European IT Services Association (EISA) [online]
< http://ec.europa.eu/internal_market/indprop/docs/comp/replies/eisa_en.pdf >
[cit. 12.2.2010]

Dvelop EU policy aimed at diminishing anti-competitive effects linked to patentability.

Much of the argument against software patents centers around the anti-competitive monopoly granted to the holder. Patents granted should, where possible, be closely monitored especially the behaviour of those awarded patents to avoid any "bad" patent processes arising. This monitoring can lead to the development of a strong EU policy to combat the problem.

We offer qualified support for granting of patents for business methods that have, as their basis, software with a technical effect.

We believe extreme care needs to be exercised in relation to such applications. It is very important that patents for business methods are granted only for non-obvious ideas

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