Software Patents in Europe

Exploring how the EPO handles non-technical features

Basic requirements at the EPO

For an invention to be patentable it must have *technical character*, which means that it must be concerned with a *technical problem* and must have *technical features* that can define the scope of protection.

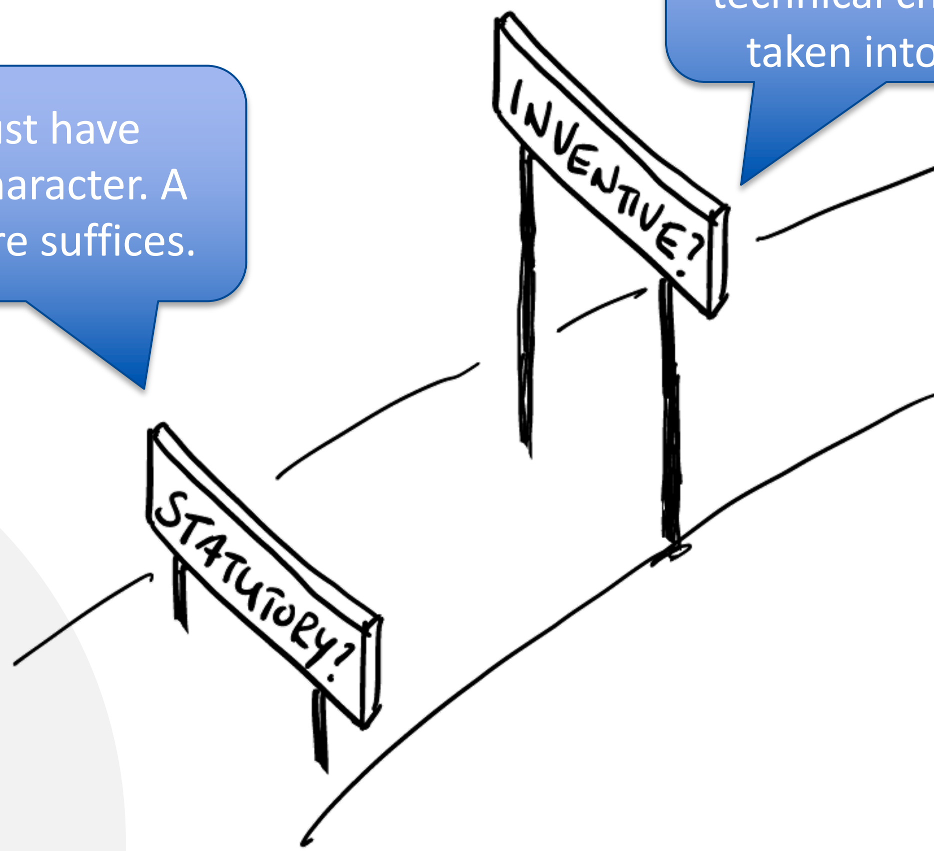
Mathematical methods, business methods, and programs for computers are not regarded as inventions. However, such subject-matter is only excluded from patentability if the patent application relates to such subject-matter ”as such”.

This is normally a very low threshold to pass. The challenge for software patents in Europe is rarely that the claimed subject-matter is non-statutory. Rather, the challenge is to prove the presence of an inventive step.

Two hurdles

Claim must have technical character. A single feature suffices.

Only features that contribute to the technical character are taken into account.



Software patenting in Europe

- Some software is entirely non-technical, but more often a computer-implemented invention is a mix of technical and non-technical aspects.

  ✓ To be patentable, a computer program must have a ”further technical effect” when run on a computer, i.e. go beyond the normal interactions between the software and the hardware. In the sense of patent law, a computer program is not technical just because it will (inevitably) cause a computer to perform internal operations when executed.

  ✓ It’s permissible to have a mix of technical and non-technical features, and the non-technical features may even dominate. However, the non-technical features can never contribute to an inventive step.

  ✓ A clear line is drawn between on the one hand features relating to administration/economics/business, and on the other hand technical features.

Inventive Step at the EPO - Basics

A 56	An invention shall be considered as involving an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art.

A 84	The claims shall define the matter for which protection is sought.

Inventive Step at the EPO - Basics

Article 84 is further specified in Rule 43

R 43(1)	The claims shall defined the matter for which protection is sought in terms of the technical features of the invention.

R 43(3)	Any claim stating the essential features [...] may be followed by [dependent claims].

Independent claims must state all “essential features”.

