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Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

on the patentability of computer-implemented inventions

(presented by the Commission)

EXPLANATORY MEMORANDUM

OBJECTIVE OF THE COMMUNITY INITIATIVE

Software development has shown steady growth in recent years. It has had a major impact on the whole of European industry and provides a substantial contribution to the GDP and to employment. In 1998, the value of the packaged software market in Europe was 39 B Euros[1]. A recent study by Datamonitor[2] concluded that the number of packaged software workers in Western European countries will grow by between 24% and 71% from 1999 to 2003, with an average of 47%. A further conclusion is that each packaged software job creates 2-4 jobs in the downstream economy and 1 job in the upstream economy.

Its future potential for growth and, thus, its impact on the economy are even stronger because of the accelerating importance of electronic commerce in the Internet-based Information Society. Given the maturity that today's software industry has achieved, many improvements of software are increasingly difficult and expensive to achieve while, at the same time, they can easily be copied.

Patents play an important role in ensuring the protection of technical inventions in general. The basic principle underlying the patent system has proven its efficiency with respect to all kinds of inventions for which patent protection has thus far been afforded in the Member States of the European Community. Patents act as an incentive to invest the necessary time and capital and it stimulates employment. Society at large also reaps benefits from the disclosure of the invention which brings about technological progress upon which other inventors can build.

The current legal situation regarding patent protection in the field of computer-implemented inventions[3] is ambiguous, and thus lacks legal certainty. In fact, computer programs “as such” are excluded from patentability by Member States’ patent laws and the European Patent Convention (EPC)[4] but thousands of patents for computer-implemented inventions have been granted by the European Patent Office (EPO) and by national patent offices. The EPO alone accounts for more than 20,000 of them. Many of these patents are in the core areas of information technology, i.e. digital data processing, data recognition, representation and storage. Others are being granted in other technical areas such as automotive and mechanical engineering, e.g. for program-controlled processors.

While the statutory provisions setting out the conditions for granting such patents are similar, their application in the case law and the administrative practices of Member States is divergent. There are differences, in particular, between the case law of the Boards of Appeal of the European Patent Office and the courts of Member States. Thus, a computer-

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1 Cf. study by Booz Allen & Hamilton for the Dutch Ministry of Economic Affairs, The Competitiveness of Europe's ICT Markets, March 2000, at 10.

2 *Packaged software in Western Europe: The economic impact of the packaged software industry on the combined economies of sixteen European countries* September 2000 Datamonitor, London

3 For a definition of the term, see Art. 1.

4 “The Munich Convention”. It entered into force on 7 October 1977. All 15 EC Member States as well as Cyprus, Liechtenstein, Monaco, Switzerland and Turkey are contracting states.

implemented invention may be protected in one Member State but not in another one, which has direct and negative effects on the proper functioning of the internal market[5].

This Directive addresses this situation by harmonising national patent laws with respect to the patentability of computer-implemented inventions and by making the conditions of patentability more transparent.

THE BACKGROUND TO THE INITIATIVE: COMMISSION'S CONSULTATIONS

Following consultation centred on the 1997 Green Paper on the Community Patent and the Patent System in Europe[6], the patentability of computer-implemented inventions was one of the priority issues identified in early 1999 on which the European Commission should rapidly take action[7]. It was envisaged that a Directive harmonising Member States' law on the issue would remove the ambiguity and lack of legal certainty surrounding the issue. Furthermore, it was stated that in parallel with this action at the Community level, the contracting states to the EPC would need to take steps to modify Article 52(2)(c) of the Convention, in particular to abolish computer programs from the list of non-patentable inventions.

After 1999, public debate on the issue developed and became more intense. Some sections of European industry repeatedly asked for swift action to remove the current ambiguity and legal uncertainty surrounding the patentability of computer-implemented inventions, while on the other hand, developers and users of open source software and a substantial number of small and medium-sized enterprises backing them have increasingly raised concerns about software patents.

On 19 October 2000 the European Commission launched a final round of consultations in which the public at large and Member States were invited to comment on the basis of a paper which was made available on the Internet[8].

The consultation adopted a two-pronged approach. In the first place, the basic question was posed as to whether there was any need at all for action at the Community level on harmonisation, and in the case this question were to be answered in the affirmative, what the appropriate level would be in general terms. Following this, there was set out in some detail the current state of the case law as established within the EPO, with the suggestion of a number of very specific elements which might figure in any harmonisation exercise based more or less on this *status quo*.

The consultation produced around 1450 responses, which have been analysed by a contractor whose report has been published[9].

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5 On the divergences in greater detail see below.

6 Promoting innovation through patents: Green Paper on the Community patent and the patent system in Europe COM(1997) 314 final, 24 June 1997

7 Promoting innovation through patents: The follow-up to the Green Paper on the Community patent and the patent system in Europe COM (1999) 42 final , 5 February 1999

8 The patentability of computer-implemented inventions: consultation paper by the services of the Directorate-General for the Internal Market (19 October 2000). Paper available for downloading at http://europa.eu.int/comm/internal_market/en/indprop/softpaten.htm

9 http://europa.eu.int/comm/internal_market/en/indprop/softpatanalyse.htm

One conclusion which can be drawn unquestionably from the responses is that there is a clear demand for action. The present situation in which there is lack of clarity as to the limits of what is patentable is seen as an important negative influence on the industry. However as to precisely what action should be taken, opinions were sharply divided between those who wish to see strict limits on software-related patents (or a complete ban) and those who support harmonisation at the level of more or less the *status quo* as defined by the current practice and jurisprudence of the EPO.

