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Patents for software?

European law and practice



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Computer-implemented inventions

People often talk about software patents – what exactly do they mean?

The term "software" is considered to be ambiguous, because it may refer to a program listing written in a programming language to implement an algorithm, but also to binary code loaded in a computer-based apparatus, and it may also encompass the accompanying documentation. So in place of this ambiguous term the concept of a computer-implemented invention has been introduced.

A computer-implemented invention is one which involves the use of a computer, computer network or other programmable apparatus, where one or more features are realised wholly or partly by means of a computer program.

The European Patent Office (EPO) follows European patent law as laid down in the European Patent Convention (EPC) adopted by the 38 member states of the European Patent Organisation.

Under the EPC, a computer program claimed "as such" is not a patentable invention (Article 52(2)(c) and (3) EPC). Patents are not granted merely for program listings. Program listings as such are protected by copyright. For a patent to be granted for a computer-implemented invention, a technical problem has to be solved in a novel and non-obvious manner.

Patents for computer-implemented inventions: how does society benefit?

Patents as an incentive for innovation

As technology advances and matures, computer-implemented inventions are used increasingly in all fields of technology. In many cases the innovative part of a new product or process may well lie in the method underlying a computer program and/or its computational implementation. Another factor to bear in mind is that the developer, depending on the circumstances (e.g. energy consumption, processing speed), has the choice of implementing a method as a computer program or in hardware (e.g. with FPGAs – field-programmable gate arrays). The Research & Development resources put into the creation and commercialisation of such products are enormous. It is questionable whether such an effort would be considered appropriate if the innovators could not expect to benefit economically from their work. Patent protection is every bit as well-deserved for computer-implemented inventions as for innovations in established and traditional technologies.

Patents are granted in exchange for making inventions public

The EPO grants patents for inventions that comply with strict criteria on patentability laid down in the EPC. If the invention to which an application relates satisfies these criteria, the applicant is awarded a patent, which is a temporary exclusive right preventing others (including competitors) from using the patented invention without the consent of the patent owner. In return for protection the invention must be fully disclosed to the public.

Energy consumption display in hybrid technology car





Smartphone touch screen

Researchers therefore often innovate also in the knowledge that they may obtain legal protection for their ideas. Indeed, especially in areas which have high product-development costs and start-up investment, it is hard to imagine a business even contemplating putting its products on the market without adequate patent protection. Very often, therefore, a patent is a vital element for successful commercialisation. It constitutes an essential incentive to innovate, and indeed much innovation would not take place without patents.

The publication of patent applications – which is mandatory 18 months after they are filed – provides access for the public to the latest technical developments. By publishing this vast flow of new ideas the patent system serves as an effective transmission belt for the spread of knowledge and information on state-of-the-art technologies, and so efficiently supplies society's knowledge base.

The EPO's free patent database Espacenet is the largest in the world and, in 2013, already contained over 80 million documents. Equipped with an automatic translation tool for patents, Patent Translate, Espacenet is one of the most important information dissemination tools for the knowledge economy and a pillar of the innovation process in Europe.

Patents and small businesses

Anybody can apply for a patent under the EPC, which makes no distinction between individuals, SMEs (small and medium-sized enterprises) and large corporations. With its tools and services, the EPO aims to keep access to patent protection equally attractive for smaller users, such as individual inventors, SMEs and research institutions. There is little evidence to suggest that SMEs do not benefit from patents: indeed, for innovative SMEs and start-ups without sufficient financial resources and a large market share, patents are often the only chance to stand their ground in competition.

European patents: high quality and high legal certainty

Before a European patent can be granted, each application is subject to a thorough search and rigorous examination procedure carried out by three members of the EPO's highly trained staff. This ensures that the application fulfils the strict patentability requirements of the EPC.

The search – special situations

If the patent application is considered to contain only subject-matter excluded from patentability, no meaningful search can be carried out. In such a case a declaration will be issued stating that no search report will be produced. Consequently, the vast majority of such applications are either refused by the EPO or withdrawn by the applicant.

