Securing software patents through the EPO

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Securing software patents through the EPO

By Giovanni Zelioli, Botti & Ferrari Srl

For granting European patents, the European Patent Office (EPO) is bound by the provisions of the European Patent Convention (EPC) (established in 1973 and revised in 2000).

Patentability of software under the EPC

Under Article 52(2)(c) of the EPC, computer programs are not regarded as patentable inventions, meaning that European patents cannot be granted for that subject matter. Specifically, the EPC considers that "schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers" are not patentable inventions. The notable exclusion of computer programs or software from patentability is generally reflected in the national legal provisions of the European countries bound by the EPC.

On the other hand, Article 52(3) of the EPC states that patentability of computer programs, among others, is excluded only to the extent that European patent applications and patents relate to that subject matter "as such".

This means that some aspects of a software invention, going beyond a "computer program as such", may still lead to the grant of a European patent.

Computer-implemented inventions

The EPO Guidelines for Examination explain (G-II, 3.6) that the exclusion from patentability of "computer programs as such" does not apply to computer programs "having a technical character". Computer programs with technical character will produce a "further technical effect" when run on a computer, beyond the mere physical interactions between the program (software) and the computer (hardware) on which it is run.

The guidelines thus define 'computer-implemented inventions' (CIIs) as solutions which are technical and involve computers, computer networks or other programmable apparatuses, wherein at least one feature is realised by means of a computer program (F-IV, 3.9). According to the EPO, an invention which involves a computer program but simultaneously exceeds the boundaries of software "as such" and provides a "further technical effect", is eligible for patent protection. The EPO recognises that patent protection is as well-deserved for CIIs as it is for innovations in more traditional technologies, as they all represent benefits for society.

It is thus clear that patent coverage for certain aspects of software can be obtained at the EPO, and there is ongoing practice for judging these CIIs. At the same time, it should be kept in mind that patent examination is conducted by the EPO on a case-by-case basis: while harmonisation is certainly sought after, a certain degree of variability in the case law is expected, especially as technology evolves.

To be considered a patentable CII before the EPO, any patent application relating to software should demonstrate technical character in the specific characteristics of the invention. The applicant should take these aspects into account, to reduce uncertainty during the examination of patentability requirements of the claims of the patent application.

Double hurdle in examination

When considering a software patent application, the initial hurdle is whether the claims are directed to a patentable invention. The EPO will consider whether the subject matter of the claims possesses

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technical character or is directed to a "computer program as such". If the technical character of the software patent application is established, the EPO treats it as an actual CII.

As is the case for all types of invention, including CIIs, the EPO will examine whether the claimed subject matter satisfies the substantive patentability requirements and deserves protection. Therefore, a further hurdle is whether the claimed invention is novel over the prior art, involves an inventive step and is susceptible of industrial application as required by Article 52(1) of the EPC for granting a patent.

When facing these two hurdles, the applicant of a software patent application filed before the EPO should pay serious attention to the technical features which are particularly directed to solving a technical problem within the software's scope.

Highlighting the technical character of the invention is, in fact, useful for overcoming the first hurdle by achieving CII status and for overcoming the second hurdle related to substantive patentability requirements, to maximise the chances of obtaining patent protection.

Role of technical character

The EPO will look for at least one claimed feature which possesses technical character. The good news is that it is easy, from a practical standpoint, to avoid the claims of a software application being rejected as "computer programs as such": technical character can be provided by simply reciting 'computer', 'database' or any 'hardware' means in the claims.

The not-so-good news is that relegating the technical character of a software invention in its hardware implementation may not be enough for achieving a patent grant at the EPO.

In practice, a CII is likely to comprise a mix of features, some of which relate to technical aspects of the software (eg, algorithms, specific protocols or even hardware), and some relate to the purpose of the software and the nature of the information which is involved. The EPO will examine this mix

of technical and non-technical features appearing in the claims, as prescribed by the guidelines (G-VII, 5.4).

When assessing inventive step of a CII, the EPO will focus only on the technical aspects, since features which do not contribute to the technical character of the invention are not considered useful for supporting the presence of an inventive step.

As an outcome, many software patent applications examined by the EPO achieve the status of CII, but end up being rejected nonetheless: the claims may relate to a computer program having technical character, but they may differentiate from the prior art only by non-technical features, which cannot support the presence of an inventive step and lead to the grant of a patent. In other words, the EPO will consider a claim of a CII as lacking inventive step if the invention is realised by generic computer means – which are known *per se* – and if the only differences with respect to the prior art reside in non-technical details regarding the purpose of the software and the nature of information which is treated.

This criterion of the EPO represents a big obstacle for CIIs. In practice, very few software inventions are embodied in dedicated and original hardware; most software inventions are meant to be executed on existing computer means, as apps will run on phones or tablets, and most programs will run on generic PCs which may or may not include network features.

For most of these software solutions, the status of a CII is easily reached by reciting in the claims the presence of the computer means. Unfortunately, if these computer means are already of a known type, the CII may be considered by the EPO as being an obvious implementation of methods which are devoid of technical character.

A patent application before the EPO regarding a CII should include a proper technical characterisation of the invention, focusing on technical details which go beyond

the purpose of the software and the nature of information which is treated. In fact, non-technical features which are relevant from a marketing standpoint, cannot be the sole actors when defending inventiveness of the solution before the EPO, and must be supplemented by sound technical features which are directed to achieving a technical effect.

