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Learning path for patent examiners

Inventive step:
Advanced level

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Introduction

This publication, "Inventive step, Advanced level", is part of the "Learning path for patent examiners" series edited and published by the European Patent Academy. The series is intended for patent examiners at national patent offices who are taking part in training organised by the European Patent Office (EPO). It is also freely available to the public for independent learning.

Topics covered include novelty, inventive step, clarity, unity of invention, sufficiency of disclosure, amendments and search. Also addressed are patenting issues specific to certain technical fields:

- patentability exceptions and exclusions in biotechnology
- assessment of novelty, inventive step, clarity, sufficiency of disclosure and unity of invention for chemical inventions
- the patentability of computer-implemented inventions, business methods, game rules, mathematics and its applications, presentations of information, graphical user interfaces and programs for computers
- claim formulation for computer-implemented inventions

Each publication focuses on one topic at entry, intermediate or advanced level. The explanations and examples are based on the European Patent Convention, the Guidelines for Examination in the EPO and selected decisions of the EPO's boards of appeal. References are made to the Patent Cooperation Treaty and its Regulations whenever appropriate.

The series will be revised annually to ensure it remains up to date.

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All references to natural persons are to be understood as applying to all genders.

Contents

Legal references

1. Learning objectives

Participants to this course will learn:

- To use of non-technical indicators
- To evaluate selection inventions
- To evaluate non-technical features

2. Inventive step and sufficiency of disclosure

For some inventions, the question of sufficiency of disclosure under Article 83 EPC may arise. If it does, the assessments of inventive step and sufficiency of disclosure might be linked because both are carried out from the skilled person's standpoint.

For the assessment of inventive step, the skilled person knows the closest prior art and is faced with the objective technical problem but they do not know the invention. For sufficiency of disclosure, however, the skilled person knows the invention and the issue is whether they can carry it out using the teaching of the description.

In both cases, however, the skilled person's common general knowledge is the same. Therefore, the common general knowledge considered for the assessment of inventive step also has consequences for the assessment of sufficiency of disclosure. If the invention is considered non-obvious because the common general knowledge is relatively limited, the skilled person might not be able to carry out the invention using their limited knowledge, meaning that the invention is not sufficiently disclosed.

The two questions of inventive step and sufficiency of disclosure are also linked when the claimed subject-matter cannot achieve the technical effect of the invention. If the information given by the description is not enough for the skilled person to carry out the invention, then the invention is not sufficiently disclosed. If, on the other hand, the information given by the description is enough but the technical effect cannot be achieved over the whole scope of the claimed subject-matter, then the subject-matter is not inventive.

Legal references:
GL F-III, 12

3. Problem inventions

With the problem-solution approach, the inventive step – if any – lies in the step between the objective technical problem and the solution to the objective technical problem, i.e. the way the closest prior art is modified in order to solve the problem. In other words the inventive step is an assessment, from the skilled person's point of view, whether the solution to the technical problem, defined by the distinguishing features, would be obvious or not to the skilled person.

However, in exceptional cases an inventive step might be considered to be present in the mere formulation of the technical problem. In other words, the problem itself is not obvious. This is the case when it is difficult to discern the problem because, for instance, it arises only in specific circumstances that cannot be easily reproduced, e.g. when testing the claimed product or device.

These cases are what are known as "**problem inventions**".

It goes without saying that this has consequences for applying the problem-solution approach because the claimed subject-matter can be deemed to involve an inventive step before the fifth and last step, i.e. at the fourth step concerning the definition of the objective technical problem. To put it in simple terms, if the very problem is something that is *unknown* to the skilled person, i.e. no prior art discloses any information about this specific problem and it cannot be deduced based on the common general knowledge that such a problem will occur under specific circumstances, then any feasible solution to such a problem will be inventive even if the solution appears straightforward once the objective technical problem is defined.

Examples

The invention relates to a pet door to be inserted in a house door and shaped to prevent the pet getting its paw caught when it passes the paw through the door and tries to retract it instead of passing completely through the pet door.

The objective problem is to avoid paw injury if the pet changes its mind about proceeding through the pet door.