Along with the European search report (or the declaration taking its place), the EPO produces the European search opinion, in which the examiner will set out his objections to the application. This allows the EPO to indicate at a very early stage in the procedure that some or all claims of the application are not patentable, and also to state the reasons why. For example an invention is excluded from patentability due to lack of technical character, or because no inventive step is involved. In that way, both the applicant and the public are informed very early of the invention's chances of becoming a patent.

Are patents granted for "trivial" inventions?

The expression "trivial patent" is frequently used for patents which third parties think should have not been granted because they lack novelty or inventive step, which means that the proposed invention is seen as either being known already or being too obvious to a technically skilled person ("person skilled in the art") to qualify for patent protection under the applicable law. A reason for that may be that the invention appears to be trivial with the benefit of hindsight, but may not have been at the priority date of the application. Legal mechanisms enabling third parties to challenge such patents are in place. The various possibilities for these parties to already intervene during examination are important with a view to ensuring that European patents are of high quality and legal certainty, enjoying a good presumption of validity in court proceedings. When the examination at the EPO is finished and the resulting patents leave the jurisdiction of the EPO, subsequent disputes concerning the validity and infringement of a European patent are subject to national law, and the final decision rests with national courts of the member states for which the patent has been granted.

Far-reaching rights for third parties

The EPC provides several legal means enabling third parties to monitor the procedure and also to challenge decisions taken by the EPO, for instance where new relevant prior art comes to light.

Within the EPO procedure the following are available:

- free online file inspection by the public after publication of the application
- observations by third parties on pending applications and in opposition or appeal procedures
- oppositions by third parties to granted patents
- appeals by any party adversely affected by an EPO decision in grant and opposition proceedings
- limitations enabling patentees to narrow down the protection conferred by a patent after grant.

There is no fee for the inspection of published applications (available at www.epo.org/register), or for the filing of third-party observations. Parties to opposition proceedings at the EPO are not required to have any economic or legal interest in the patent: anyone can file an opposition to a granted patent.

After the EPO procedure (in national courts):

- actions for revocation of European patents.



EPO examination practice

Legal framework

The starting point for assessing the patentability of computer-implemented inventions is the fundamental provision that a patent should be granted for any invention, in any field of technology, provided that it is new, involves an inventive step, is susceptible of industrial application and is not expressly excluded from patent protection (Article 52 EPC).

Patent protection for technical creations

Whilst the EPC sets out the patentability requirements of novelty, inventive step and industrial application in some detail (Articles 54, 56 and 57 EPC), it does not contain a legal definition of the term "invention". It has, however, been part of the European legal tradition since the early days of the patent system that patent protection should be reserved for technical creations. The subject-matter for which protection is sought must therefore have a "technical character" or, to be more precise, involve a "technical teaching", i.e. instruction, addressed to a technically skilled person as to how to solve a particular technical problem using particular technical means. The problem solved by the invention must thus be technical, in contrast for example to a purely financial, commercial or mathematical one. This must be satisfied in order for the invention not to be excluded from patentability.

Although the law does not define the term "invention", it does contain a list of subject-matter or activities that are not to be regarded as "inventions". Among the particular examples mentioned in this list are "programs for computers". It should be emphasised that the subject-matter or activities on the list are excluded only if the European patent application or patent relates to them "as such". Therefore, inventions having a technical character that are or may be implemented by a computer program are not excluded from patentability.

The case law of the boards of appeal

In the field of computer-implemented inventions, many decisions have developed the interpretation of the EPC provisions relating to the term "invention", providing guidance on what is patentable and what is not.

The boards of appeal, which enjoy independence in their decision-making function, have the task of reviewing the decisions of the EPO in grant and opposition proceedings. They thus interpret the EPC in cases where dispute arises, including consideration of what is excluded and what is not, and why. Their case law, therefore, is instrumental in the development of patenting practice at the EPO.

EPO case law says that controlling or carrying out a technical process is not excluded from patentability, irrespective of whether it is implemented by hardware or by software. Whether the process is carried out by means of special circuits or by means of a computer program has been found to depend on economic and technological factors; patentability should not be denied on the grounds that a computer program is involved.