The individual responses were dominated by supporters of open source software, whose views ranged from wanting no patents for software at all to the "official" position of the Eurolinux Alliance which is to oppose patents for software running on general-purpose computers. On the other hand, submissions broadly in support of the approach of the consultation paper tended to come from regional or sectoral organisations representing large numbers of companies of all sizes, such as UNICE, the Union of Industrial and Employer's Confederations of Europe, EICTA, the European Information and Communications Technology Industry Association, and the European IT Services Association. There were also individual large organizations, other industry associations and IP professionals. Thus although the responses in this category were numerically much fewer that those supporting the open source approach, there seems little doubt that the balance of economic weight taking into account total jobs and investment involved is in favour of harmonisation along the lines suggested in the paper.

The Commission's Directorate-General for Enterprise also commissioned a study, specifically in relation to small and medium sized enterprises (SMEs)[10]. This study aimed to investigate how SMEs involved in the development of software manage their IP. A central objective was to produce for them a brochure that will enhance the awareness of various methods of IP protection, as well as to inform them of these forms of protection. The research was largely desk-based but was supplemented with a survey questionnaire of European software SMEs that were selected from a number of sources. Of the questionnaires distributed, 12 SMEs responded. A limited number of large European software companies were also surveyed, as was a group of public research organisations.

Among the SMEs who responded there was generally quite a low level of awareness of patents as a means of protection for their products. Patents were seen as complex, expensive and difficult to enforce for small entities and therefore less valuable than copyright or informal means of protection. Neither was there much awareness of the possibilities to use patents as a source of technical information. These results highlight the need to increase awareness among SMEs and present a particular challenge to practitioners and those responsible for administering the various systems.

The Commission has assessed the question as to how extensive harmonisation of the national patent laws regarding computer-implemented inventions should be in the light of the likely impact of the proposal on innovation and competition, both within Europe and internationally, and on European businesses, including electronic commerce. Moreover, it has considered the impact on small and medium-sized enterprises and on the creation and dissemination of

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[10] "Patent protection of computer programmes" (Contract no. INNO-99-04). Report available for downloading at ftp://ftp.ipr-helpdesk.org/softstudy.pdf. A complementary guide on software protection for Small and Medium-sized Enterprises is also available for download from the following link: ftp://ftp.ipr-helpdesk.org/software.pdf

free/open source software. For this purpose, in particular, the findings of a study on the economic impact of the patentability of computer programs as well as of other pertinent economic studies[11] have been taken into account. In determining the conditions for patentability, the Commission has paid special attention to the practice of its main trading partners, in particular of the United States and Japan. In this context, consideration has been given to the granting of patents for computer-implemented business methods in the United States, and more specifically to those of these patents which have applications in electronic commerce. Business method patents have become the subject of considerable debate in industrialised countries.

INTERNATIONAL COMPETITION: THE LEGAL SITUATION IN THE U.S. AND JAPAN

To create a level playing field regarding the conditions for protecting computer-implemented inventions between Europe and the U.S., it could have been considered desirable to widen the scope of protection and bring European patent law in this field more in line with the U.S. law. One could have conceived, in particular, to allow for the patentability of computer-implemented business methods.

The difference between the U.S. and Europe and between the U.S. and Japan is that in Europe there has to be a *technical contribution* provided by the invention. In Japan there is a doctrine which has traditionally been interpreted in a similar way: the invention has to be a highly advanced creation of technical ideas by which a law of nature is utilised. In the U.S., the invention must simply be within the technological arts and no technological contribution is needed. The mere fact that the invention uses a computer or software makes it become part of the technological arts if it also provides a "useful, concrete and tangible result". That the U.S. does not require the invention to provide a technical contribution means that the restrictions on patenting of business methods (apart from the requirements of novelty and inventive step) are negligible[12].

THE IMPACT OF THE PATENTABILITY OF SOFTWARE-RELATED INVENTIONS ON INNOVATION, COMPETITION AND ON BUSINESSES

The study referred to above (see note 11) relies on the United States as a test case. It finds that "the patentability of computer program related inventions has helped the growth of computer program related industries in the States, in particular the growth of SMEs and independent software developers into sizeable indeed major companies"[13]. In Europe, too, there is

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11 "The Economic Impact of Patentability of Computer Programs" (text available for downloading at http://europa.eu.int/comm/internal_market/en/indprop/studyintro.htm). The study was conducted by the Intellectual Property Institute, London, on behalf of the Commission and finalised in March 2000.
Other pertinent economic studies which have been taken into account and which relate to the divergent U.S. situation include Cohen, Wesley M., Nelson, Richard R., and Walsh, John P., Protecting their Intellectual Assets: Appropriability Conditions and why U.S. Manufacturing Firms Patent (or not), Working Paper 7552, National Bureau of Economic Research, February 2000; Bessen, James and Maskin, Eric, Sequential Innovation, Patents, and Imitation, Working Paper, Department of Economics, Massachusetts Institute of Technology, January 2000; Jaffe, Adam B., The U.S. Patent System in Transition: Policy Innovation and the Innovation Process, Working Paper 7280, National Bureau of Economic Research, August 1999.

12 In the wake of the decision of the U.S. Court of Appeals for the Federal Circuit, of 23 July 1998, in *State Street State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, patent applications for business methods have soared.

13 See study, at 5.

increasing, even though still relatively low, use by independent software developers of patents in raising finance or in licensing[14]. The main source of protection that has allowed the software industry to grow has been the law of copyright.