The problem is not very simple to discern because it only arises rarely and cannot be recognised by the usual testing carried out for pet doors. Therefore, merely recognising the problem is inventive, even though the door shape claimed in the invention is obvious once the problem has been recognised.

Legal references:
CL Book I.D.9.11

4. Non-technical indicators

The "indicators" (also called "secondary indicators" or "sub-tests") have been developed to help with the decision, at the last stage of the problem-solution approach, of whether or not a combination of the closest prior art with the distinguishing features is obvious.

In addition to the "technical indicators" already presented, further indicators based on non-technical considerations might be used.

These "**non-technical**" indicators are usually put forward by the applicant when arguing that an inventive step is present and are **not used** as indicators to assess the obviousness of the invention.

Some of these non-technical indicators are based on commercial considerations (as set out below) but these "**commercial indicators**" usually do not demonstrate inventiveness for the following reasons:

- **Commercial success** (Guidelines G-VII, 10.3): the success may result from a number of factors that have nothing to do with inventiveness, e.g. good marketing techniques or effective advertising.
- **Licencing**: for a competitor, the cost of defending an infringement case in court, even against a patent thought to be not inventive, could be greater than the cost of a licence.
- **Infringement**: the fact that a competitor copies an invention is not convincing because the competitor might be convinced that the patent is not valid, i.e. that it does not involve an inventive step.

Another non-technical indicator used by applicants is the time factor. Where the invention solves a technical problem which workers in the art have been attempting to solve for a long time, or otherwise fulfils a **long-felt need**, this may be regarded as an indication of inventive step (Guidelines G-VII, 10.3).

A further non-technical indicator used by applicants is the **success of a parallel application** granted by a foreign patent office, e.g. the USPTO or the JPO. This argument is not convincing because patent law and examination practices vary among patent offices. Other offices do not use the problem-solution approach, so their assessment of inventive step cannot be compared with the EPO's.

Non-technical indicators should be carefully considered and not be taken for granted, in particular, the decisions of the other offices, i.e. success of a parallel application. The results of parallel proceedings *may* be checked by the examiner, for example to see what reasoning was provided by another authority and what citations they used in the proceedings, **but the decision on obviousness must be based on facts and a proper problem-solution approach**.

Examples

The closest prior art is an old document dating from 1960, and the problem arising with the closest prior art has not been solved since 1960. This might be regarded as a long-felt need that has never been solved and might point to a non-obvious invention.

Legal references:

GL G-VII, 10, GL G-VII, 15

5. Selection inventions

A "selection invention" involves selecting individual elements within a list of elements of a prior-art disclosure, or selecting sub-ranges or sub-sets within a broader range or set that is known from the prior art.

As we know, a selection is novel only when specific requirements are fulfilled, like the "two-lists" principle when individual elements are selected. When the selection is a sub-range, it must be both "narrow" compared with the broader range of the prior art and "sufficiently far removed" from any specific example disclosed in the prior art and from the end-points of the known range (Guidelines G-VI, 7).

Only when these requirements are fulfilled, i.e. when the selection is novel, is inventive step to be assessed.

The selection is inventive when it is linked to a particular technical effect and when there is nothing to point the skilled person to the selection. This technical effect occurring within the selected range may be the same as that attained with the broader known range, provided it occurs to an unexpected degree.

This particular technical effect must apply to the entire range as claimed. If it occurs in only part of the claimed range, the claimed subject-matter does not involve an inventive step.

The criterion of "seriously contemplating" used with the test for the novelty of overlapping ranges must not be confused with the assessment of inventive step. For inventive step, it must be considered whether the skilled person would have made the selection or would have chosen the overlapping range in the expectation of some improvement or advantage. If it is concluded that they would not have done so, then the claimed matter involves an inventive step.

Examples

The invention concerns a chemical process with a heating step.

The closest prior art discloses a heating step within a temperature range of 200 to 300°C, with specific examples at 210°C and 290°C. The invention claims a range of 259°C to 261°C. Compared with the prior art, the claimed range is novel as it is narrow enough and remote enough from the end-points and from the examples.

