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Software Patents: Legal and Cultural Basics and Critical Review of the Current Situation

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1 Introduction

In the following paper the authors will deal with the subjects of software patents, software patentability and related subject-matters.

First of all we will define the term “intellectual property“ and measures of protecting it, known as trademarks, copyrights and patents. Afterwords a historical overview of patent systems and copyrights will be given as well. Followed by a review of the current situation concerning software patents in different countries and regions of our world.

Subsequently the authors will be responsive to different cultural backgrounds that influence the treatment of intellectual property. Finally the pros and cons of software patents will be shown.

2 Intellectual Property

The term “intellectual property“ refers to a part of law that deals with the establishment of property protection over intangible things such as ideas, inventions, signs, and information. It is a general area of law that includes copyright, patents, designs, and trademarks, as well as a host of related rights. Computer programs are also a part of protectable goods. As intellectual property rights are different in the most regions or countries of the world there is also a difference in the range of protection given to computer programs. The types of protection given within the IP-law are now explained shortly:

2.1 Trademark

A Trademark protects words, names, symbols, sounds, or colors that distinguish goods and services. Trademarks need to be registered and guarente protection as long as they are being used in business. A Trademark makes it possible to protect a computer programs name or symbol but not the program itself.

2.2 Copyright

A Copyright is a form of protection of “original work of authorship“, both published and unpublished. The copyright protects the form of expression of ideas but not the subject matter of writing. It includes literary, musical and artistic works. As a part of literary work, software is also protected by the copyright.

2.3 Patent

A patent gives the inventor the right to exclude all others from making, using, importing, selling or offering to sell his or hers invention in a certain region of the world and for a certain period of time. It is a limited monopoly which is granted for the disclosure of technical information. There is a big debate of whether computer programs are patentable or not. As software allows a person to capture a creative thought and then perform it on a computer, the end-result

is may be completely intangible. In this case software is very close to pure thoughts, witch has long been regarded as something that no one can own an exclusive right. Each region and country of the world has its own idea of the possibility of patenting software.

3 Historical Overview

Even though the history of computers and software has its beginning in the twentieth century, the history of intellectual property starts quiet earlier. To understand the modern day intellectual property systems we have to take a look at their roots. This chapter gives a general overview of patent and copyright history followed by a more detailed description for each country or region of the world within the next chapter.

3.1 Patents

Although the Greek historian Phylarchos tells us about patents given for an article of cuisine, to protect a receipt for being copied, in the third century B.C., the important history of patents starts in the middle ages. In the tenth century England had due to its comparative isolation a very low commercial and industrial standard. To get a higher standard of living the crown granted the title of “thane“ to anyone who made three trading voyages abroad. To get these title of “thane“ many adventurers travelled a brought and bring back goods and technology England would otherwise not have had [cf. Stob00, 3 et seq.].

By and by large trading guilds rose to power, formed voluntary by merchants of a town. Granting the title of “thane“ may have worked in the tenth century, but in the more sophisticated fourteenths century a better inventive was needed. As technology and commerce still lagged behind the rest of Europe the crown began to grant monopolies to the first individuals or guilds importing new products to England. These monopolies were also called “letter patents“and by the time they were also granted for processes and methods of manufacture. The patent grantee did not need to be the actual inventor, but only the first importer [cf. Stob00, 4].

Of course England was not the only country getting the idea of granting monopolies, but is a very illustrative example. Venice got its statute of inventions in 1474 to grant monopolies to individuals bringing new technology and commerce to Venice.

Back to England the letters patent system also had its dark sides. The Crown was in habit of granting the best monopolies only to their friends and the

granting of monopolies often had the effect of rising prices. For example the prices of salt increase more than tenfold after granting a monopoly for salt manufacturing. As public protest gets more an more both Houses of Parliament acted in 1623, passing the “Statute of Monopolies“ which was approved in final form on May 25, 1624. The “Statute of Monopolies“ began by sweeping away all existing monopolies, with certain exceptions. What makes it historically important is the sixth section, which authorizes patents for new inventions to the true and first inventor within the realm for not more than fourteen years. It is said to be the first modern patent law and was the model for several other countries patent law [cf. Stob00, 8 et seqq.].

3.2 Copyrights

The history of copyright starts with the invention of printing technology by Guttenberg in the fifteenth century. The small market for books which were normally copied hand-written now expanded rather fast. The possibility of printing and selling books in a large number leads to high investments in the printing sector and a never ending search for new literature. On the other side the risk of publishing companies increased because of reprinting. Publishing companies invested in different types of literature hoping to get one bestseller in a row of books. Other publishing companies only copied these bestsellers to publish them without risk. As in days of hand written books protection of literature was not necessary, now the publisher of primary literature asked for help by their authorities [cf. Bing01, 7].

The principle of free publishment was part of the common opinions in these times, which lead to given privileges by the authority. These privileges were given to publishing companies as well as to individual persons. The range of privileges started with given monopolies for the whole printing sector of the economy and ends with book and author privileges. All these privileges were given for a certain territory and period of time. Privileges had a high similarity with censorship as the authority gave them only for preferred literature.

Over the years the printing and publishing companies got the idea of having a kind of ownership to their published literature as they usually paid authors fees for their books. This right should be given without any specific privilege. In the

fifteenth century the English Publishing Right was the first accepting an “owner of copy“.

With the idea of natural justice in Europe the theory of the publisher’s right of ownership was replaced by the theory of intellectual property. The right of ownership went from the publisher to the author. Again England was the first country passing the “Statute of Ann“ which gave only the author the right of copying his literature. The idea was to take away the monopoly status of the publishing company guilt in England and to give humans the right of ownership to goods produces by themselves. As Intellectual property was seen as a good it could also be sold what leads in a change of the ownership. This was the beginning of the Anglo-American “copyright system“.

The replacement of the privilege system on the European continent was quiet later. But in difference to the copyright system which was based on the intellectual property seen as a good it was more concerned with the natural right of the authors in their creations. This is reflected in the fact that not only the author’s economic interest is protected but also the author’s spiritual interests [cf. Bing01, 7 et seqq.].

3.2.1 International Agreements

The Berne Convention for the Protection of Literary & Artistic Works of 1886 can be seen as the basic international copyright agreement. It established fundamental categories for copyright protection, rights and the duration of copyright protection. Berne ensures some consistency in the copyright law of participating nations. The first Berne agreement basically provided give-and-take recognition of national copyright systems, building on bilateral agreements. From 1883 to 1993 the number of members rose from 69 to around 100 countries [cf. W3Ca05].

Like copyright law in most countries, the Berne Convention has been modified to reflect new technologies. Since 1886 the convention has been modified six times to stay with the time and the coming out of new technologies. Additional agreements extending the Berne Convention of 1886 include the

- 1928 Rome Convention for the Protection of Performers, Producers of Phonograms & Broadcasting Organizations

- Paris Convention for the Protection of Producers of Phonograms
- 1971 Geneva Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication of Their Phonograms
- 1974 Brussels Convention Relating to the Distribution of Programme-Carrying Signals Transmitted by Satellite [cf. W3Ca05].

The Performances & Phonograms Treaty deals with intellectual property rights of performers and producers of phonograms. The agreement covers both groups, performers and record companies, because most of the rights are connected with their fixed, purely aural performances (which are the subject matter of phonograms) [cf. W3Ca05].

More recently the 1996 WIPO Copyright Treaty (WCT) and the 1996 WIPO Performances & Phonograms Treaty (WPPT) have updated Berne and Rome conventions in an attempt to catch up with technologies such as the internet [cf. W3Ca05].

The WIPO Copyright Treaty enlarges traditional copyright protection to computer programs and "compilations of data or other material (databases) in any form, which by reason of the selection or arrangement of their contents constitute intellectual creations" [cf. W3Ca05].

In 1967 the United Nations Convention founded the World Intellectual Property Organization (WIPO) which came into effect in 1974. WIPO replaced BIRPI. It includes all characteristic of intellectual property: copyright and industrial property. It is located in Geneva and is part of the United Nations system [cf. W3Ca05].

WIPOs activities include

- promoting acceptance of existing agreements
- updating existing agreements and supporting the negotiation of new agreements
- promotion of intergovernmental cooperation through international classification schemes, compilation of statistics and maintenance of international databases
- research, directly and through independent partners

- processing of international applications for patent, trademark and design registrations
- provision of an arbitration service

WIPO operates in two ways. One of them is the World Trade Organization (WTO), the multilateral trade body dealing with the Agreement on Trade Related Aspects of Intellectual Property (TRIPS) and the other as the global trade treaties that replaced the General Agreement on Tariffs & Trade (GATT) in 1995 [cf. W3Ca05].