However, the study also clearly identifies concerns about the patentability of computer-implemented inventions in the U.S. They relate, first, to the grant of allegedly "clearly invalid patents" (in particular for e-commerce), that is patents which are granted for inventions that are either not new or where inventive step is on the face of it lacking. Second, patents for computer-implemented inventions might strengthen big players' market positions. And, third, patents for incremental innovation which is typical of the software industry entail the economic costs of figuring out the patent holders and negotiating the necessary licences. Yet, the study acknowledges that it has not been shown that these reservations would outweigh the positive effects of the patentability of computer-implemented inventions in the U.S. To outline how Europe might be better placed than the U.S. to avoid adverse effects, the study stresses "our strength in having opposition procedures in addition to the facility of being able to submit observations on the patentability of inventions to the EPO without the expense of opposition procedures". These are important legal means to ensure patent quality which are not available in the U.S.

Moreover, the study points out that in Europe we must ensure the application of proper examination standards, in particular of the inventive step, to prevent invalid patents[15]. It should be added that the quality of the examination done in particular by the EPO is widely respected. Finally, the study finds "no evidence that European independent software developers have been unduly affected by the patent positions of large companies or indeed of other software developers"[16].

The study identifies as one possible option for the scope of harmonisation to "stay with the *status quo* (as defined by the case law of the EPO), subject to removal of the exclusion of 'computer programs' 'as such'. This would, the authors consider, have no consequence save for the important one that SMEs and independent software developers will be less likely to consider computer program related inventions unpatentable."[17] On the other hand, "any move to strengthen IP protection in the software industry cannot claim to rest on solid economic evidence"[18].

THE CURRENT LEGAL SITUATION REGARDING ART. 52(1) AND (2) OF THE EPC

The fundamental requirement of "technical character"

According to the general requirements *cf.* article 52(1)-(3) of the EPC, which are reproduced in essence in Member States' patent laws, all patentable inventions must be new, involve an inventive step and be capable of industrial application *cf.* Article 52(1).

Under Art. 52(2) of the EPC, *programs for computers* "as such" are defined as not being inventions and are thus excluded from patentability. The Boards of Appeal of the EPO have held that it is fundamental to all inventions that they have a *technical character*. Similarly,

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14 Ibid., at 3.
15 Ibid., at 5 et seq.
16 Ibid., at 3.
17 Ibid., at 8.
18 Ibid., at 36.

Article 27(1) of the TRIPS Agreement confirms that patents shall be available for inventions in all fields of *technology*. Accordingly, the EPO Boards of Appeal and courts of the Member States have held that computer-implemented inventions can be considered as patentable when they have a technical character, i.e. when they belong to a field of technology. Computer-implemented inventions which meet this condition are not considered to fall under the exclusion in Article 52(2) as they are considered not to relate to programs for computers "as such". In fact, the exclusion has been interpreted by the Boards of Appeal of the EPO as relating to those computer-implemented inventions which have no technical character[19].

With regard to what computer-implemented inventions can be said to have "technical character" the conclusion to be drawn from the recent *Controlling pension benefits system*[20] case is that all programs when run in a computer are by definition technical (because a computer is a machine), and so are able pass this basic hurdle of being an "invention".

Similar considerations have been applied by the EPO Boards of Appeal to the other items of Art. 52(2) which are excluded "as such", for instance, to "methods for doing business", "presentation of information", or "aesthetic creations". This means that inventions relating to one of these items have equally been held to be patentable when they have a technical character.

With regard to the representation of the invention in the patent claims, the Board held, in *Computer program product I & II*[21] that if a program on a carrier has the *potential* to produce a technical effect when loaded and run on a computer, such a program claimed by itself should not be excluded from patentability. This has been interpreted as meaning that it should be allowable to claim such a program by itself or as a record on a carrier or in the form of a signal (*e.g.* stored as a file on a disk or transmitted across the internet).

The role of algorithms

The term "algorithm" may be understood in its broadest sense to mean any detailed sequence of actions intended to perform a specific task. In this context, it can clearly encompass both technical and non-technical processes.

The mere existence of an algorithm does not constitute a workable criterion for distinguishing patentable from non-patentable subject matter. An algorithm may underlie either a computer-implemented invention or an invention relating to a conventional (mechanical, electrical etc.) machine or the process carried out by that machine. The sole difference is that a computer program is executed by instructions directed to the computer and a conventional machine is operated by its (mechanical, electrical etc.) components.

An abstract algorithm can be defined in terms of pure logic in the absence of any physical reference points. It is possible that such an algorithm may be put to practical use in many different functions in apparently unrelated domains, and may be capable of achieving different effects. Thus, an algorithm which is considered as a theoretical entity in isolation from the context of a physical environment, and in respect of which it is accordingly not possible to

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19 *Computer program product I* and *II*, T1173/97 of 1.7.1998, 1999 OJ EPO [609] and T0935/97 of 4.2.1999, [1999] R.P.C. 861. The holdings of the two cases are largely similar.

20 *Controlling pension benefits system/PBS* T-0931/1995 decision dated 8.09.2000

21 *Supra*. See also case T1002/92 where the EPO Board of Appeal made this criticism for the first time.

infer its effects, will be inherently non-technical and thus not susceptible of being regarded as a patentable invention.

It is a consequence of the above that an abstract algorithm as such cannot be monopolised. The normal rules for patentability mean that a patent claim to an invention which is founded on a particular algorithm would not extend to other applications of that algorithm.