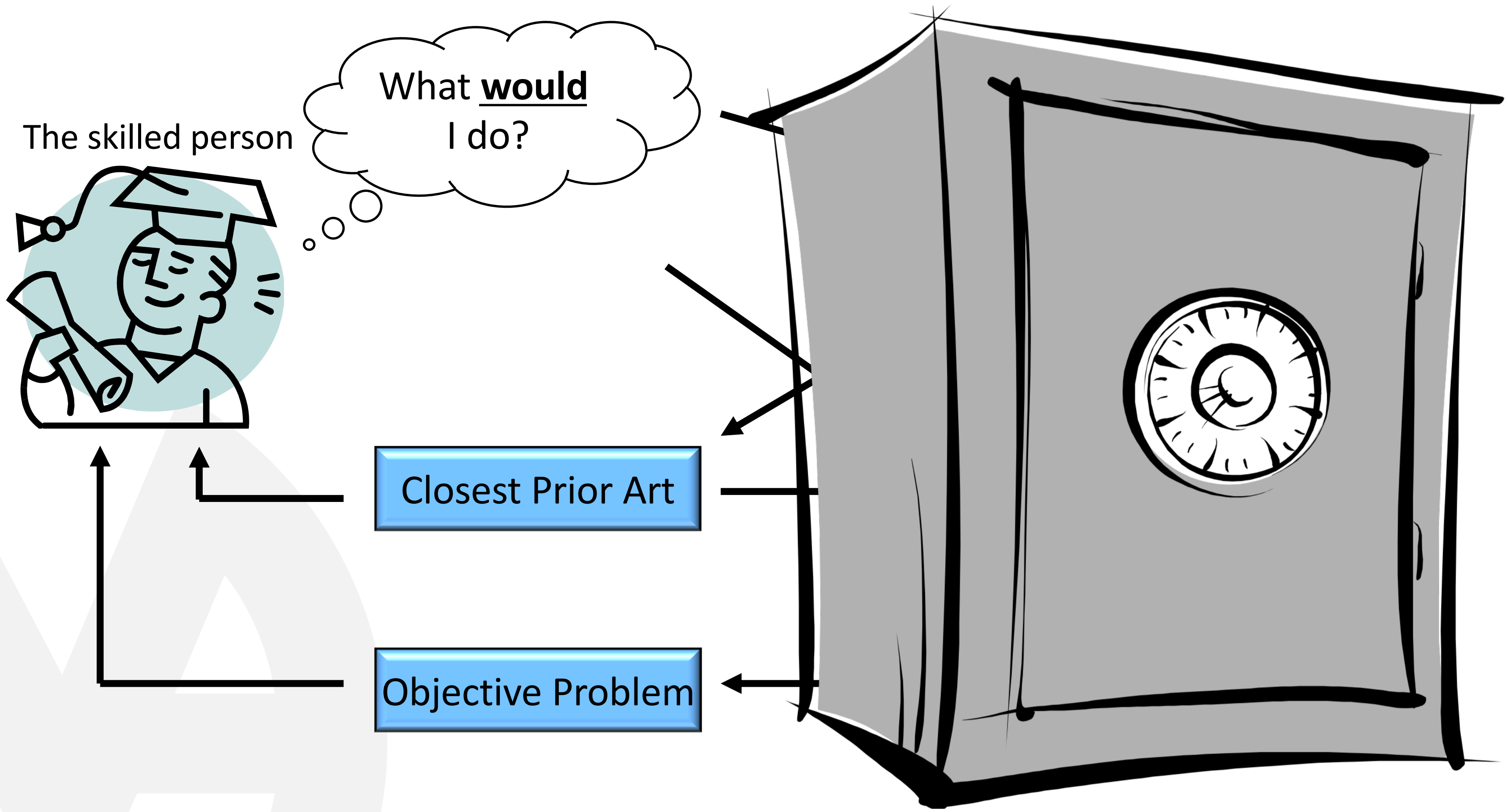
Essential for:

- Obtaining the technical effect
- Distinguishing the invention over the prior art

AWA

The Problem-Solution Approach

Starting out from CPA and the OP, is the invention an obvious solution?