TRIPS covers copyright and industrial property (e.g. patents, trademarks, designs). Non-cooperation by WTO member countries may lead to trade sanctions [cf. W3Ca05].

TRIPS reflects rather than supersedes the Berne Convention. It has forced all developed economies and all but a handful of developing economies to abide by Berne [cf. W3Ca05].

Cooperation between WIPO and TRIPS is formalised through the 1995 Cooperation Agreement, which covers regular contact, information exchange and treatment of members [cf. W3Ca05].

4 Countries and Regions

In 1997 the “Accotiation International Pour la Protection de la Propriete Industrielle“ (AIPPI) met in Vienna to discuss software patents. “Questionaires“ were sent to officials in countries throughout the world. Thirty-five countries responded, sharing their views about software patents and their national patent law. The two tables are the summary of this survey. Although the survey was made in 1997 and is may not up to date for each countries patent law it is a good overview to get a first impression of the worlds view about software patents. Right after the two tables, more detailed information about several regions and countries of the world is given [cf. Stob00, 516 et seqq.].

Summary of AIPPI Software Patent Survey April 1997

Country	National law expressly excludes software	EPC Member	Favor software patent	Can patent a purely abstract data manipulation	Requires presentation on a support (memory)	Level of disclosure required to support	Distinction source code v. memory structure
Argentina	yes			no	no	flowchart	no
Australia	no		yes	no	no	flowchart	no
Austria	yes	yes	yes	yes		flowchart	no
Belgium	yes	yes		yes	no		no
Brazil	yes		yes	no	yes (technical or aesthetic effect)	flowchart	no
Canada	no		yes	yes	yes	flowchart	no
China	no		no	no	no	all program items	no
Czech Republic	yes		yes	no	no	source code	no
Denmark	yes	yes	yes	no	yes (technical effect only)	flowchart	no
Egypt	no		no	no	yes		no
Estonia	yes						no
Finland	yes	yes	yes		case by case	flowchart	no
France	yes	yes	yes	case by case	case by case	flowchart	no
Germany	yes	yes	yes	no	no	flowchart	no
Great Britain	yes	yes	yes	yes	case by case	flowchart	no
Hungary	yes		yes	no	no	flowchart	no
Ireland	yes	yes	yes			flowchart	no
Israel	no				no	flowchart	no
Italy	yes	yes		no	no	flowchart	no
Japan	no		yes	yes	no (may change)	flowchart	no

Table 1: A Software Patent Survey April 1997, Part 1 [cf. Stop00, 516]

Summary of AIPPI Software Patent Survey April 1997

Country	National law expressly excludes software	EPC Member	Favor software patent	Can patent a purely abstract data manipulation	Requires presentation on a support (memory)	Level of disclosure required to support	Distinction source code v. memory structure
Korea	no				no		no
Malaysia	yes		no				no
Mexico	yes		yes	no	no	source code	no
Netherlands	yes	yes		no	no	flowchart	no
New Zealand	no		yes	yes	no	flowchart	no
Nigeria	no		yes	yes	no		no
Norway	yes			no	no	flowchart	no
Panama	yes						no
Portugal	yes	yes		no	no		no
Slovenia	no	soon					no
South Africa	yes		yes	yes	case by case	flowchart	no
Spain	yes	yes	no	case by case	case by case	source code	no
Sweden	yes	yes		case by case	case by case	flowchart	no
Switzerland	yes	yes	no			flowchart	no
Taiwan	no		yes	no	no	flowchart	no
Ukraine	yes		yes	yes		source code	no
USA	no		yes	no	yes (technical effect only)	flowchart	yes
AIPPI	**yes**	**yes**	**yes**	**no**	**yes**	**flowchart**	**no**

Table 2: A Software Patent Survey April 1997, Part 2 [cf. Stop00, 517]

4.1 USA

4.1.1 Copyright

In 1790 Congress passed the first federal copyright act. Interestingly, the act specifically noted that it did not prohibit plagiarizing the works of foreign authors. The idea was to protect the own culture and take advantage of cultural products of more developed countries. It took until the 1891 International Copyright Act that foreign author's got equal treatment.

By the time, U.S. copyright law has constantly expanded to include new modes of communication. In the nineteenth century, American copyright law expanded to include photographs and photographic negatives, paintings, drawings, and models. This model has continued in the twentieth century: The Copyright Act of 1909 responded to musical rolls for player pianos; The Copyright Act of 1976 responded to new copying technology, cable television, and computer software; The Computer Software Copyright Act of 1980 responded to computer programs; The Record Rental Amendment of 1984 responded to compact disk players; and The Audio Home Recording Act of 1992 responded to digital audio recording.

At the moment, copyright protection exists automatically, even without registration with the United States Copyright Office. It exists for both unpublished and published "original works of authorship" after they become fixed in a tangible form. This protection is extended for the life of the author followed by additional seventy years. Some intellectual property is not qualified for copyright protection. Examples are works that have not been fixed in a tangible form, titles, names, slogans, ideas, and works consisting entirely of information that is drawn from the public domain.

The Copyright Law of 1976 gives copyright holders exclusive rights to do and to authorize 1) copying of the copyrighted work; 2) preparing derivative works; 3) distributing copies of the work; 4) performing the work publicly; and 5) displaying the work publicly. Even though the law protects intellectual property, not every unauthorized use is necessarily a plagiarism. The 1976 law also stated that copyrighted work that is used for purposes such as criticism, comment, news, reporting, teaching, scholarship, or research, is not an infringement of copyright.

In 1998, the U.S. Congress passed the Digital Millennium Copyright Act. It was designed to implement the agreement signed in December 1996 at the WIPO Geneva conference, but also contains additional provisions:

- Makes it a crime to circumvent anti-piracy measures built into most commercial software.
- Outlaws the manufacture, sale, or distribution of code-cracking devices used to illegally copy software.
- Does permit the cracking of copyright protection devices, however, to conduct encryption research, assess product interoperability, and test computer security systems.
- Provides exemptions from anti-circumvention provisions for nonprofit libraries, archives, and educational institutions under certain circumstances.
- In general, limits Internet service providers from copyright infringement liability for simply transmitting information over the Internet.

- Service providers, however, are expected to remove material from users' web sites that appears to constitute copyright infringement.
- Limits liability of non-profit institutions of higher education – when they serve as online service providers and under certain circumstances – for copyright infringement by faculty members or graduate students.
- Requires that "web casters" pay licensing fees to record companies.
- Requires that the Register of Copyrights, after consultation with relevant parties, submit to Congress recommendations regarding how to promote distance education through digital technologies while "maintaining an appropriate balance between the rights of copyright owners and the needs of users."
- States explicitly that "nothing in this section shall affect rights, remedies, limitations, or defences to copyright infringement, including fair use..."

4.1.2 Patents

With the Constitution of 1789 the United States government began to operate. At first the Congress handled patent petitions by itself introducing an individual bill for each patent petition. It took less than one year to make the Congress realize that the system did not work. In 1770 the first patent act was enacted. It created a patent agency in the Department of State, headed by a board comprising the Secretary of State, the Secretary of the Department of War, and the Attorney General. Any two of the board members could issue a patent. Patents were given for petitioners that invented or discovered any useful art, manufacture, or device, or any improvement therein not before known or used if the board found that it is sufficiently useful and important. The period a parent was given was not exceeding fourteen years. As examining patents was hard and time-consuming work and the board was very carefully with their duties only fifty-seven patents were issued in the next tree years [cf. Stob00, 13 et seq.].

The answer for this problem was the Patent Act of 1793 which removed the requirement of being sufficient useful and important. It also eliminated the examination of the application to make the process of issuing a patent a purely clerical matter. So the patent system changed from an examination system to a registration system. The system did not work and led to an enormous rise in the number of granted patents. Masses of worthless patents with dubious originality were granted. However, there are several vestiges of the 1793 Patent Act in the patent law today: It provided that changes in form or proportions of issued patents are not patentable. The patentee had to swear to be the true inventor and had to provide a full, clear and exact description of the invention [cf. Stob00, 15 et seqq.]

In 1836 a new Patent Act was enacted. The law went back to an examination system, established the Patent Office and placed a chief to be known as the Commissioner of patents in charge. It provided a fourteen year term, extend able for additional seven years. An Invention had to meet the requirements of being novel, original and useful to be considered as patentable. It was the commissioner's decision if the requirements were meeting or not [cf. Stob00, 22].

In 1926 the Congress adopted the United States Code which was a codification of the existing general and permanent law. Because of the large size each of the titles were enacted separately one after the other. It took quiet a time, but in 1949 it was time for the patent law to get reenacted and codified. The same time the Congress independently decided that it was time to revise the patent law. By combining these two projects the Patent Act of 1952 was adopted. Apart from minor improvements in wording, one rather significant change was made. Section 103 was added comprising that only a no obvious invention can be granted as patent [cf. Stob00, 23 et seq].