Patent and copyright protection are complementary

A *patent* protects an invention as delimited by the patent claims which determine the extent of the protection conferred[22]. Thus, the holder of a patent for a computer-implemented invention has the right to prevent third parties from using any software which implements his invention (as defined by the patent claims). This principle holds even though various ways might be found to achieve this using programs whose source or object code is different from each other and which might be protected in parallel by independent copyrights which would not mutually infringe each other[23].

On the other hand, for the purposes of Directive 91/250/EEC on the legal protection of computer programs[24], *copyright* protection is accorded to the particular expression in any form of a computer program, while ideas and principles which underlie any element of a computer program, including those which underlie its interfaces, are not protected. A computer program will be accorded copyright protection where the form of expression is original in the sense of being the author's own intellectual creation. In practice, this means that copyright would subsist in the expression in any form of the source code or the object code but would not subsist in the underlying ideas and principles of the source code or object code of a program. Copyright prohibits a substantial copy of the source code or object code but does not prevent the many possible alternate ways to express the same ideas and principles in different source or object code. It also does not protect against development of an identical or substantially identical program without the knowledge of an existing copyright.

Accordingly, legal protection may exist in a complementary manner in respect of the same program both by patent and by copyright law. The protection may be cumulative in the sense that an act involving exploitation of a particular program may infringe both the copyright in the code and a patent whose claims cover the underlying ideas and principles.

Directive 91/250/EEC includes specific provisions (Articles 5 and 6) to the effect that copyright in a computer program is not infringed by the doing of acts under certain circumstances which would otherwise constitute infringement. These exceptions include acts done for the purposes of studying the ideas and principles underlying a program and the reproduction or translation of code if necessary for the achievement of the interoperability of an independently-created computer program. It is also specified that the making of a back-up copy by a lawful user cannot be prevented.

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22 The claims have to be interpreted in the light of the description and the drawings relating to the invention. Cf., e.g., Art. 69(1) of the EPC.

23 Such expression alone cannot serve as disclosure of a respective invention; see, e.g., EPO Guidelines for Substantive Examination, C-II, 4.14a.

24 The law relating to copyright, as it applies to computer programs, was harmonised at Community level with the introduction of this Directive, Council Directive of 14 May 1991 on the legal protection of computer programs (91/250/EEC), [17.5.1991] OJ L 122, at 42. See Commission Report on the implementation and effects of Directive 91/250/EEC, COM(2000) 199 final of 10.4.2000.

Such provisions are justified and necessary in the context of copyright law because copyright confers the absolute right to prevent the making of copies of a protected work. All the acts mentioned involve making copies and would therefore infringe in the absence of any exception. On the other hand, Member States' patent laws, while not fully harmonised, do not in general extend to acts done privately and for non-commercial purposes, or to acts carried out for experimental purposes related to the subject-matter of the invention. Nor is it likely that the making of a back-up copy in the context of the authorised exploitation of a patent covering a programmed computer or the execution of a program could be construed as an infringement. Thus, because of the differences between the subject-matter of protection under patent and copyright law, and the nature of the permitted exceptions, the exercise of a patent covering a computer-implemented invention should not interfere with the freedoms granted under copyright law to software developers by the provisions of the Directive 91/250/EEC. Moreover, as regards developing interoperable programs, the requirement for each patent to include an enabling disclosure should facilitate the task of a person seeking to adapt a program to another, pre-existing one incorporating patented features (the requirement of disclosure has no analogue under copyright law). Finally, it should be said that in the event that patent rights are exercised in abusive way, compulsory licenses may be available as a remedy, as well as possible recourse to competition law. Recital 18 and Article 6 make specific reference, *inter alia*, to the provisions on decompilation and interoperability in Directive 91/250/EEC.

THE NECESSITY OF A COMMUNITY ACTION HARMONISING NATIONAL LAWS AND ITS LEGAL BASIS

European Patents are granted by the European Patent Office, thus a uniform set of rules in a centralised procedure is provided for according to which, once granted European patents become subject to the national patent laws of each country for which they enter into force. Furthermore, the basic national laws on patentability are in principle uniform as between themselves and the provisions of the European Patent Convention, but their detailed interpretation – with regard to the effect of a European Patent as well as a national patent - is the preserve of the courts. While the national courts may accord persuasive authority to decisions of the EPO's appellate bodies (and to decisions of other Member States' courts), they are not bound to follow them, and in the event of direct conflict, they may have no choice but to respect binding precedents in accordance with their own legal traditions. This can lead, and has in practice led, to divergences in interpretation of the European Patent Convention and consequently in the scope of protection accorded to certain classes of invention.

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). This suggests strongly that the courts of other Member States, in the absence of any harmonising measures, could well come to widely diverging positions if and when confronted with cases to decide in this field. Thus, patentees and the public at large who may be users of patentable matter currently lack certainty as to whether in the event of litigation patents which have been granted in this field will be upheld.

Moreover, the existence of such uncertainty and divergences in legal protection can have a real and negative effect on investment decisions and free movement of goods within the internal market. The most obvious example of this can arise where a product is held to be

patentable in the jurisdiction of one Member States and not in another. The competitive environment for innovative products in this situation will be radically different depending upon whether or not they are protected, while unlicensed copies will be prevented from passing across the Community's internal frontiers from Member States where protection has been denied to those where it exists. Companies considering the location of development facilities or the entry into new markets are also likely to be influenced in their decisions by the degree of certainty in the extent to which the local courts would give protection to computer-implemented inventions.