The Problem-Solution Approach

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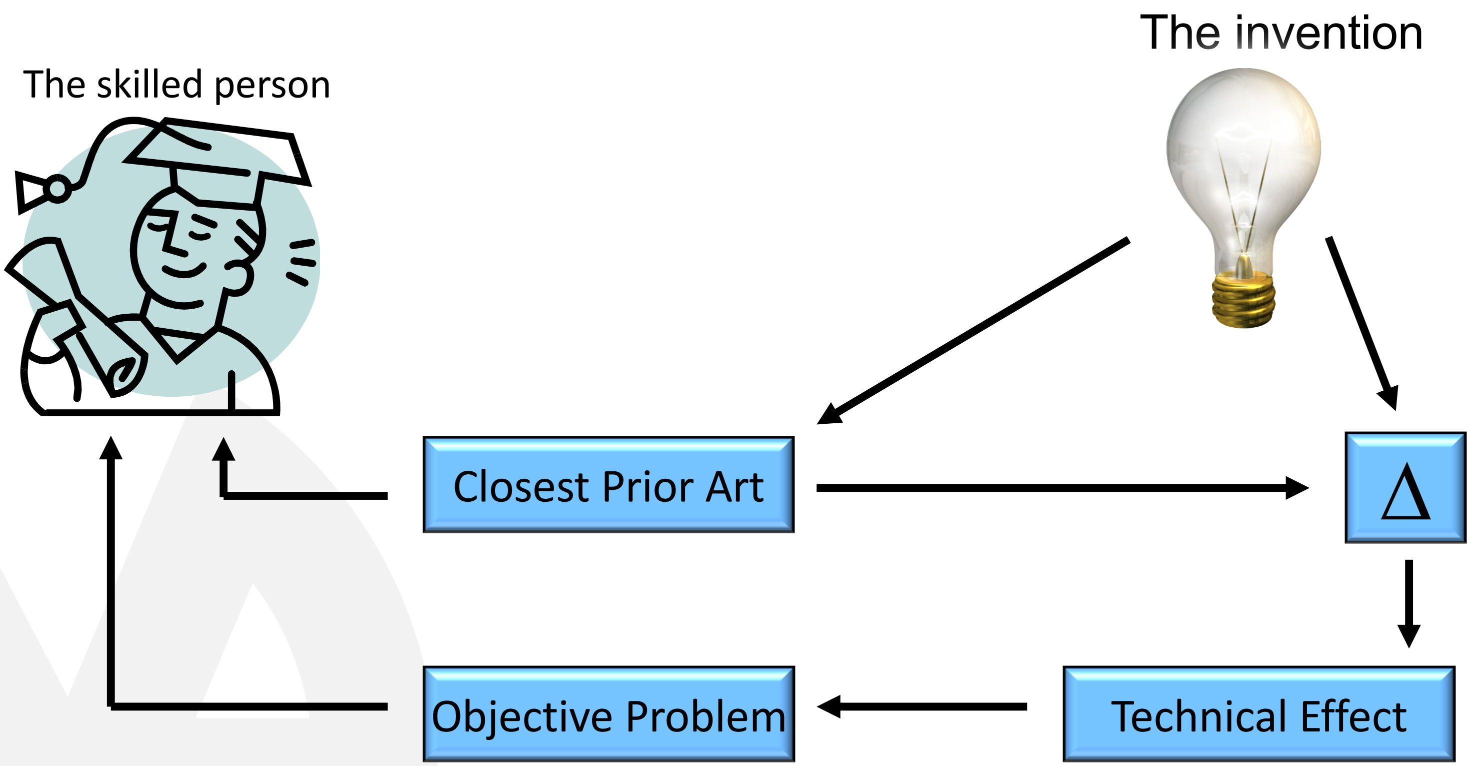


Software Patents

The Comvik Approach (T 641/00)

1. 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**.

2. Although the technical problem to be solved should not be formulated to contain pointers to the solution or partially anticipate it, merely because some feature appears in the claim does not automatically exclude it from appearing in the formulation of the problem. In particular **where the claim refers to an aim to be achieved in a non-technical field, this aim may legitimately appear in the formulation of the problem as part of the framework** of the technical problem that is to be solved, in particular as a constraint that has to be met.

Mixed-type inventions

i. Determine which features are technical in the context of the invention
ii. Identify the closest prior art with a focus on the features identified in step (i)
iii. Identify the differences from the closest prior art and determine the technical effect(s) of these differences.
    a. If there are no differences, not even non-technical ones, then there is a lack of novelty
    b. If the only differences are non-technical, then there is a lack of inventive step (regardless of prior art). Non-technical features cannot contribute to an inventive step
    c. If there are technical differences, an objective technical problem is formulated based on the technical effects(s) achieved. Non-technical features, or any non-technical effect achieved, may be used when formulating the objective technical problem (even if those non-technical features are new).

Formulation of ”the objective problem”

The objective technical problem must be so formulated as not to contain pointers to the technical solution.

This applies only to those features that contribute to the technical character of the invention.