4.1.3 Software Patents

The U.S. Patent Law does not include any statutory exceptions to patentability. The only exceptions to patentability are judicially created. The Supreme Court of the United States has identified three categories of subject matters that are seen as exceptions: "laws of nature, natural phenomena and abstract ideas" [cf. HaHo00, 16].

In 1996 the U.S. Patent Office issued Guidelines for Computer-related inventions in response to the change of the U.S. Court of Appeal decisions in this matter. The Guidelines define an invention to be within the technological arts. It is stated that a computer-related invention is within the technological arts and a practical application of a computer-related invention is a statutory subject matter. Such an invention that has a particular application in the technological arts satisfies the utility requirement. Further it identifies [cf. HaHo00, 17]

- a computer or other programmable apparatus whose action directed by a computer program or other form of software is a statutory machine;
- a computer-readable memory that can be used to direct a computer to function in a particular manner when used by a computer is a statutory article of manufacture;
- a series of specific operational steps of be performed on or with the aid of a computer is a statutory process.

In the scope of protection provided for computer program related inventions there have been two significant cases since the adoption of the Guidelines.

Although the guidelines assimilated case law there still was confusion left. Are mathematical algorithms a fourth category of not patentable subject matter? The reason for this confusion were two statements made in the Supreme Court decision Gottschalk v Benson [cf. HaHo00, 17]:

- “The mathematical formula involved in no substantial practical application expect in connection with a digital computer“ what had the consequence that “the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself“.
- The transformation and reduction of an article to a different state or thing is the clue to the patentability of a process claim that does not include particular machines.

The Freeman- Walter- Able test was the answer to this problem. The test was developed to decide which algorithms were patentable and which were not [cf. HaHo00, 17]:

1. The case is analyzed to determine whether the mathematical algorithm is directly or indirectly recited.

2. If an mathematical algorithm is found, the clame as a whole is further analyzed to determine whether the algorithm is applied in any manner to physical elements or process steps.
3. If it is, it is patentable.

The State Street Bank & Trust Co. v Signature Financial Group Inc. case took the opportunity of reviewing the “Mathematical Algorithm“ exception nothing that the Freeman- Walter- Able test. The subject of this case was a data processing system for managing a financial services configuration of a portfolio established as a partnership, each partner being one of a plurality of funds. Because of a former case (Diamond v Diehr in 1981) where the Court of Appeal noted that “the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers in of itself, would not render it non-statutory subject matter, unless, of course, its operation does not produce a useful concrete and tangible result“. As a result of this every practical application of a mathematical algorithm, formula, or calculation is a statutory subject matter as long as it produces a useful, concrete and tangible result. In this case, a computer program transformed data, representing discrete dollar amounts to a final share price, which was seen as a useful, concrete and tangible result. The decision in the *State Street Bank* case represents the resolution of the patentability of algorithms. It also clarified the issue regarding the patentability of business methods which are related to patent protection for inventions embodied in computer programs as this cases subject was the implementation of a business method by a suitably programmed computer. In connection with business methods the Court stated that since the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or method [cf. HaHo00, 18 et seqq.]

The State *Street Bank* case decision has removed two mature restrictions on patentability:

- Mathematical Algorithms
- Business Methods

At the moment the key to patentability in the United States is the production of a *useful, concrete and tangible result.*

4.2 Europe

4.2.1 Copyright

The early history of European Copyright is already mentioned in the second chapter. As Europe is also member of the International agreements mentioned above, there is now given information on the European Copyright Directive 2001.

In 2001, a new directive was adopted in the EU which extends copyright protection to the Internet and other new media. The law should be transposed into national laws within 18 months. The European Commission stated that the directive will provide a secure environment for cross-border trade in copyright protected goods and services and will ease the development of electronic commerce in new and multimedia products and services. The EU and its member countries will now be able to ratify the 1996 World Intellectual Property (WIPO) agreement [cf. W3EU05].

The directive harmonises across the EU the rights of reproduction, distribution, communication to the public, the legal protection of anti-copying devices and rights management systems. It also includes a mandatory exception for technical copies on the net for network operators in certain circumstances, an exhaustive optional list of exceptions to copyright which includes private copying, the introduction of the concept of fair compensation for right holders plus a mechanism to secure the benefit for users for certain exceptions where anti-copying devices are in place [cf. W3EU05].

There is now a detailed list of optional exceptions to the reproduction right and right of communication to the public. All are optional and therefore countries may choose to apply any or all of these exceptions [cf. W3EU05].

This applies to three of the exceptions, namely reprography (photocopying), private copying and broadcasts reproduced for viewing or listening in certain social institutions and member states are given flexibility in how to interpret this. In particular, in certain minor cases, there may be no obligation for payment or

further payment. Member states would also have a degree of flexibility in their treatment of fair compensation for time shifting i.e. private copies made off the air from radio or television for the purpose of viewing or listening to the broadcast at a later more convenient time [cf. W3EU05].

Legal protection of anti-copying devices and exceptions was the most contested issue of the whole directive. The problem has been how to ensure that an exception, for example an act of reproduction or copying for illustration for teaching, could be made use of where a copyright holder also has in place an anti-copying device such as a digital tracker designed to prevent piracy. Failure to address this would have meant that the exceptions could have been meaningless in some cases. Firstly, right holders have complete control over the manufacture, distribution etc. of devices designed to circumvent anti-copying devices. Secondly, the directive provides that right holders either voluntarily or by way of agreements with other parties have to provide those who would benefit from a particular exception e.g. schools, libraries in the case of teaching, with the means to do so. It will be up to countries to ensure that such means exist [cf. W3EU05].

The directive applies Community exhaustion and not international exhaustion for the distribution right. Therefore, once a copyright protected product is marketed in the EU by or with the consent of the right holder, the distribution right is said to be "exhausted" i.e. there is no right to restrict further distribution in the EU [cf. W3EU05].

4.2.2 Patents

The history of European Patent Law started after the Second World War. Each of Europe’s countries had its own patent system. It started in 1949 with an agreement of the Benelux Countries and France introducing the Institution of International Patents. Its duty was to make enquiries of the member’s national patent registration [cf. Dybd04, 7].

The next step was the European agreement of formal- requirements for patent registrations in 1953. The idea was to fix the maximum formal requirements a

country is allowed to demand for patent registrations. The agreement was assigned by 20 countries [cf. Dybd04, 8].

In 1954 the agreement of International Patent Classification (IPC) was determined by 15 European countries. It was enhanced worldwide in connection with the WIPO and has now more than 25 members. Patents were classified in seven sections having a lot of classes consisting of several groups. Now there are more than 50.000 groups [cf. Dybd04, 8].

In November 1963 the agreement of unification of the definition of the material law of patents was sighed directed by the European council. It became operative in 1980 and has now 13 countries as member. The idea was the harmonisation of the European Patent Law. In the end it was able to do so indirectly. It was the basic for the formulation of the specifications of the material law in ART. 52-74 EPC, which initiated its members to change the national Patent Law [cf. Dybd04, 8 et seq.].

By the time considerations about a European Patent got stronger and stronger. In 1962 a first concept of a European Patent which exists separate from the national patents was made. The diplomatic conference took place in Munich in 1973 and was signed by 16 countries. It entered into force on 7 October 1977. The European Patent Organisation was set up as an intergovernmental body, whose members were the contracting countries of this European Patent Convention (EPC). The European Patent Office (EPO) grants European Patents for the members of the EPC. As already mentioned the contracting countries had to harmonize their material patent law with the EPC, but also kept their National Patent Offices. At the moment the EPC has 31 contracting countries as members and handles more than 120.000 patent registrations each year [cf. Dybd04, 9 et seqq.]

4.2.3 Software Patents

The European Patent Office is bound by the European patent law laid down in the EPC. In Article 52 EPC concerning patentable inventions is written:

(1) European patents shall be granted for any inventions which are susceptible of industrial application, which are new and which involve an inventive step.
(2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1:
(a) discoveries, scientific theories and mathematical methods:
(b) aesthetic creations;
(c) schemas, rules and methods for performing mental acts, playing games or doing business, and programs for computers;
(d) presentations of information.
(3) The provisions of paragraph 2 shall exclude patentability of the subject matter or activities referred to in that provision only to the extent to which a European patent application or European patent relates to such subject-matter or activities as such.