It should also be recalled that patents can be obtained by a purely national route without the involvement of the European Patent Office. The above arguments concerning divergences between national laws apply equally in such situations, but there is the additional factor that the applications will be fully processed and granted exclusively according to national laws. Thus even the unifying factor of the EPO as a single granting authority will be absent, with the consequence that members of the same patent "family" in different countries (*i.e.* patents all relating to the same invention and stemming from a single original application) could be granted from the very outset with very different scopes of protection.

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. This is illustrated by *Merrill Lynch*[25], for business methods, and by *Raytheon Co's Application*[26], for mental acts.

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[27]. Such an interpretation would open the door to significant extension of patentability into this field. Relevant cases include the "Automatic Sales Control" case[28] and *Speech Analysis Apparatus*[29]. While the *Bundesgerichthof* recently clarified the position[30] by affirming that the correct approach is the one adopted by the EPO Board of Appeals and this Directive, namely that an inventive technical contribution is an essential prerequisite for inventive step, this example clearly illustrates the potential for judicial interpretation to develop the law in such a manner as to result in major changes to the scope of patentability at the national level.

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25 [1989] RPC 569.

26 [1993] RPC 427, insofar confirming *Wang Laboratories Inc's Application* [1991] RPC 463.

27 *Cf.* in this sense Nack, Ralph, *Sind jetzt computerimplementierte Geschäftsmethoden patentfähig? – Analyse der Bundesgerichtshof-Entscheidung "Sprachanalyseeinrichtung"*, [2000] GRUR Int. 853.

28 [1999] GRUR 1078.

29 [2000] GRUR 930

30 Case X ZB 16/00 (decision of the German supreme court (*Bundesgerichtshof (BGH)*) issued on October 17, 2001)

In addition to differences in the assessment of the patentability criteria, there is uncertainty with respect to the form of possible claims allowable. While the U.K. moved quickly to announce[31] that its patent office would be allowing program product claims in the form approved in the two EPO Board of Appeal decisions *Computer program product I and II*, and this approach was recently also endorsed by the German court[32], other Member States have not yet clearly followed suit.

The approach adopted

In the light of the Commission's findings on the impact of patents for computer-implemented inventions on innovation and competition and European businesses, the Commission believes that the Directive should harmonise protection for computer-implemented inventions while avoiding any sudden change in the legal position, and in particular any extension of patentability to computer programs "as such". An important safeguard is provided in Article 5 which mandates the Commission to report to the European Parliament and Council within three years of the coming into force of the Directive on the impact of computer-implemented inventions on innovation. In the light of the experience gained following the implementation of the Directive and the reports of the special panel, the Commission could consider proposing changes to the Directive.

While the patent system has to be adapted where appropriate to meet the need for protection of inventions in new fields of technology, such developments should be based on the general principles of European patent law as they have evolved historically. These are expressed, in particular, in the rule that an invention, to be patentable, must make a *technical contribution* to the state of the art.

Having reached this stage, the Commission believes it is right that the Community should, for the time being at least, refrain from extending the patent protection available for computer-implemented inventions, for example by dispensing with the technical contribution requirement. Such a course of action would lead to the patenting of computer-implemented business methods. The U.S. experience in this field is still only recent and the impact of business method patents on the economy in general and on electronic commerce in particular cannot yet be fully assessed. Moreover, on this subject there is considerable debate in the U.S. where it has been argued that such patents may stifle e-commerce. An additional consideration is that a harmonisation in this sense would essentially create a set of rules for computer-implemented inventions separate from the more general principles of European patent law which have always required a technical contribution.

By codifying the requirement for a technical contribution, the Directive should ensure that patents for "pure" business methods or more generally social processes will not be granted because they do not meet the strict criteria, including the need for technical contribution.

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31 See U.K. Patent Office practice notice of 19.4.1999 (available on the Patent Office website at http://www.patent.gov.uk/patent/notices/practice/computer.htm).

32 Case X ZB 16/00 (*supra*). The BGH disapproved an earlier judgement of the Federal Patent Court (*Bundespatentgericht*) in which it was held that a claim to a carrier only with a computer program was not allowable. In doing so, the court seems indirectly to have indicated its approval of the EPO practice of permitting claims to computer programs on their own provided that when associated with computer apparatus, a technical contribution is achieved.

The above should ensure that patents for computer-related inventions in the Community have a positive impact on innovation and European businesses, and do not unfairly stifle competition.

Patents for computer-implemented inventions are of importance for all enterprises in the software field, including SMEs. SMEs however often have little or no experience with the patent system. Therefore, they have frequently preferred to rely solely on copyright, which provides protection for the expression of computer programs as literary works. In order for SMEs to be able to make full use of the different possibilities offered by the patent system, they must have easy access to information about the means of obtaining patent protection, the benefits which this protection can provide, and the conditions for obtaining patents for their own inventions, for licensing them and for securing patent licenses from other patent holders. Member States have a role in evaluating whether the specific situation of patents in the field of computer-implemented inventions requires specific educational initiatives to be undertaken, in particular by their patent offices.

The proposed Community action meets the subsidiarity criteria since its objectives cannot be achieved at national level. In fact, the case law and administrative practices of the Member States regarding computer-implemented inventions have been divergent for many years and there is no indication that these practices would converge without legislative action being taken. In the light of the cross-border impact of these practices, the objectives can, therefore, only be achieved by Community action.

The means of the Community action are also proportional to its objectives. The Directive is strictly confined to setting forth the basic rules regarding the patentability of computer-implemented inventions. To the largest extent possible, general patent law, as it relates both to procedure and to substance and as it has been interpreted by the national courts, will continue to apply and complement the Directive, provided that it is not contradictory to it.