An aim to be achieved in a non-technical field may appear in the formulation of the problem as part of the framework of the problem to be solved.

Hence, the formulation of the problem may refer to non-technical features or any non-technical effect achieved by the invention.

A fictional ”business person”, who has no technical understanding whatsoever, can represent the separation between business considerations and technical considerations (T 1463/11).

Example

Claim 1

A system for the transmission of a broadcast media channel to a remote client over a data connection, said system including:

(a) means for storing an identifier of the remote client and an indication of an available data rate of the data connection to the remote client, said available data rate being lower than the maximum data rate for the data connection to the remote client;

(b) means for determining a rate at which data is to be transmitted based on the indication of the available data rate of the data connection; and

(c) means for transmitting data at the determined rate to said remote client.

Example 2(3)

Difference compared to closest prior art:

storing an indication of an available data rate of the data connection to the remote client, said available data rate being lower than the maximum data rate for the data connection to the remote client

determining a rate at which data is to be transmitted based on the indication of the available data rate of the data connection

Description explains that using “lower than maximum data rate” has the purpose of allowing the user a choice between different data-rate service levels. This is not a technical aim, but rather of a commercial nature. It may therefore appear in the formulation of the objective technical problem.

Example 3(3)

The problem is thus formulated as *how to implement, in the prior art system, a pricing model which allows the customer to choose a data-rate service level*.

Such implementation is obvious to the skilled person. The data rate purchased by the subscriber (which can only be lower or equal to the maximum data rate) would have to be stored for each subscriber and used by the system to determine the rate at which data is to be transmitted.

A couple of other examples

- A system that divides orders for buying stocks among bidders based on the bidders' credit ratings. (not technical)
- A system that divides orders for buying stocks among bidders based on the speed and reliability of the internet connection of the bidders. (technical)

- A user interface that improves the readability of text in the UI by using specific different colors for the text and the background of the text. (not technical)
- A user interface that improves the readability of text in the UI by considering the resolution and frame rate of the display (technical)

Different types of CII

1. Methods performed on a generic computer
   a. The underlying method must be patentable
   b. Claims can be directed to the software *per se*
      ”A computer-implemented method comprising the steps A, B, …”
      “A computer program, comprising instructions to…”

2. Methods that require specific means
   a. The essential specific means must be included in the claim
   b. Claims can typically *not* be directed to the software *per se*

3. Methods implemented in a distributed environment
   a. Multiple independent claims to the methods performed in each node of the distributed environment may be included
   b. If specific means are required, these must (again) be included in the claims

Data structures/formats

Functional data serve to control the operation of a device processing the data. They inherently comprise, or reflect, corresponding technical features of the device.

Cognitive data, on the other hand, are those data whose content and meaning are only relevant to human users.

Functional data contribute to producing a technical effect whereas cognitive data do not. An illustrative distinction is control data ("how") vs. payload ("what").

Artificial Intelligence

The algorithms underlying artificial intelligence (AI) and machine learning (ML) are considered to be of abstract, mathematical nature and are thus in general not considered to be technical.

AI and ML may nevertheless contribute to the technical character of a claimed invention if:

the AI/ML is claimed for a specific technical purpose ("*technical application*")

OR

the AI/ML is specifically designed based on technical considerations relating to the internal functioning of the computer ("*specific technical implementation*")

Artificial Intelligence

Technical application

The specific technical purpose must be recited in the claim, i.e. the claim must be functionally limited to the purpose. The EPO will assess how the output of the underlying mathematical method is used and how this is specified in the claim, and whether this use is technical.

Typical examples are where AI/ML is used for controlling machinery.

Specific technical implementation

The claim must be directed to (mathematical) steps that are specifically adapted to exploit the internal functioning of the computer on which they are implemented. The claim does not need to be limited to the technical application (cf. above).

Common Fallacies

T 1670/07 – Identifying three “fallacies”

The invention

A shopper enters a selection of two or more goods into a mobile device, and the device displays a shopping itinerary (provided by a server) showing a sequence in which the shopper can visit a group of vendors to obtain the goods. The itinerary is a function of user preferences, e.g. shortest route or lowest price.

Examining Division

Obtaining goods is non-technical. Technical problem: How to provide an optimized itinerary. Solution (to make it a function of user preferences) was obvious.

Board of Appeal

Also, providing the list (of vendors) based on user preferences is **non-technical**.

T 1670/07 – Fallacy number one

First argument: “Selection of a group of vendors” interacts with technical features, in particular the transmission of the selection from a server to the mobile device. The feature therefore has technical effect.