If there is an unexpected effect (shorter reaction time, better yield, etc.), the invention is non-obvious.

If the description does not disclose any such unexpected effect, the invention is obvious. The selection of a sub-range cannot be a mere arbitrary choice.

Legal references:
GL G-VII, 12

6. Non-technical features

Under Articles 52 and 56 EPC, an invention must provide a non-obvious technical solution to a technical problem. However, it is acceptable to have a mix of technical and non-technical features in the claimed subject-matter.

When assessing the inventive step of these "mixed-type" inventions, all those features which contribute to the technical character of the invention are considered. These also include the features which, when taken in isolation, are non-technical, but do, in the context of the invention, contribute to producing a technical effect serving a technical purpose, thereby contributing to the technical character of the invention.

However, features which do not contribute to the technical character of the invention cannot support the presence of an inventive step. This situation may arise, for instance, if a feature contributes only to the solution of a non-technical problem, e.g. a problem in a field excluded from patentability.

Examples

Claim 1:

"Method of facilitating shopping on a mobile device wherein:
a. the user selects two or more products to be purchased;
b. the mobile device transmits the data on the selected products and the device location to a server;
c. the server accesses a database of vendors to identify vendors offering at least one of the selected products;

d. the server determines, on the basis of the device location and the identified vendors, an optimal shopping tour for purchasing the selected products by accessing a cache memory in which optimal shopping tours determined for previous requests are stored; and
e. the server transmits the optimal shopping tour to the mobile device for display."

The closest prior art is D1, which discloses a method for facilitating shopping on a mobile device in which the user selects a single product and the server determines from a database which vendor selling the selected product is nearest to the user and transmits this information to the mobile device.

The features contributing to the technical character are a distributed system comprising a mobile device connected to a server computer which has a cache memory and is connected to a database.

The differences between the subject-matter of claim 1 and D1 are:
1. The user can select two or more products to purchase (instead of a single product only).
2. The user is given an "optimal shopping tour" for purchasing the two or more products.
3. The server determines the optimal shopping tour by accessing a cache memory in which optimal shopping tours determined for previous requests are stored.

Differences (1) and (2) represent modifications to the underlying business concept since they specify producing an ordered list of shops to visit which sell these products. This does not serve any technical purpose, nor can any technical effects be identified from these differences. Hence, these features make no technical contribution over D1. On the other hand, difference (3) makes a technical contribution as it relates to the technical implementation of differences (1) and (2) and has the technical effect of enabling rapid determination of the optimal shopping tour by accessing previous requests stored in a cache memory.

The objective technical problem is how to modify the method of D1 to implement, in a technically efficient manner, the non-technical business concept defined by the differences (1) and (2), which is given as a constraint to be met.

Obviousness:

As to requirement (1), it would have been a matter of routine for the skilled person to adapt the mobile device used in D1 so as to enable the user to select two or more products instead of a single one. It would also have been obvious to assign the task of determining the optimal shopping tour (arising from requirement (2)) to the server, by analogy with the server likewise determining the nearest vendor in D1.

Since the objective technical problem further requires a technically efficient implementation, the skilled person would have looked for efficient technical implementations of tour determinations. A second document, D2, discloses a travel planning system for determining travel trips, which lists a set of places to visit. D2 addresses the same technical problem as, to this end, the system of D2 accesses a cache memory storing results of previous queries. The skilled person would thus have considered the teaching of D2 and adapted the server in D1 to access and use a cache memory as suggested in D2 so as to provide a technically efficient implementation of the determination of the optimal shopping tour, i.e. difference (3).

Hence, no inventive step is involved within the meaning of Articles 52(1) and 56 EPC.

Legal references:
GL G-VII, 5.4

7. Technical fields specificities for inventive step

In addition to what has been presented in this course, the assessment of inventive step might include further field specific considerations. This is the case in some of the chemistry and biotech fields, in which the evaluation of the technical effect plays an important role. This is also the case in fields dealing with computer-implemented inventions (CII), where the evaluation of non-technical features is of particular importance.

Should you have an interest in deepening your knowledge in these fields, you are invited to study the corresponding courses of the learning path.

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