Harmonisation and greater transparency should provide an incentive for European companies, and in particular for SMEs, to use such patents in order to fully exploit their computer-implemented inventions.

The legal basis for harmonisation

As the measure has as its object the achievement of the internal market by approximation of the provisions laid down by law, regulation or administrative action in Member States related to the patentability of computer-implemented inventions, the Commission proposes to rely on Article 95 of the EC Treaty as legal basis for the harmonisation. This legal base has been relied upon in the case of other directives aligning national laws on intellectual property[33] and, most importantly, in the recent Directive 98/44/EC concerning the harmonisation of the patentability of biotechnological inventions. This choice of legal basis has been recognised under the circumstances which are present with regard to patentability by the Court of Justice

[33] See e.g. Directive 89/104/EEC approximating the laws of the Member States relating to trade marks (OJ L 40, 11.2.1989, at 1) ; Directive 91/250/EEC on the legal protection of computer programs (OJ L 122, 17.5.1991, at 42) ; Directive 93/98/EEC harmonising the term of protection of coyright and certain related rights (OJ L 290, 24.11.1993, at 9) ; and Directive 96/9/EC on the legal protection of databases (OJ L 77, 27.3.1996, at 20).

on a number of occasions[34] and especially with regard to the mentioned Directive 98/44/EC in a recent ruling of the Court of Justice[35] where the legal basis was examined thoroughly.

EXPLANATION OF THE DIRECTIVE ARTICLE BY ARTICLE

Article 1

This is a straightforward provision defining the scope of the Directive, which lays down rules relating to the patentability of computer-implemented inventions. The term "computer-implemented invention" is defined in Article 2.

Article 2

This article defines certain terms used in the Directive. A "computer-implemented invention" is stated to mean any invention implemented on a computer or similar apparatus which is realised by a computer program. It is a consequence of this definition that the "novelty" of any invention within the scope of the Directive does not necessarily need to reside in a technical feature. The employment of the expression "*prima facie*" to qualify "novel features" means that it is not necessary to establish actual novelty (for example through the carrying out of a search) in order to determine whether an alleged invention falls within the scope of this definition. As set out in recital 11 and Article 4, the presence of a "technical contribution" is to be assessed not in connection with novelty but under inventive step. Experience has shown that this approach is the more straightforward to apply in practice.

"Technical contribution" is defined to mean a contribution to the state of the art in a technical field which is not obvious to a person skilled in the art.

Article 3

Article 3, in the context of Recital 6, reflects Article 27(1) of the TRIPS Agreement, according to which patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are susceptible of industrial application. A computer-implemented invention is defined as belonging to a field of technology. However, an algorithm which is defined without reference

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[34] See opinion 1/94, Competence of the Community to conclude international agreements concerning services and the protection of intellectual property [15.11.1994] ECR I-5267, and Case C-350/92 *Spain v Council* [13.7.1995] ECR I-1985.

[35] C-377/98. Pays-Bas v Parliament and Council. It was concluded (para 18-20):
"By requiring the Member States to protect biotechnological inventions by means of their national patent law, the Directive in fact aims to prevent damage to the unity of the internal market which might result from the Member States' deciding unilaterally to grant or refuse such protection.
"However, the applicant submits, secondly, that if the application by the Member States of the relevant provisions of international law left a measure of legal uncertainty, it should have been removed not by Community harmonisation but by renegotiation of international legal instruments such as the EPC, in order to clarify their rules
"That argument is unfounded. The purpose of harmonisation is to reduce the obstacles, whatever their origin, to the operation of the internal market which differences between the situations in the Member States represent. If divergences are the result of an interpretation which is contrary, or may prove contrary, to the terms of international legal instruments to which the Member States are parties, there is nothing in principle to prevent recourse to adoption of a Directive as a means of ensuring a uniform interpretation of such terms by the Member States."

to a physical environment does not meet the definition of "computer-implemented invention" and does not fall within a field of technology.

Article 4

Article 4 paragraph 1 obliges Member States to protect computer-implemented inventions as any other invention, subject to the basic requirements of novelty, inventive step and industrial applicability as laid down in Article 52(1) of the European Patent Convention.

Paragraph 2 provides that it is a requirement for the presence of inventive step that a computer-implemented invention must make a technical contribution, that is, a contribution to the state of the art in a technical field which is not obvious to a person skilled in the art (Article 2). This is to be regarded as a qualification of, and not a substitute for, the definition of inventive step as it appears in Article 56 of the EPC, which provides that an invention shall be regarded as having an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art. This is effectively already a general requirement for all patentable inventions, although naturally, in the course of assessing the inventive step of inventions in fields where there is rarely any question of excluded matter (for example mechanical subject-matter), there is normally no need to consider whether a contribution to the state of the art is technical or not.

Thus, a computer-implemented invention in which the contribution to the prior art does not have a technical character will be considered to lack inventive step *even if the (non-technical) contribution to the prior art is not obvious*. When assessing inventive step, the questions as to what is to be included in the state of the art and the knowledge of the skilled person must be determined according to the criteria applied when assessing inventive step in general (see for example Article 56 EPC, second sentence).

Article 4 paragraph 3 provides that in determining the technical contribution, the invention must be assessed as a whole. This is consistent with the decisions of the EPO Technical Boards of Appeal in *Controlling Pension Benefits*[36] and *Koch & Sterzel*[37] according to which there must be no assessment of a "weighting" between technical and non-technical features in an attempt to determine which aspect makes the more important contribution to the invention's success.

