

This document includes some recent decisions of the EPO in 2025 with regards to software related inventions and shows relevant extracts from the respective decisions.

T 1249/22 (Development and deployment of analytical models/ACCENTURE) 13-01-2025

European Case Law Identifier ECLI:EP:BA:2025:T124922.20250113

MACHINE FOR DEVELOPMENT AND DEPLOYMENT OF ANALYTICAL MODELS

Inventive step - assessment of a technical implementation of a non-technical method

Identification of technical and non-technical features by underlining words in the claim - not sufficient

Common general knowledge - book cited as evidence

Appealed decision not sufficiently reasoned (yes)

Application number 16199043.7
IPC class G06F 9/50; G06N 99/00
Applicant name Accenture Global Solutions Limited
Cited decisions G 0002/21, T 0766/91, T 0641/00, T 1158/02, T 0688/05, T 1027/06, T 1325/17

Board 3.5.06

Catchword

1. Regarding the assessment of inventive step of a technical implementation of a non-technical method without starting from a particular IT infrastructure, see points 10 and 11.

2. Underlining words in the text of a claim to identify what is considered "technical" is normally not sufficient to clearly identify the technical and non-technical features of the claimed subject-matter (see point 12.2).

3. Regarding reliance on a book as evidence for common general knowledge, see point 14. The pertinent passage of the Guidelines for Examination in the EPO, G-VII, 3.1, needs nuance (see point 14.4).

<https://www.epo.org/boards-of-appeal/decisions/pdf/t221249eu1.pdf>

The invention

1. The application relates to the development - including the training - of an analytical model (e.g. a machine learning model) and the deployment of the trained analytical model on a "compute engine" so as to process live incoming data.
2. The application indicates as aim to allow domain experts, as well as data scientists and data engineers, to carry out these tasks quickly and easily (paragraphs [0021], [0022], [0112] of the original description).
3. To meet this aim, the application discloses in particular a graphical user interface to manage and deploy different analytical models across different run time environments that creates a layer of abstraction between the user managing the models and the target run time environments (paragraphs [0050], [0051], [0083], [0112]; figures 7-9).

However, the method of independent claim 5 of the main request is not concerned with that graphical user interface but specifies instead the steps of a process for developing and applying an analytical model to incoming data together with how this process is implemented in a computer environment.

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Inventive step - the reasoning of the examining division

7. The examining division found that the independent claims of the main request lacked an inventive step in view of common general knowledge evidenced by D5 (decision, point 14).
8. In the statement of grounds of appeal, the appellant argued that D5 was not evidence of common general knowledge and that each of the chapters of D5 represented a separate piece of prior art (grounds of appeal, sections 2 and 3). The examining division had combined several distinct elements from these chapters in a mosaic-like fashion without providing any reasoning as to why the skilled person would at all have identified, singled out and combined them in the alleged fashion (grounds of appeal, see in particular page 17, last two paragraphs). The objection of lack of inventive step was "not supported and substantiated by a reasoned statement" (grounds of appeal, page 26, third paragraph from the bottom).
9. The examining division's inventive step objection focuses on independent method claim 5. It starts with a reference to section G-VII, 5.4 of the Guidelines for Examination in the EPO (relating to the problem-solution approach for claims comprising technical and non-technical features) and may be outlined as follows:

- an identification of those features of claim 5

that are technical when considered in isolation by underlining them in the text of the claim (decision, points 14.2 and 14.3);

- arguments as to why the thereby also identified "non-technical features" do not contribute to a technical effect serving a technical purpose in the context of the invention and do thus not

contribute to the technical character of the claimed invention (decision, points 14.4 and 14.5);

- arguments as to why, "when considering only the technical features of claim 5", these features "comprise only normal technical considerations of data processing in the context of distributed computing, forming part of the common general knowledge of the skilled person"; with several passages of chapters of book D5 cited as evidence of common general knowledge relevant for technical features grouped in groups "A" to "D" (decision, point 14.6);

- a conclusion that "by using common general knowledge and applying trivial design choices, the skilled person would arrive at the subject-matter of claim 5 in order to satisfy non-technical requirements related to the training and use of an analytical model to generate results based on inputs, without exercising inventive skill" (decision, point 14.7).

10. The board notes that the examining division did not select a particular piece of prior art as starting point for the assessment of inventive step (as suggested in the Guidelines, G-VII, 5.4, fourth paragraph, point (ii)).

The board does not find fault in this aspect of the examining division's argumentation.

In the case of an invention that amounts to a technical implementation of a non-technical method (provided the "non-technical method" does not contribute to the technical character of the invention), the **board considers it to be a valid approach to**

- **identify, on the one hand, the non-technical method underlying the invention, and, on the other hand, the features of its technical implementation,**

- **define as "technical problem" to provide a technical implementation of that non-technical method, provided to the (technically) skilled person as a "non-technical requirement specification" which is part of the technical problem,**

- **assess whether the skilled person would have solved this technical problem by providing the claimed technical implementation (if so, the claim is not inventive).**

Such an approach has been applied in several board of appeal decisions, for instance in T 1027/06 Rewards programs/MARITZ.