As we see, the EPC specifically excludes programs for computers as such as patentable inventions. At first it is important to find out why programs for computers were excluded from the EPC. The first drafts of the EPC in 1962 contained no exclusion of programs for computers. The first time this exclusion appeared at the second draft of the EPC in 1971 due to the fact that the patentability of computer programs was denied by case law in the most contracting countries. The main reason for the exclusion was found in the concept of the invention, which grew out of national traditions and forms the basis for the EPC. Even without explicate exclusions by Article 52(2) EPC, computer programs could not be granted because they do not constitute a patentable invention as defined in Article 52 (1) EPC. They are not of technical nature. Patentability requires a specific technical application. Surprisingly this does not mean that software patents as a hole are simply not patentable. The technical effect is the key. But where to draw the line? [cf. HaHo00, 9 et seq.].

The EPO set up Guidelines to be used in connection with operations of search and examination in the EPO on computer program related inventions. In response to the growth of computer industry they were modified in 1985 and adopted a medium course. The idea that the combination of a computer and a program should be sufficient to justify patentability because of the technical

effect was rejected. As the guidelines (C-IV, 2.3) make it clear that: “A computer program claimed by itself or a record on a carrier is not patentable irrespective of its content. The situation is not normally changed when the computer program is loaded into a known computer“ [cf. HaHo00, 13]. This statement was modified by a practice notice of the EPO: “ Programs of computers are considered as having technical character, if they cause, when run on a computer, a technical effect which may be known in the art but must go beyond the “normal“ physical interactions between program and computer.“ As a consequence, a program that causes, when run on a computer, the required technical effect would be regarded as an invention within the meaning of Article 52(1) EPC. Examples for this type of patentable subject matters are program controlled machines and program controlled manufacturing and control processes. The question if a subject matter claimed is concerned only with the internal working of a known computer is patentable can be shown on an example. A program controlling a fast and small memory and a slow but large memory is able to provide the fast access speed even to processes needing more address space as the small memory. This program could be seen as patentable because of its technical character [cf. HaHo00, 13 et seqq.].

As we see, the qualification for computer related inventions of being patentable in Europe is the “technical character“. But it still has to be new and involving an inventive step.

4.3 Japan

4.3.1 Copyright

After a 270-year isolation policy of Japan the Meiji Restoration got to power in 1868. Along with the improvement of a variety of political, legal, economic and social systems, an intellectual property system was also established and developed. In 1887, a legislation named the Copyright Ordinance was enacted.

In 1899 Japan got part of the Berne Convention. To meet the terms of the Berne Convention the Copyright Ordinance was changed as a whole into the Copyright Law in 1899. This Copyright Law of 1899 is said to be the first

modern copyright law of Japan consistent with the international standard of copyright protection.

With the constant modifying of the Bern Convention the Japanese government decided to reform its copyright system as a hole. The new copyright Law of 1970 was enacted in 1971 and met the requirements of both the Brussels Act (1948) and the Paris Act (1971) of the Berne Convention.

With regard to other international conventions, Japan has ratified or acceded to them as follows:
1956 The Universal Copyright Convention
1978 The Phonograms Convention
1989 The Rome Convention
1994 The TRIPS Agreement

To manage the times of digitization and networking, Japan agreed to the WIPO Copyright Treaty in 2000 and the WIPO Performances and Phonograms Treaty in 2002.

The level of the protection of author's right and neighbouring rights in Japan exceeds the obligations of the above international conventions in a number of aspects.

At the moment the main sources of law concerning copyright is the Copyright Act of 1970. The Scope of Protection includes literary and musical works, maps and drawings, cinema to-graphic works, photographs as well as computer programs. But copyright protection is not extended to programming languages, rules or algorithms, and semi-conductor circuit’s layout.

Copied works, which are work to be created by translating, arranging musically, modifying, dramatizing, cinematizing or otherwise adapting the original work are protected independently, but it should not affect the protection of the original work.

Edited works are also protected if the selection or arrangement of materials is original. Database is protected if the selection or systematic organization of the information is original.

Foreigners' works which were first published in Japan are protected as a work originating in Japan. Even works first published abroad could be protected by virtue of international conventions to which Japan is a signatory.

The author has the rights to publish the work, to be identified as the manner which he has chosen, to object to derogatory treatment of the work, to reproduce, to perform, to broadcast, to diffuse by cable network, to recite, to exhibit the work, to show a cinematographic work to the public, to present the work to the public by lending copies, and to translate, musically arrange, modify, dramatize, cinematize or otherwise adopt the work.

The Copyright starts with the creation of the work, and keep going for fifty years after the death of the author. If the author is not known or used a pseudonym, the fifty years starts from the date of its publication. There is no registration required.

4.3.2 Patents

The political system in Japan had made its remarkable renovation under the Meiji government which well recognized the importance of a role a patent system could play in achieving industrial development. In order for the Meiji government to make its policy successful and catch up with industrially developed countries, the establishment of a patent system was essential [cf. Japa97, 3].

The Meiji government’s action was quick. In 1871, only three years after the Meiji Restoration of Imperial Power in 1868, the “Exclusive Right Law” based on the examination and first-to-file principles were adopted. This quick attempt to establish a patent system ended up in failure due to lack of enough preparations [cf. Japa97, 3 et seq.].

Under thorough preparations a patent ordinance, the first substantial legislation of its kind in Japan, was promulgated in 1885. The patent bureau was installed at the Agriculture and Commerce Ministry in 1886. The patent ordinance was patterned after the U.S. and French patent laws and is regarded as the first Japanese patent law. As it features, the patent ordinance adopted the principle of examination, called for a material invention to be novel and useful. The

patent ordinance was revised in 1888 to incorporate the first-to-invent principle [cf. Japa97, 5et seq.].

From 1885 to 1911 was a period for the foundation of the Japanese patent system with the framework of the Japanese patent law completed following various overseas patent systems. The patent law revised in1899 as a measure to allow Japan to join the Paris Convention. It for example recognized rights of non-residents [cf. Japa97, 6 et seqq.].

Through the First World War, the government and industry alike became increasingly aware of the necessity of developing their country's own technology. The Patent Law of 1921 with revisions adopted against this background constituted a basis for the later Japanese Patent Law. As its features, the Patent Law of 1921 adopted the first-to-file principle, incorporated a provision for a compulsory license, adopted a system for a notification of reasons for refusal, adopted a publication system and an opposition system [cf. Japa97, 8 et seq.].

In post-war Japan, a society of high economic growth had been developing. It was a time when the number of patent applications was increasing. This causes various problems, such as late examination, etc. To catch up with the country's economic and industrial development the Patent Law was revised in 1959, incorporating the following: A patentable invention was changed from an industrial invention to an industrially-applicable invention. Overseas publications were included in the criteria for the judgement of novelty. A provision was included concerning an inventive step. A substance manufactured through a nuclear transformation was included in not patentable items. It was made possible to file a patent application covering more than a single invention [cf. Japa97, 10 et seq.].

With the increase in technological development, it was apparent from a national economic point of view to grant inventions adequate and speedy protection under the industrial property system. The Japanese Patent Office was not in a position to process patent applications, catching up with their increase. The Patent Law was revised in 1970 [cf. Japa97, 11 et seq.].

Along with the active development of Japan's political, economic, cultural and other interchanges with overseas countries, the country's industrial property system had come to be internationally harmonized. With consideration to this as a major aim, the patent law was revised in 1975, in 1978, in 1985 and again in 1987 [cf. Japa97, 13 et seqq.].

The revision of the Patent Law in 1994 was designed to actively cope with the TRIPS agreement, incorporated the following [cf. Japa97, 21 et seq.]:

- Term of Patent: The term of a patent was revised to be 20 years from the date of an application.
- Subject of Patent: From not patentable items, an invention for a substance manufactured through a nuclear transformation was deleted.
- Effects of Patent Right: As acts of working a product invention and a process invention for manufacturing a product, a phrase "offering for assigning or lease" was added.
- Non-Exclusive License Granted by Arbitration Decision: It was stipulated that a non-exclusive license granted by an arbitration decision may be transferred if so done with business working a patent right concerned and an arbitration decision granting such an exclusive license may be revoked a ground for that arbitration decision ceases to exist or it has become adequate to maintain that arbitration decision.

4.3.3 Software Patents

Within the Japanese statutory the definition of an invention is: "a highly advanced creation of technical ideas by which a law of nature is utilized".

Inventions involving computer programs are subject to the following process to evaluate if they conform to the following requirements to be patentable [cf. HaHo00, 20 et seq.]:

1) Whether the technology of the application.

2) Whether there is a novelty in the invention described in the application.

3) Whether there is an inventive step in the invention described in the application.

In 1997 the Japanese Patent Office released “Implementing Guidelines for Examination of Inventions in Specific Technical Fields“, with Chapter 2 concerning Computer Software-related Inventions. Right at the beginning it is defined what a process is and what a product is:

If a software related invention is expressed in a sequence of processes or operations connected in time series, or procedure, the invention can be defined as process invention by specifying the procedure.