It follows from the above that an invention, aspects of which lie in a field of subject-matter excluded under Article 52(2) (for example a method for doing business), may still be patentable **if a non-obvious technical contribution is present**. However, if there is no technical contribution, *e.g.* if the contribution to the state of the art lies wholly in non-technical aspects, as would be the case if the contribution to the state of the art comprised purely a method of doing business, there will be no patentable subject-matter. A further logical consequence of this approach is that although a valid claim may comprise both technical and non-technical features, it is not possible to monopolise the purely non-technical features in isolation from the technical features.

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[36] See note 20

[37] T26/86 (21.5.87) [1988] OJEPO 19

The term “technical contribution” has been used in the case law of the EPO Boards of Appeals for many years[38]. Consistent with the jurisprudence of the EPO, a technical contribution may result from

- the problem underlying, and solved by, the claimed invention;
- the means, that is the technical features, constituting the solution of the underlying problem;
- the effects achieved in the solution of the underlying problem;
- the need for technical considerations to arrive at the computer implemented invention as claimed.

Article 5

In accordance with Article 27(1) of the TRIPS Agreement, patents have to be available for any inventions, whether they be products or processes. Article 5 provides that a computer-implemented invention may be claimed either as a programmed computer or similar apparatus (*i.e.* a product) or as a process carried out by such an apparatus.

It should be noted that the proposal has not followed the practice of the EPO in permitting claims to computer program products either on their own or on a carrier, as this could be seen as allowing patents for computer programs “as such”.

Article 6

Article 6 expressly preserves the application of the provisions on decompilation and interoperability in Directive 91/250/EEC.

Article 7

Article 7 requires the Commission to monitor the impact of computer-implemented inventions on innovation and competition, both within Europe and internationally, and on European businesses, including electronic commerce.

Article 8

This article requires the Commission to report to the Parliament and the Council on the operation of the Directive within three years from the date by which Member States have to transpose it into national laws. This framework provides an important safeguard which should ensure that any negative effects of the Directive are detected and reported.

Articles 9, 10 and 11

These are standard articles governing the coming into force of the Directive and its transposition by the Member States.

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[38] See *Vicom* Case T208/84 (15.7.1986) [1987] OJEPO 14

In order to implement this Directive, Member States will need to introduce new provisions in their patent laws which, in particular, make it clear that the patentability criteria for computer-implemented inventions are as set out in Articles 1 to 5 of the Directive. The Directive does not require action in respect of any of the other exceptions from patentability in the provisions of Member States' patent laws corresponding to Art. 52(2) of the EPC.

Beyond what is provided for in this Directive, the procedural and substantive legal rules of national patent laws and binding international agreements remain the essential basis for the legal protection of computer-implemented inventions.

2002/0047 (COD)

Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

on the patentability of computer-implemented inventions

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 95 thereof,

Having regard to the proposal from the Commission[39],

Having regard to the opinion of the Economic and Social Committee[40],

Acting in accordance with the procedure laid down in Article 251 of the Treaty[41],

Whereas:

(1) The realisation of the internal market implies the elimination of restrictions to free circulation and of distortions in competition, while creating an environment which is favourable to innovation and investment. In this context the protection of inventions by means of patents is an essential element for the success of the internal market. effective and harmonised protection of computer-implemented inventions throughout the Member States is essential in order to maintain and encourage investment in this field.

(2) Differences exist in the protection of computer-implemented inventions offered by the administrative practices and the case law of the different Member States. Such differences could create barriers to trade and hence impede the proper functioning of the internal market.

(3) Such differences have developed and could become greater as Member States adopt new and different administrative practices, or where national case law interpreting the current legislation evolves differently.

(4) The steady increase in the distribution and use of computer programs in all fields of technology and in their world-wide distribution via the Internet is a critical factor in technological innovation. It is therefore necessary to ensure that an optimum environment exists for developers and users of computer programs in the Community.

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39 OJ C, , p.
40 OJ C, , p.
41 OJ C, , p.

(5) Therefore, the legal rules as interpreted by Member States' courts should be harmonised and the law governing the patentability of computer-implemented inventions should be made transparent. The resulting legal certainty should enable enterprises to derive the maximum advantage from patents for computer-implemented inventions and provide an incentive for investment and innovation.

(6) The Community and its Member States are bound by the Agreement on trade-related aspects of intellectual property rights (TRIPS), approved by Council Decision 94/800/EC of 22 December 1994 concerning the conclusion on behalf of the European Community, as regards matters within its competence, of the agreements reached in the Uruguay Round multilateral negotiations (1986-1994)[42]. Article 27(1) of TRIPS provides that patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application. Moreover, according to TRIPS, patent rights should be available and patent rights enjoyable without discrimination as to the field of technology. These principles should accordingly apply to computer-implemented inventions.

(7) Under the Convention on the Grant of European Patents signed in Munich on 5 October 1973 and the patent laws of the Member States, programs for computers together with discoveries, scientific theories, mathematical methods, aesthetic creations, schemes, rules and methods for performing mental acts, playing games or doing business, and presentations of information are expressly not regarded as inventions and are therefore excluded from patentability. This exception, however, applies and is justified only to the extent that a patent application or patent relates to such subject-matter or activities as such, because the said subject-matter and activities as such do not belong to a field of technology.

(8) Patent protection allows innovators to benefit from their creativity. Whereas patent rights protect innovation in the interests of society as a whole; they should not be used in a manner which is anti-competitive.