A specific claim form for the protection of computer-implemented inventions is the "computer program/computer program product". It was introduced in order to provide better legal protection for computer programs distributed on a data carrier and not forming part of a computerised system. This claim form should not be confused with the term "computer program" as a list of instructions. Subject-matter claimed under this form is not excluded from patentability if the computer program resulting from implementation of the corresponding method is capable of bringing about, when running on a computer or loaded into a computer, a "further technical effect" going beyond the "normal" physical interactions between the computer program and the computer hardware on which it is run.

The normal physical effects of the execution of a program, e.g. electrical currents, are not in themselves sufficient to lend a computer program technical character, and a further technical effect is needed. The further technical effect may result for example from the control of an industrial process or the working of a piece of machinery, but also from the internal functioning of the computer itself (e.g. memory organisation, program execution control) under the influence of the computer program.

For instance, a method of encoding audio information in a communication system may aim to reduce distortion induced by channel noise. Although the idea underlying such a method may be considered to reside in a mathematical method, the encoding method as a whole is not a mathematical method "as such", and hence is not excluded from patentability by Article 52(2)(a) and (3) EPC. Similarly, a method of encrypting/decrypting or signing electronic communications may be regarded as a technical method, even if it is essentially based on a mathematical method.

On the other hand, "schemes, rules and methods for (...) doing business" are not patentable; but a new method which solves a technical, rather than a purely administrative, problem may indeed be patentable.

Some landmark case law decisions

Two identities/Comvik (T 641/00)

Technical but not inventive

A SIM card having two identities (e.g. professional and private)

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

Auction method/Hitachi (T 258/03)

Technical but not inventive

An auction method carried out over the internet, characterised by the auction rules.

In this case, it was considered that the technical problem allegedly solved by the application had not been solved but rather circumvented. (Furthermore, it was found that a method involving any technical means whatsoever is to be considered an invention, i.e. technical.)

Circuit simulation I/Infineon Technologies (T 1227/05)

Technical and inventive

Specific technical applications of computer-implemented simulation methods, even if involving mathematical formulae, are to be regarded as "inventions" in the sense of Article 52(1) EPC. Circuit simulations possess the required technical character because they form an essential part of the circuit fabrication process.

A reliable framework

The President of the EPO has referred a number of questions to the Enlarged Board of Appeal in order to gain guidance on the finer aspects of the patentability of computer programs. In its opinion G 3/08 the Enlarged Board found that any possible divergence in jurisprudence over time was a normal development in a changing world, and that the practice of the EPO, while not the only one imaginable, was practicable and reliable in its results. It basically affirmed the status quo, i.e. the pragmatic problem-solution approach as set out in T 641/00 (Comvik) and T 258/03 (Hitachi). Since then the case law of the EPO has reached a stable situation, providing predictability for applicants for computer-implemented inventions.



Bluetooth technology

In a nutshell

The EPC as interpreted in the case law enables and obliges the EPO to grant patents for inventions in many fields of technology in which computer programs make a technical contribution. Such fields include medical devices, the automotive sector, aerospace, industrial control, communication/media technology such as automated natural language translation, voice recognition and video compression, and also the computer/processor itself.

According to EPO case law, the question "Is there an invention?" necessarily precedes all other patentability assessments (e.g. novelty, inventive step and industrial applicability) and also tacitly implies the further question: "Does the claimed subject-matter have a technical character?". So-called non-inventions (those expressly excluded under Article 52 EPC, such as methods of doing business, mathematical methods or presentations of information) enter the realm of patentability in Europe with the use of technical means such as a computer or a computer network. Computer programs for implementing a business method, nevertheless, would not be inventive since they originate from non-technical constraints of particular business requirements, the implementation of which on a conventional computer is obvious.

The high-quality examination practice of the EPO, together with the rights of third parties to comment on and challenge the Office's decisions, ensures that only those applications which meet the requirements of the EPC are granted.

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