If a software related invention is expressed as one or more functions performed by the invention, the invention can be defined as product invention by specifying the functions. A for a computer readable storage medium having a program or structure data thereon is a product defined by its functions [cf. HaHo00, 20].

There are also concerns whether a computer software related invention is utilizing a law of nature. According to the guidelines the invention has to correspond to any of the following cases to pass this criteria [cf. HaHo00, 21]:

- control of hardware resources or processing operation associated with control
- information processing based on physical property or technical property of an object
- processing by utilizing hardware resources

4.4 Australia

4.4.1 Copyright and Patents

The Patents Act 1903, the Copyright Act 1905, the Trade Marks Act 1905 and the Designs Act 1906 were modelled on the UK Patents, Designs & Trade Marks Act 1883 [cf. W3Ca04].

In 1912 the federal Parliament stated that the UK Copyright Act 1911 was in force throughout Australia. The few differences between Australian and UK law were driven by Australia's membership of the Berne and Paris Conventions [cf. W3Ca04].

After 1935 the British legislative models were not adopted as automatically as before. Even though there was a close connection between Australian and UK law. The work of two technically expert committees led to the Patents Act 1952 and Trade Marks Act 1955 [cf. W3Ca04].

The Copyright Act of 1968 was a consequence of the advices of a committee of review established in 1959. It provided the copyright framework for the rest of the century [cf. W3Ca04].

A decade later, after the 1979 Patents Amendment Act, work by the Industrial Property Advisory Committee from 1980 to 1984 led to the Patents Act 1990 [cf. W3Ca04].

The importance of intellectual property in connection with the international legal developments, changing perception of rights and responsibilities, and the technological move on were reflected in a fast legislative change from the mid 1990s on [cf. W3Ca04].

The Copyright Law Review Committee (CLRC) was established in 1983 as an advisory body concerned with copyright reform and operating in tandem with the Australian Law Reform Commission (ALRC). It produced a range of recommendations (for example on computer software protection), and was established to work on a simplification of the Copyright Act 1968 [cf. W3Ca04].

Source code, executable code and data banks and tables are automatically copyright under the Copyright Act 1968 without the need for observing any formality such as registration [cf. IPAu05, 4].

The Trade Marks Act 1995 replaces the 1955 Act and reflected the 1994 World Trade Organisation Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) [cf. W3Ca04].

4.4.2 Software Patents

Australia makes patents available for innovative ideas that provide a particular solution to a technological problem. In this perspective patents for computer related invention are not different from any other type of innovation. To be patentable the invention needs to be new, inventive (it must involve a degree of innovation compared with the known before), a manner of manufacture and useful. With manner of manufacture is meant that the invention must produce a practical solution to a technological problem. This excludes discoveries, ideas, scientific principles and mathematical algorithms on their own from patentability. However, a practical application of one of them can be patented [cf. IPAu05, 1].

Computer programs are patentable if they include a mode or manner of achieving an end result that is artificially created and has economic utility. The second criterion is that the invention must be industrially applied. Consequently the solution for a mathematical problem by a computer program is not patentable [cf. IPAu05, 2].

The governmental office “IP Australia” gives three illustrative examples for types of computer related Patents that are suitable for patents [cf. IPAu05, 2 et seq.]:

- Software included within an industrial process controller
- Software directed to the operation of a computer (e.g.: Software controlling the data flow, or enable the computer to work faster)
- Patent applications directed to electronic commerce are similarly acceptable if there is an end result that is an artificial created state of affairs of economic utility. (e.g.: methods of enabling electronic transactions, or creating electronic links between customers and suppliers and banks)

4.5 India

In this specific case the authors were not able to receive any information about the Indian Copyright Law because the Indian Copyright Office does neither provide a homepage nor is there any possibility for email contact. Therefore the authors were only able to engage with the Indian Patent Law.

4.5.1 Patents

In 1856, when India was under British rule, patent rights were enacted for the first time in this part of the British Commonwealth. In this Act patents were defined as “exclusive privileges“. Just after a year this act was nullified because it was introduced without the approval of Queen Victoria. A new provision was enacted in 1859 which was further added by the provision of “The Patents and Designs Protection Act“ in 1872, that was related to designs. This act was enhanced several times in the following years and replaced in 1911 by the “Indian Patents and Designs Act, 1911“ [cf. MaIn05, 7].

From the time when India got independent from the United Kingdom the Indian Patents and Designs Act, 1911 was not longer fulfilling its planned target. On account of this, a committee was appointed in 1949 to search for drawbacks in the existing patent system and to suggest changes to that to create a new and improved patent act. The outcome of this committee was a report, submitted in 1959, on which “The Patent Bill, 1965“ was based that passed the Indian Parliament and came into force an 20th April 1972 as “The Patents Act,1970“ which is described as follows:

“The Patents Act, 1970 is a landmark in the industrial development of India. The basic philosophy of the Act is that patents are granted to encourage inventions and to secure that these inventions are worked on a commercial scale without undue delay; and patents are granted not merely to enable patentee to enjoy a monopoly for the importation of the patented article into the country. The said philosophy is being implemented through compulsory licensing, registration of only process patents for food, medicine or drug, pesticides and substances produced by chemical processes which, apart from chemical substances normally understood, also include items such as alloys, optical glass, semi-conductors, inter metallic compounds etc. It may, however,

be noted that products vital for our economy such as agriculture & horticulture products, atomic energy inventions and all living things are not patentable. Thus, the Patents Act 1970 was expected to provide a reasonable balance between adequate and effective protection of patents on the one hand and the technology development, public interest and specific needs of the country on the other hand.“ [cf. MaIn05, 7 et seq.].

Today, several amendments – the most important amendment for India was probably the provision of TRIPS after the Uruguay round of GATT negotiations in 1994 that took effect in 1999 which paved the way for WTO – of this act later, the “Patents (Amendement) Act 2005“ is having effect since 01.01.2005 [cf. MaIn05, 8].

4.5.2 Software Patents

In India, like in most other regions of the world, there are three typical criteria for an invention that make it patentable [cf. MaIn05, 11]:

1. An invention must be novel
2. has an inventive step and
3. is capable of industrial application

But there are also some exclusions from patentability that interfere with computer-related inventions. These are:

- a mathematical or business method or a computer program per se or algorithms is not patentable;
- a literary, dramatic, musical or artistic work or any other aesthetic creation whatsoever including cinematographic works and television productions;
- a mere scheme or rule or method of performing mental act or method of playing game;
- a presentation of information; [cf. MaIn05, 22 et seqq. and MaIn05, 143].

At first sight it seems to be obvious that software or computer-related content is not patentable at all in India, but in Annexure II of the “Manual of Patent

Practice and Procedure“ of the Patent Office of India which is titled as “Examination Guidelines for Patentability of Computer-Related Inventions“ you can find the following conclusion:

“The statute excludes from patentability the software per se. The inventions relating to the application of the computer program or software is held patentable under the Indian Patent Act, 1970 when claimed in combination of hardware and software components of a computer which provides a “technical advancement“ over the prior art. It is necessary for the applicant to describe the “technical contribution” to the prior art when the invention involves software. The technical problem, which needs to be solved by the invention, should be sufficiently described as to how the hardware is controlled by the software to overcome the previously described problem. The “technical character” of the invention should be brought out clearly in the claims.“ [cf. MaIn05, 156].

To illustrate these guidelines there is a sample collection of case laws both against and in favour of computer-related inventions. In this paper the authors will mention just a few exemplary cases of this collection: [cf. MaIn05, 150 et seqq.].

Texas Instruments/Language understanding system:

A computer with a menu based system to enable an operator to make a multiword input. Each time a word or phrase is entered, the computer operated to parse the resulting text entered so far as to determine the linguistic categories that could follow the entered text and to produce a menu of suitable words or phrases for presentation to the operator. When a sentence was complete and had been confirmed by the operat or, the computer translated the sentence into a command executable by the computer.

Judgement:

The Board held that the invention was not primarily concerned with linguistic operations but rather with allowing an operator using his own natural language to feed information into a computer and to operate the computer and that it was a technical matter.

IBM/Text processing:

A computer programmed to highlight homophones in an entered text, such as “there” and “their”, when the rules of grammar suggested that they had been incorrectly used.

Judgement:

No contribution in the technical field (case refused).

Computer generation of Chinese characters:

A computer program for a method of storing, processing, displaying or printing Chinese characters.

Judgement:

Rejected on the grounds that the method claimed was not of technical nature and was merely a method of performing mental acts.

Concluding for the content software-relating patents and comparable matters in India it has to be pointed out that if it is possible to highlight the technical context of a software-related invention there should not be any difficulties in obtaining the patent for it.