(9) In accordance with Council Directive 91/250/EEC of 14 May 1991 on the legal protection of computer programs[43], the expression in any form of an original computer program is protected by copyright as a literary work. However, ideas and principles which underlie any element of a computer program are not protected by copyright.

(10) In order for any invention to be considered as patentable it should have a technical character, and thus belong to a field of technology.

(11) Although computer-implemented inventions are considered to belong to a field of technology, in order to involve an inventive step, in common with inventions in general, they should make a technical contribution to the state of the art.

(12) Accordingly, where an invention does not make a technical contribution to the state of the art, as would be the case, for example, where its specific contribution lacks a

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42 OJ L 336, 23.12.1994, p. 1

43 OJ L 122 , 17.5.1991 p. 42– Directive amended by Directive 93/98/EEC (OJ L 290, 24.11.1993, p. 9).

technical character, the invention will lack an inventive step and thus will not be patentable.

(13) A defined procedure or sequence of actions when performed in the context of an apparatus such as a computer may make a technical contribution to the state of the art and thereby constitute a patentable invention. However, an algorithm which is defined without reference to a physical environment is inherently non-technical and cannot therefore constitute a patentable invention.

(14) The legal protection of computer-implemented inventions should not necessitate the creation of a separate body of law in place of the rules of national patent law. The rules of national patent law should remain the essential basis for the legal protection of computer-implemented inventions as adapted or added to in certain specific respects as set out in this Directive.

(15) This Directive should be limited to laying down certain principles as they apply to the patentability of such inventions, such principles being intended in particular to ensure that inventions which belong to a field of technology and make a technical contribution are susceptible of protection, and conversely to ensure that those inventions which do not make a technical contribution are not so susceptible.

(16) The competitive position of European industry in relation to its major trading partners would be improved if the current differences in the legal protection of computer-implemented inventions were eliminated and the legal situation was transparent.

(17) This Directive shall be without prejudice to the application of the competition rules, in particular Articles 81 and 82 of the Treaty.

(18) Acts permitted under Directive 91/250/EEC on the legal protection of computer programs by copyright, in particular provisions thereof relating to decompilation and interoperability, or the provisions concerning semiconductor topographies or trade marks, shall not be affected through the protection granted by patents for inventions within the scope of this Directive.

(19) Since the objectives of the proposed action, namely to harmonise national rules on computer-implemented inventions, cannot be sufficiently achieved by the Member States and can therefore, by reason of the scale or effects of the action, be better achieved at Community level, the Community may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty. In accordance with the principle of proportionality, as set out in that Article, this Directive does not go beyond what is necessary to achieve those objectives.

HAVE ADOPTED THIS DIRECTIVE:

Article 1

Scope

This Directive lays down rules for the patentability of computer-implemented inventions.

Article 2

Definitions

For the purposes of this Directive the following definitions shall apply:

(a) "computer-implemented invention" means any invention the performance of which involves the use of a computer, computer network or other programmable apparatus and having one or more *prima facie* novel features which are realised wholly or partly by means of a computer program or computer programs;

(b) "technical contribution" means a contribution to the state of the art in a technical field which is not obvious to a person skilled in the art.

Article 3

Computer-implemented inventions as a field of technology

Member States shall ensure that a computer-implemented invention is considered to belong to a field of technology.

Article 4

Conditions for patentability

1. Member States shall ensure that a computer-implemented invention is patentable on the condition that it is susceptible of industrial application, is new, and involves an inventive step.

2. Member States shall ensure that it is a condition of involving an inventive step that a computer-implemented invention must make a technical contribution.

3. The technical contribution shall be assessed by consideration of the difference between the scope of the patent claim considered as a whole, elements of which may comprise both technical and non-technical features, and the state of the art.

Article 5

Form of claims

Member States shall ensure that a computer-implemented invention may be claimed as a product, that is as a programmed computer, a programmed computer network or other programmed apparatus, or as a process carried out by such a computer, computer network or apparatus through the execution of software.

Article 6

Relationship with Directive 91/250 EC

Acts permitted under Directive 91/250/EEC on the legal protection of computer programs by copyright, in particular provisions thereof relating to decompilation and interoperability, or the provisions concerning semiconductor topographies or trade marks, shall not be affected through the protection granted by patents for inventions within the scope of this Directive.

Article 7

Monitoring

The Commission shall monitor the impact of computer-implemented inventions on innovation and competition, both within Europe and internationally, and on European businesses, including electronic commerce.

Article 8

Report on the effects of the Directive

The Commission shall report to the European Parliament and the Council by [DATE *(three years from the date specified in Article 9(1))]* at the latest on

(a) the impact of patents for computer-implemented inventions on the factors referred to in Article 7;

(b) whether the rules governing the determination of the patentability requirements, and more specifically novelty, inventive step and the proper scope of claims, are adequate; and

(c) whether difficulties have been experienced in respect of Member States where the requirements of novelty and inventive step are not examined prior to issuance of a patent, and if so, whether any steps are desirable to address such difficulties.

Article 9

Implementation

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive not later than [DATE *(last day of a month*)]. They shall forthwith inform the Commission thereof.

   When Member States adopt those provisions, they shall contain a reference to this Directive or shall be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.

2. Member States shall communicate to the Commission the text of the provisions of national law which they adopt in the field covered by this Directive.

Article 10

Entry into force

This Directive shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Communities*.

Article 11

Addressees

This Directive is addressed to the Member States.

Done at Brussels,

For the European Parliament	*For the Council*
The President	*The President*