Examples of technical character for CIIs

The EPO frequently updates the guidelines to reflect changes in case law and keep up with the pace of ever-developing fields of technology. From 2015 to 2018 several remarks concerning aspects of software patents and CIIs have been provided in the guidelines.

The guidelines give examples of features of CIIs which possess technical character and can be more effective in overcoming the double-hurdle examination, in particular supporting the presence of an inventive step in the patent application.

Software which is directed to generic control or processing, and is often run on generic computer means, is typically claimed in the form of a method. The guidelines explain (G-II, 3.6.1) that if a method possesses technical character, a corresponding computer program specifying that same method produces a further technical effect when run on a computer. Examples given in the guidelines include:
- methods of controlling an anti-lock braking system in a car;
- determining emissions by an X-ray device;
- compressing digital video;
- restoring a distorted digital image; and
- encrypting electronic communication.

The list is not exclusive, as many granted European patents involve at least some degree of control, processing or automation realised by means of a computer program.

Another category of software patents of commercial interest considered in the guidelines (G-II, 3.5.3) is represented by computer-implemented business methods. By itself, a 'business method' represents activities which are of a financial, commercial, administrative or organisational nature, and which are not patentable "as such". If a business method claim also specifies technical means (eg, computer networks or other programmable apparatuses), it becomes a CII. The EPO holds that only those features of technical implementation contribute to the technical character, whereas

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the features specifying the business method itself do not. Consequently, the EPO often finds that a particular computer implementation of a business method is already a well-known hardware set-up, and that the residual business features cannot provide an inventive step. For these reasons, patents concerning computer-implemented business methods are extremely difficult – if not almost impossible – to obtain at the EPO.

Software patents may also relate to artificial intelligence (AI) and machine learning. In a definition provided by the guidelines (G-II, 3.3.1), 'AI' and 'machine learning' are based on computational models and algorithms for classification, clustering, regression and dimensionality reduction. The EPO regards these

algorithms as having an abstract mathematical nature and being excluded from patentability "as such". At the same time, the EPO indicates that AI and machine learning find applications in various fields of technology, and if a technical effect can be derived by the interaction of the software with the technology, the claim will be treated by the EPO as any other CII by considering its technical character.

The guidelines also discuss computer simulations (G-II, 3.3.2) and graphical user interfaces (GUIs) (G-II, 3.7.1). For these classes of software, once again, the discrimination is according to their technical character.

If a simulation is directed to an adequately defined class of technical items or specific technical processes, it is regarded by the EPO as potentially possessing technical character, whereas simulations of non-technical processes (eg, a marketing campaign, administrative scheme for transporting goods or determining a schedule for agents in a call centre) are attributed no technical character which contributes to inventiveness.

The features of GUIs, which relate to presenting information and receiving input as part of human-computer interaction, are considered by the EPO on a case-by-case basis. As a particular example, the graphic design of a menu (eg, its look and feel) is determined by aesthetic considerations and is regarded by the EPO as not contributing to technical character.

The guidelines (G-II, 3.6.1) also consider specific software directed to the internal functioning of the computer on which it is to be executed, which may be considered to produce a further technical effect.

When considering data retrieval, formats and structures of databases, the guidelines (G-II, 3.6.3) make a distinction between 'functional data' and 'cognitive data':

- Functional data serves to control the operation of a device processing the data and inherently comprises corresponding technical features.
- Cognitive data is only relevant to human users and cannot produce a technical effect.

When it comes to programming languages and techniques, technical character is often excluded by the guidelines (G-II, 3.6.3).

These are just some of the examples provided in the guidelines which concern the technical character of a CII involving software and hardware aspects.

"In designing the specific patent coverage sought for a software-involving solution, a general aim should be to explain in detail the technical character of the solution, showing the technical effect which goes beyond the mere execution of the software on a computer system of known type"

One conclusion which can be derived is that, in designing the specific patent coverage sought for a software-involving solution, a general aim should be to explain in detail the technical character of the solution, showing the technical effect which goes beyond the mere execution of the software on a computer system of known type.

Gold standard for software patents

Having a software patent granted in Europe by the EPO is already a great result for an applicant. For litigation and licensing purposes, it is desirable to have several software patents with at least a comparable scope of protection, granted in countries other than the ones bound by the EPC. This result is harder to achieve, as different patent offices will apply different examination standards when it comes to eligibility and patentability of software inventions.

It could be advocated that the approach of the EPO can be used as a 'gold standard' for patentability. If a software invention clears the stricter requirements of the EPO for CIIs, it is likely to be allowable in other important jurisdictions (eg, Japan, China and the United States).

Although appealing, this strategy may not work perfectly in practice, as some patent offices do not necessarily have a lower bar than the EPO when it comes to software inventions, but rather have slightly different requirements for patentability.

It has been shown by considering the specific requirements of the EPO for CIIs that eligibility and patentability of software inventions is a very

delicate matter, wherein the weight of each word in the claims can be highly relevant.

For software inventions worldwide, a simplified solution of the 'one-size-fits-all' kind should not be expected. At the same time, an important lesson can be learned from EPO practice when it comes to software patents and CIIs: it is always advisable to focus on the technical aspects of the software, keeping in mind that considerations relating to the purpose of the software and the nature of information which is treated may be appealing when it comes to marketing purposes, but may be given little to no weight when assessing patentability and inventiveness. *iam*

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