4.6 China

In comparison to other worlds regions China startet remarkably late with an elaboration of rules that engage with intellectual property. In 1980 the Patent Office of the People‘s Republic of China (CPO) was founded as a result of the changing policy of reform and opening-up of the communist Chinese leadership. Its objective was:

“... to protect intellectual property, encourage invention and creation, help popularize inventions and their exploitation, promote the progress and innovation in science and technology, and meet the needs of socialist modernization.“ [cf. W3Si05a].

In the same year China joined the Convention Establishing the World Intellectual Property Organization. Four years later, in 1984, the Patent Law of the People's Republic of China became effective which was amended two times, in 1994 and 2000, by the Standing Committee of the National People's Congress. 1998 the CPO was renamed to its current name State Intellectual Property Office of the Peoples' Republic of China (SIPO) which is an governmental institution controlled by the State Council [cf. W3Si05a].

4.6.1 Copyright

The current Copyright Law of the People's Republic of China has its origin in 1990 when the Standing Committee of the National People's Congress approved the first Chinese Copyright Law which was revised by an enhanced version of Copyright Law in October 2001 [cf. W3Si05b].

This law protects works of Chinese citizens as well as works of legal entities or other organisations. Therefor publishment of such a work is not necessary. Article 2 of the Chinese Copyright Law says also that in fact anybodies work, regardless his nationality or which country he belongs to, shall be protected [cf. W3Si05b].

Article 3 of the Copyright Law of the People's Republic of China defines materia and the necessary forms they have to be expressed in as follows: [cf. W3Si05b].

“ (1) written works;
(2) oral works;
(3) musical, dramatic, quyi' (traditional art forms), choreographic and acrobatic works;
(4) works of fine art and architecture;
(5) photographic works;
(6) cinematographic works and works created by virtue of an analogous method of film production;
(7) drawings of engineering designs, and product designs; maps, sketches and other graphic works and model works;
(8) computer software;

(9) other works as provided for in laws and administrative regulations."
[cf. W3Si05b].

There is also a list of granted rights for copyright owners, like in most other countries, provided by this law which includes among others the right of publication, of authorship, of alteration, of reproduction, of distribution, the right of exhibition, of performance, of broadcast, the right of adaptation and the right of translation [cf. W3Si05b].

4.6.2 Patents

Due to the fact that the Patent Law of the People's Republic of China is – compared with other countries – a relatively new regulation there is of course not that much information concerning the historical background available (cf. Chapter 4.6).

As well as the Chinese leadership changed its policy and tried to stimulate the industry in the last years the Chinese government is also anxious to make up for a competitive patent system. To achieve this goal two guidelines were created which provide a collection of measures that shall be realised in the following years. These guidelines are:

- **Major National Patent Work 2002**

  This Paper specifies several measures to enhance the existing awareness of importance of the appropriate combination of patent work economy, science and technology among enterprises and institutions. Further it is postulated to strengthen patent protection and international cooperation [cf. W3Si05c].

- **"Tenth Five-year Plan" for National Patent Work**

  This Paper discusses very similar subject-matters like the Major National Patent Work 2002 but in addition to these it demands among others an acceleration of patent examination, an enhancement of the intellectual property awareness of the society, or an advancement of the research of intellectual property strategy, tactics and policy [cf. W3Si05d].

4.6.3 Software Patents

Referring to Software Patents there can no regulations be found – neither in the Patent Law of the People‘s Republic of China nor within the Implementing Regulations of the Patent Law of the People‘s Republic of China – that would explicitly deal with these or with related matters [cf. W3Si05e and W3Si05f].

In chapter 2 – Requirements for Grant of Patent Right – of the Patent Law of the People‘s Republic of China Article specifies subject-matters that are not patentable.

Article 25:

> “For any of the following, no patent right shall be granted:
> (1) scientific discoveries;
> (2) rules and methods for mental activities;
> (3) methods for the diagnosis or for the treatment of diseases;
> (4) animal and plant varieties;
> (5) substances obtained by means of nuclear transformation.
>
> For processes used in producing products referred to in items (4) of the preceding paragraph, patent right may be granted in accordance with the provisions of this Law.“ [cf. W3Si05e].

As it can bee seen there is no reason why software should not be patentable in China. According to this the authors of this paper used the possibility to execute an online patent-search at the SIPO-Homepage and found about 660 patents related to “software“ and about 190 patents related to “algorithm“ which prove that the opportunity of receiving patents for software exists in China. Furthermore there is obviously no necessity to point out any technical context like it is necessary in other regions of the world, for example in Europe.

4.6.4 Hong Kong

As a result of its history Hong Kong takes a special position in the Chinese Patent System. Since 1898, after the Opium Wars, Hong Kong was under British reign. After becoming a crown colony in 1943 Hong Kong was under British sovereignty for 54 years. On 30th June 1997 it was given back China.

This long time of British governance had of course also effects on the patent law.

Hence there exist three designated patent offices at the so called “Hong Kong Special Administrative Region“ of which an applicant can decide where he wants to apply for a patent.

“The grant of a standard patent in Hong Kong, China is based on the registration of a patent granted by one of three designated patent offices

- State Intellectual Property Office, People's Republic of China
- European Patent Office, in respect of a patent designated the United Kingdom
- United Kingdom Patent Office.“ [cf. W3Hk05].

As a matter of course the patent laws and regulations of the region, which is referred to by the specific patent office, take effect but only at the Chinese territory (cf. Chapter 4.2 and 4.6).

4.7 The Arab States of the Gulf

In 1981 the leaders of six of the Arab States of the Gulf decided to cooperate in several scopes of economic and cultural concerns. As a result of this decision the “Cooperation Council for the Arab States of the Gulf“ (GCC) was established.

“On 21st Rajab 1401 AH corresponding to 25th May 1981, Their Majesties and Highnesses, the leaders of the United Arab Emirates, State of Bahrain, Kingdom of Saudi Arabia, Sultanate of Oman, State of Qatar and State of Kuwait met in Abu Dhabi, United Arab Emirates, where they reached a cooperative framework joining the six states to effect coordination, integration and inter-connection among the Member States in all fields in order to achieve unity, according to article 4 of the GCC Charter. Article 4 also emphasized the deepening and strengthening of relations, links and areas of cooperation among their citizens. The underpinnings which are clearly provided for in the

preamble of the GCC Charter, confirm the special relations, common qualities and similar systems founded on the creed of Islam, faith in a common destiny and sharing one goal, and that the cooperation among these states would serve the sublime objectives of the Arab nation.“ [cf. W3GC05a].

Article 4 of the GCC Charter, as referred to above, reads as follows:

“**Objectives:**

The basic objectives of the Cooperation Council are:

1. To effect coordination, integration and inter-connection between Member States in all fields in order to achieve unity between them.

2. To deepen and strengthen relations, links and areas of cooperation now prevailing between their peoples in various fields.

3. To formulate similar regulations in various fields including the following:

    1. Economic and financial affairs

    2. Commerce, customs and communications

    3. Education and culture

4. To stimulate scientific and technological progress in the fields of industry, mining, agriculture, water and animal resources; to establish scientific research; to establish joint ventures and encourage cooperation by the private sector for the good of their peoples.“ [cf. W3GC05b].

A consequence of this GCC Charter was the establishment of the “Patent Office of the Cooperation Council for the Arab States of the Gulf“ (GCC Patent Office).

In contrast there are the Copyright Offices which operate independent from each other in their own countries. Unfortunately, the authors of this paper were not able to receive any information concerning the different copyright laws because there is no possibility for any online contact with these offices [cf. W3Wi05].

4.7.1 Patents

The current GCC Patent Regulation has its roots in 1992 when parent patent regulation was approved by the Supreme Council of the GCC in its 13th session. Seven years later, in 1999, an amendment of the at that time existing regulation came into force which describes the actual state.

Article 2 defines principles that make an invention patentable. These principles are of course quite similar to other patent regulations of the world but there is a especial part of Article 2/1 that is characteristic for Islamic regions.

“2/1 An invention shall be patentable according to the provisions of this Regulation and its Bylaws if it is new, involves an inventive step, industrially applicable and is not contrary to the laws of Islamic Sharia, or public order or to morality observed in the Cooperation Council States, whether that was pertaining to new products, industrial processes, or to manufacturing methods.“ [cf. W3Gu05].

Obviously there is also a religious component, which will be discussed later on in this paper (cf. Chapter 5.2), that has to be considered by an applicant if he wants to apply for a grant of a patent in this region.

4.7.2 Software Patents

Article 3 of the GCC Patent Regulation designates all reasons that exclude inventions from patentability.

“**Article 3**

3/1 for the purposes of this Regulation, the following shall not be regarded as inventions:

3/1/1 Discoveries, scientific theories, mathematical methods, and computer programs.

3/1/2 Schemes, rules, and methods for doing business, performing purely mental acts, or playing games.