Board: “**technical leakage fallacy**”, i.e. the intrinsic technical nature of the implementation leaks back to the non-technical nature of the problem.

Here, “selection of vendors” is not technical, and does not become technical merely because technical means are used to transmit *information about the selection*, which is in itself also not technical.

T 1670/07 – Fallacy number two

Second argument: “Identifying a *group* of vendors” (compared to only one as in the prior art) is a logistic issue and therefore technical.

Board: “**broken technical chain fallacy**”, i.e. any possible final technical effect brought about by a user cannot serve to show an overall technical effect as it requires mental activities of the user.

Here, actually navigating in a certain manner may be technical, but simply providing an itinerary is not technical, as it only indicates possible choices. In the present case, any possible technical effect depends on the user’s reaction to the itinerary.

T 1670/07 – Fallacy number three

Third argument: If requested to provide several items, the prior art system would try to find *one single* vendor. The invention improves this solution.

Board: "**non-technical prejudice fallacy**", i.e. the arguments invokes non-technical aspects as a reason for not modifying the prior art. The question is not whether the skilled person would consider selecting multiple vendors (non-technical) but only how it is done.

T 1670/07 – The technical problem

Applicant: “The provision of a technique that has greater flexibility and can provide results tailored to a user’s preferences”

Board: The problem formulated by the applicant is not a technical one, and also too general. The correct formulation of the problem must be the more specific of how to modify the prior art to implement the non-technical aspects, namely “how to plan an itinerary that includes orders from multiple vendors”

How to avoid the fallacies:

Technical leakage fallacy – make sure that the alleged "non-technical" features interact with other, technical features in order to solve a *technical* problem. Not only the implementation, but also the underlying problem must be technical.

Broken technical chain fallacy – make sure the claim includes features related to the *final* (technical) effect (and that it is not the user who brings about the technical effect).

Non-technical prejudice fallacy – explain why the invention is non-obvious based on *technical* arguments.

Computer-implemented simulations?

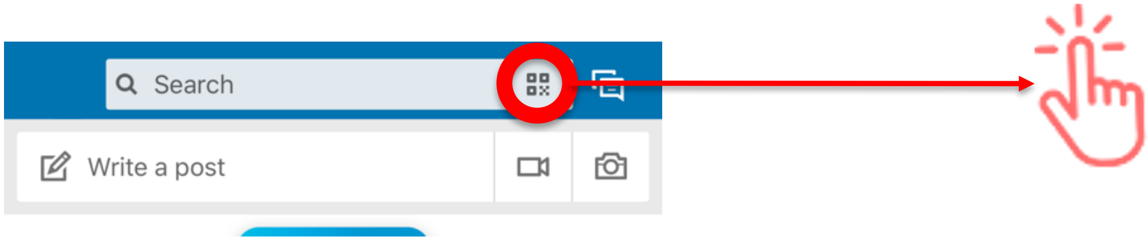
G 1/19 – Computer implemented *simulations*

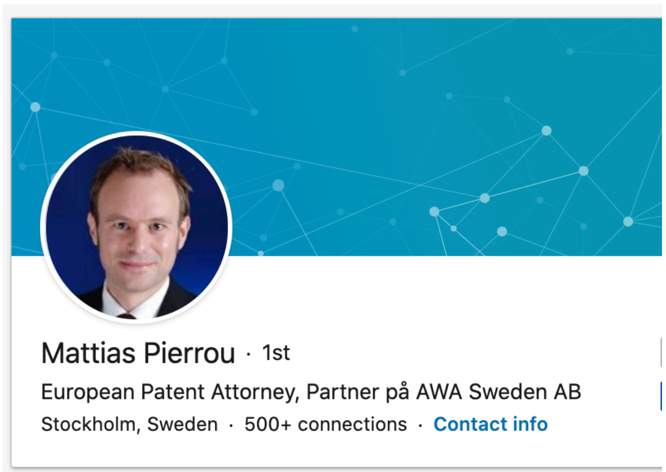
1. In the assessment of inventive step, can the computer implemented simulation of a technical system or process solve a technical problem by producing a technical effect which goes beyond the simulation's implementation on a computer, if the computer-implemented simulation is claimed as such?

2. If the answer to the first question is yes, what are the relevant criteria for assessing whether a computer-implemented simulation claimed as such solves a technical problem? In particular, is it a sufficient condition that the simulation is based, at least in part, on technical principles underlying the simulated system or process?

3. What are the answers to the first and second questions if the computer-implemented simulation is claimed as part of a design process, in particular for verifying a design?

Let’s Connect – LinkedIn





Thank You