3/1/3 Plant varieties and species of animals, and biological processes for the production of plants or animals with the exception of microbiological pro cesses and the products thereof.

3/1/4 Methods of surgical or therapeutic treatment of the human or animal body and methods of diagnosis applied to the human or animal body with the exception of products used in any of these methods.

3/2 This Regulation shall not protect varieties of plants or species of animals.“ [cf. W3Gu05].

As Article 3/1/1 explicitly declares it is not possible to grant a patent for software and related materia. There are also no Implementing Regulations or Bylaws that would create an opportunity to apply for a patent by pointing out the technical context of the software like it is in, for example, India (cf. Chapter 4.5.2).

4.8 Eurasia

As a result of the termination of the Union of Soviet Socialist Republics (USSR) on 14th November 1991 all ministries and bodies of the state management were abolished. According to this the patent office of the USSR the “USSR Gospatent“ closed-down on 1st December 1991. Thereby the single patent space was segmented to the territories of the now independent parts of the former USSR and an “unfavorable situation was formed in respect of the invention activity, the creation of new kinds of equipment, goods, the implementation of new technologies“ [cf. W3Ea05a].

Finally the idea was born to establish an “Interstate System“ to protect the single patent space.

“Bearing in mind that after the disintegration of the USSR the single patent space in the territory of the newly born states would be broken and that it would be impossible to stop the political process, the only reasonable way out was to maintain a central body for the industrial property protection alongside with Patent Offices which may be established by the independent Republics, which would grant the single patent in the single patent space.“ [cf. W3Ea05a].

Before the Implementation of this system was able to begin the future Member States, the former republics of the USSR, enacted four principles of an organisation of a single patent system.

“The principles of organization of a single patent system were as follows:

1. The Contracting States would establish a single patent system providing that the legal protection of industrial property in the territory of those States should be effected on the basis of a single application which would be considered by a single Patent Office.

2. The patent granted by the Patent Office in the framework of such a single patent system would be valid in the territory of all the Contracting States, i.e., such a patent may be granted, assigned or canceled in the territory of all the Contracting States with due regard to the invention patentability criteria provided for in the USSR legislation.

   The Contracting States would recognize the validity, in their territory, of the earlier titles of protection issued in the USSR for inventions, industrial designs and trademarks.

3. The Interstate Patent Council should be formed for the purpose of working out a coordinated policy of the Contracting States in the patent field.

4. The Patent Office, including the organizations subordinate at that time to the USSR Gospatent, would be the executive body of the single patent system, which would be authorized to grant titles of protection for industrial property.“ [cf. W3Ea05a].

On 27th December 1991 the “Agreement on Interstate Scientific and Technical Cooperation“ and the “Provisional Agreement on the Protection of Industrial

Property“, which was related to the protection of inventions, industrial designs and trademarks, were signed by the participating states [cf. W3Ea05a].
These were:

- The Republic of Armenia
- The Republic of Belarus
- The Republic of Moldova
- The Russian Federation
- The Republic of Tajikistan
- Ukraine

This new patent system should adopt USSR laws, “in particular the laws on inventions, trademarks and industrial designs so long as there was no another legal base at that time.“ [cf. W3Ea05a].

In addition an open “Patent Convention“ similar to the system of the “European Patent“ was suggested. In the following years principles of preparing a Eurasian Patent Convention were developed. The most important were:

- “creation of the Eurasian Patent Organization composed of the Administrative Council and the Eurasian Patent Office;
- the location of the headquarters of the Interstate Organization is Moscow; the official language is Russian;
- the Eurasian Patent Office grants the Eurasian patent for any invention which is new, involves an inventive step and is industrially applicable;
- each Contracting State would provide for in its legislation the same civil law or another liability for infringement of a Eurasian patent as is provided for infringement of a national patent;“ [cf. W3Ea05a].

The Eurasian Patent Convention was signed on 9th September 1994 by the following states [cf. W3Ea05b]:

- The Republic of Azerbaijan
- The Republic of Armenia
- The Republic of Belarus
- Georgia
- The Republic of Kazakhstan
- The Kyrgyz Republic
- The Republic of Moldova
- The Russian Federation
- The Republic of Tajikistan
- Ukraine

According to this the Eurasian Patent Organisation (EAPO) was founded in 1995.

4.8.1 Patents

The Eurasian Patent Law is not a replacement of national patent laws. “In seeking patent protection, the applicant has a choice between the national procedure in each Contracting State and the Eurasian procedure, which grants a Eurasian patent conferring protection in all the Contracting States.“ [cf. W3Ea05c].

It exists also the possibility to convert an Eurasian Patent application to a national patent application. “An applicant may file a request designating those Contracting States in which he wishes to file a patent application according to the national procedure within six months of notification by the Eurasian Office that his patent application or his appeal against a decision reached by the Eurasian Office has been refused.“ [cf. W3Ea05c].

The matter of patentability is interesting because there is no explicit definition of the term “invention“.

“The Eurasian Convention does not define "invention", but contains a list of items which cannot be regarded as inventions. These are:

- Scientific theories and mathematical methods;
- Business organisation and management methods;
- Notations, schedules and rules;
- Rules and methods of performing mental acts;
- Computer programs and algorithms;
- Integrated circuit layouts;
- Designs and layouts of buildings, installations and spaces;
- Treatments relating only to the external appearance of products and intended to satisfy aesthetic requirements.

In addition, Eurasian patents cannot be granted for:

- Plant or animal varieties;

- Inventions contrary to "ordre public" and morality.“ [cf. W3Ea05c].

4.8.2 Software Patents

As we can see in Chapter 4.8.1 of this paper it is not possible to apply for Eurasian Software Patent because this materia is explicitly excluded from patentability. But there are still the national patent laws of the Member States of the Eurasian Patent Organisation. In some states exist laws and regulations that afford the protection of software and related materia irrespective from Copyright Law.

For example the Kyrgyz Republic has enacted the law “On Legal Protection of Computer Programs and Database“ which provides an opportunity to protect software [cf. W3Ky05].

4.9 Africa

Until the middle of the 20th century most francophone countries in Africa were dependent form the former colonial power, which was of course France. Finally 1960 these countries became independent from French governance. Since that time French patent laws didn‘t carry weight in this region any longer so they had to their own patent system.

In the end 12 African countries conjointly decided “to create a single body to act as the national patent rights authority for each of them. The African and Malagasy Patent Rights Authority (OAMPI) was thus born on 13th September 1962 by the agreement known as the 'Libreville Agreement'.“ [cf. W3OA05].

The Libreville Agreement was based on the provisions of the Paris Convention (cf. Chapter 3.2.1) and it covered patents, trademarks or tradenames and industrial drawings or models [cf. W3OA05]. This Agreement was signed by:

- Federal Republic of Cameroon
- Central African Republic
- Republic of Congo
- Republic of Côte d'Ivoire
- Republic of Dahomey
- Republic of Upper Volta
- Republic of Gabon
- Republic of Mauritania
- Republic of Senegal
- Republic of Chad
- Malagasy Republic
- Republic of Niger

After the rescission of the Malagasy Republic of the Libreville Agreement (Libreville – capital of Gabon) the remaining founder members decided to work it over because several insufficiencies were revealed. On 2nd March 1977 the "Bangui Agreement" (Bangui – capital of Central African Republic) relating to the creation of the "African Intellectual Property Organization (OAPI)" was signed by 16 states [cf. cf. W3OA05]. These were:

- Benin
- Burkina Faso
- Cameroon
- Central African Republic
- Congo
- Cote d'Ivoire
- Equatorial Guinea
- Gabon
- Guinea
- Guinea Bissau
- Mali
- Mauritania
- Niger
- Senegal
- Chad
- Togo

But the OAPI does not provide the only supranational patent system.

In 1976 a draft agreement an the creation of the "Industrial Property Organization for English-speaking Africa (ESARIPO)" was prepared and signed on 9th December. Nine years later in 1985 this organisation was renamed to "African Regional Industrial Property Organization (ARIPO)" to open it up for not English speaking African countries [cf. W3Ar05a].

The objectives of this organisation consider that at the time ARIPO and ESARIPO respectively was established most Member States had "dependent industrial property legislations", that is their patent systems were governed by law of a foreign country which was in most cases the United Kingdom. [cf. W3Ar05b].

Today ARIPO has 15 Member States:

- Botswana
- The Gambia
- Ghana
- Kenya
- Lesotho
- Malawi
- Mozambique
- Sierra Leone
- Somalia
- Sudan
- Swaziland
- Tanzania
- Uganda
- Zambia
- Zimbabwe

4.9.1 Patents

The “Bangui Agreement“ of 2nd March 1977 which was revised on 24th February 1999 regulates all concerns of patents and patentability within the OAPI territory. It defines patentable inventions as well as in Article 6 of “Annex I“ not patentable matters.

“Patents shall not be granted for the following:

(a) inventions the exploitation of which is contrary to public policy or morality, provided that the exploitation of the invention shall not be considered contrary to public policy or morality merely because it is prohibited by law or regulation;

(b) discoveries, scientific theories and mathematical methods;

(c) inventions having as their subject matter plant varieties, animal species and essentially biological processes for the breeding of plants or animals other than microbiological processes and the products of such processes;

(d) schemes, rules or methods for doing business, performing purely mental acts or playing games;

(e) methods for the treatment of the human or animal body by surgery or therapy, including diagnostic methods;

(f) mere presentations of information;

(g) computer programs;

(h) works of an exclusively ornamental nature;

(i) literary, architectural and artistic works or any other aesthetic creation.“ [cf. Bang99, 36].

Within the ARIPO territory the so call “Harare Protocol“ (Harare – capital of Zimbabwe) regulates all concerns of patents and patentability which was adopted in 1982 and last amended on 13th August 2004. Unfortunately there is no list of materia or subject-matters that are not patentable [cf. Hara04, 5 et seqq.].

4.9.2 Software Patents

As we can see in Chapter 4.9.1 the Bangui Agreement explicitly excludes computer programs from patentability. There are also no Implementing Regulations or Bylaws that would create an opportunity to apply for a patent by pointing out the technical context of the software like it is in, for example, India (cf. Chapter 4.5.2).

The Harare Protocol is concerning this matter quite different because in the whole text there is not a single word related to software, computer programs, algorithm or mathematical method and that is why the authors of this paper were not able to make a statement regarding software patents in this specific case [cf. Hara04].

5 Cultural Background Information

During researching literature and online sources the authors of this paper noticed that intellectual property is treated in very different ways depending on the historical and cultural background of a selected region.

Below the authors will give an overview of different perceptions of intellectual property.

5.1 Regions under Communist Leadership

Countries under straight communist leadership, such as China before it stated its policy of reform and opening-up, there does not even the question come up if intellectual property shall be protected or be patentable because private ownership and property does not exist. A definition of communism clarifies this explanation.

Communism – " A theory which advocates a state of society in which there should be no private ownership, all property being vested in the community and labour organized for the common benefit of all members; the professed principle being that each should work according to his capacity, and receive according to his wants."[cf. W3Co05].

This definition explains why China established its patent system that late (cf. Chapter 4.6).

5.2 Islamic Regions

In Islamic regions the question of patentability is always related with the Islamic Law "Sharia". Because the concept of intellectual property is new compared with the age of Sharia this materia is not expressly mentioned by this law [cf. W3Us05].

There are two groups of contemporary scholars which are of opposed opinions. The one that does not approve this concept argues that "the concept of ownership in Shariah is confined to the tangible objects only." [cf. W3Us05].

The other group accepts the concept of intellectual property because “they say that there is no express provision in the Holy Qur'an or in the Sunnah which restricts the ownership to the tangible objects only.“ [cf. W3Us05].

Obviously its depending on the religious leader of country if intellectual property is patentable or not.

5.3 Former Colonies

In these regions of the world the authors were able to observe one typical approach in establishing a patent system. In a first step a country adopts – some did it voluntarily some were forced to by the colonial power – the patent laws of the colonial power. In a second step after becoming independent these laws are being adapted to a greater or lesser extent depending on what the intention of this country is, for example to have completely different systems to the former colonial power as a symbol of independence.

6 Pros and Cons of Software Patents

Like at any other subject-matter there exist also two perceptions of the sector of software patents, which will be discussed by the authors within the following section of this paper.

6.1 Protagonists of Software Patents

The biggest proponents of software patents are of course the largest manufacturer of software, for example Microsoft.

Most of these enterprises use the same argumentation that shall demonstrate the benefits of the patentability of software. Some of these read as follows:

“Software patents, in particular, help expand technology’s benefits to society. Legal protection encourages software developers to share information needed to make their products compatible. Patent licensing enables developers to improve their products by incorporating and enhancing others’ innovations.“ [cf. W3Ms05a].

“Trailblazing work by our engineers and scientists has earned more than 3,000 U.S. patents. This year we are on course to invest nearly $7 billion in the research and development of new technologies. This cycle of investment and innovation is made possible by a legal system that helps protect intellectual property. Patents are so useful, in fact, that keeping up with the demand for them poses a major challenge.“ [cf. W3Ms05a].

In addition to the attempt of convincing the society of the benefits of the patentability of software for progress, economy and the society itself, there are also efforts of lobbying.

“Software patents enable developers to protect the value of their work and at the same time share their successes with the world. In March, the House passed H.R. 1561, which will add improvements to the U.S. Patent and Trademark Office. Now we need the Senate to act as well. You can send email to your Senators to let them know where you stand on this issue by visiting http://www.freetoinnovate.com.“ [cf. W3Ms05b].

With this appeal Microsoft tried to encourage people to tell the politicians how they think about software patents and if possible to ask for an improvement of the patent office.

Within the context of the controversy about software patents and the directive of “Computer-implemented Inventions and Patents“ which was rejected by the European Parliament in 2005 several enterprises and institutions tried to influence the opinions of members of the European Parliament and those of Europeans per se [cf. W3Kr05b].

For example the German association “Zentralverband Elektrotechnik- und Elektronikindustrie (ZVEI)“ forecasted financial losings of billions of Euros and even a threat of human life if software patents were not approved. [cf. W3Kr05b].

This statement shows also that the proponents of software patents are not only worried about a pretended deceleration of improvement but rather about possible financial losings.

6.2 Antagonists of Software Patents

The Antagonists of software patents are mainly representatives of the Open Source Software (OSS) community but there are also some economist that expect negative effects of the patentability of software.

The Swiss economist Margit Osterloh said in 2004 that an expansion of the existing patent system to make software patent possible without proof of economic benefits would be wrong. In addition she said that such patent system would “kill“ Open Source Approaches [cf. W3Kr05a].

Other arguments are named by Florian Müller who founded a campaign against the patentability of software “NoSoftwarePatents.com“. With reference to Open Source Software you can read at his home page (http://www.nosoftwarepatents.com):

“Its success is the primary reason why patents are a threat to open-source software. Since it is available free of charge (subject to certain conditions), open-source software is a fierce competitor to traditional software companies. It takes away market share, and it brings down the price levels. For instance, the

success of OpenOffice forced Microsoft to lower the price of its own Office product in Thailand to approximately 30 Euros. At that price, you can hardly buy an Office book in Europe. It would be naive to think that Microsoft and other large companies would not resort to patent litigation if open source continues to have such a dramatic impact on their business.“ [cf. W3No05a].

The reasoning of this statement is – in the opinion of the authors of this paper – comprehensible and plausible.

There can also be found surveys that abet Florian Müllers reasoning. In terms of possible negative effects of software patents for small and medium enterprises you can find a paragraph from “Deutsche Bank Research“ which reads as follows:

“SMEs are crucial providers of pathbreaking innovations, but would be most adversely affected by patentability. The majority of them is deterred by the costs of patenting themselves, but would have to navigate around software patent portfolios of large corporations.“ [cf. W3No05b].

Especially the massiv effort of investigating software patent portfolios is considered by the authors as almost insuperable barrier.

Additionally antagonists of software patents fear negative effects for individuals in terms of royalties. The German initiative “ Initiative hessischer Unternehmen gegen Patentierbarkeit von Software“ investigated 92 home pages of members of the European Parliament concerning possible incidental royalties. The result was that 77 of these home pages contained one or more of ten selected software patents as to which the home pages were reviewed [cf. W3Pa05].

Each of these politicians would have to pay royalties if software and related materia were patentable.

Finally there is an other statement that is contrary to the concept of software patents derives from Tim Berners-Lee who is known as the creator of the internet.

“It was simply that had the technology been proprietary, and in my total control, it would probably not have taken off. The decision to make the Web an open system was necessary for it to be universal. You can't propose that something be a universal space and, at the same time, keep control of it.“ [cf. W3Ms05c].

7 Conclusion

After having dealt with the materia of software patents and software patentability intensively the authors of this paper are quite sceptical to software patents and related materia because they are rather able to relate to the antagonists argumentation than to that of software patent protagonists.

On the one hand the authors see the same difficulties and dangers for small and medium enterprises and the Open Source community as well as the potentially arising trouble for individuals caused by royalties. But it is still arguable if it were possible to sanction such an amount of infringements of a patents regarding to individuals.

On the other hand the software patent protagonists argument of a probable deceleration of improvement appears to be reliable in the opinion of the authors.

All in all the authors pleased that patent system in Europe and in most other parts of the world is not that generous regarding to patentability of software as it is in the USA.

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