11. **In this approach, the choice of the IT infrastructure on which the non-technical method is to be implemented is considered to be part of the technical solution and the assessment of inventive step includes assessing whether it would have been obvious to the skilled person to select this IT infrastructure to implement the non-technical method. This is in contrast to starting from that IT infrastructure as "closest prior art" and formulating the (objective) technical problem as to provide an implementation of the non-technical method on that IT infrastructure.**

In cases where the IT infrastructure used in the invention is a computer system that is commonly used to implement methods of the same kind as the non-technical method (e.g. a

generic computer for most applications or a generic client-server architecture for e-business applications), there will be no difference in result between both approaches. **There could however be a difference where the choice of a specific IT infrastructure might not have been a straightforward one for the given non-technical method** (as noted in T 1325/17 Location-based dating/LOCATOR, reasons 10.2).

12. Re the non-technical features and requirements

12.1 In any case, whichever approach is used, it is essential to be clear from the reasoning - at least implicitly - what the technical problem and the non-technical requirements included in it are.

The **examining division's argumentation is deficient in this respect.**

12.2 First, this is mainly due to the fact that the examining division identifies "technical features" of the claimed subject-matter merely by underlining parts of the text of claim 5 and implies that the remainder of the claim are its "non-technical features" (decision, points 14.2 and 14.3).

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Such an identification by mere underlining of words (or even only parts of words, see e.g. "model metadata store") does not result in two sets of meaningful features but in two separate bags of words.

Claim 5 stripped of all the underlined parts does also not represent meaningful "non-technical requirements" that may be included in a technical problem provided to a skilled person.

In simple cases, it may be possible to somehow "reconstruct" from the two bags of words what the respective sets of (meaningful) technical and non-technical features and thus the non-technical requirements are, but this is not the case here.

Underlining words in the text of a claim to identify what is considered "technical" is normally not sufficient to clearly identify the technical and non-technical features of the claimed subject-matter.

12.3 The examining division states in point 14.4 of the decision that

"As it can be concluded from [the non-underlined parts of claim 5], the non-technical features of claim 5 are features related to an analytical model, the training of the analytical model and the creation of a trained analytical model, the analytical model parameter (being a result of the training), and the generation of results by the trained model using incoming data, given that both incoming data and 'results' are of unspecified nature and context."

While this indicates what the non-underlined parts of the claim relate to, it does not provide a clear specification of the non-technical features and thus of the "non-technical requirements".

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Such a presentation could in principle clarify what the technical features of the claimed subject-matter are. **In the present case, however, it is unclear whether it is meant to contain all the technical features, or to be only a summary of them:** for instance, group C appears to include far fewer features related to the "processing pipeline" than those that were underlined in point 14.3 of the decision (see point 12.2 above).

In any case, **even if the presentation was meant to cover all the technical features, it is not clear what (all) the non-technical features and the non-technical requirements are.**

12.5 The board notes that in points 14.26 and 14.27 of the decision, the examining division indicates (in a section replying to arguments of the appellants):

"The examining division considers that combining different features forming part of the common general knowledge of a field is part of the routine work of the skilled person to address various technical requirements in this context.

In the identified technical features for example, 'A' and 'B' address a requirement for application deployment for data processing, 'C' addressed the requirement of data exchange while 'D' addresses the requirement of scheduling."

It is **not clear whether the three "requirements" mentioned in the second paragraph correspond to the "non-technical requirements" mentioned in point 14.7 of the decision ("the skilled person would arrive at the subject-matter of claim 5 in order to satisfy non-technical requirements related to the training and use of an analytical model to generate results based on inputs, without exercising inventive skill")**. First, these **three requirements are introduced as "technical requirements"** in the first paragraph. Secondly, at least **the "requirement of scheduling" appears to refer to a scheduling of the execution of the trained model on the compute engine on the basis of the "resource allocation" features (see point 6 above), which have been underlined and thus considered technical for the most part by the examining division** (see point 12.2 above). It is not clear which aspect of scheduling - considered technical by the examining division - could have been included in the "non-technical requirements" mentioned in point 14.7 of the decision.

12.6 Hence, the **board cannot derive from the decision, what precisely the examining division considered to be the non-technical features of the method of claim 5 and thus the "non-technical requirements" referred to in point 14.7 of the decision.**

The board is therefore not in a position to review whether the technical problem including the "non-technical requirements" has been correctly defined.

Already for this reason, the **board considers the decision not to be sufficiently "reasoned" within the meaning of Rule 111(2) EPC.**

13. Re the technical features

13.1 The **examining division specifies the technical features "A" to "D" stripped of all the alleged non-technical aspects (e.g. decision, point 14.6: "storing (file) data in a database, using storage location specifiers", without indicating that the storage location specifiers are inter alia for the trained analytical model) and appears then to only assess their obviousness in isolation of the rest of the claim** (decision, point 14.6: "When considering only the technical features of claim 5, [...]").

This is however not sufficient to show that the skilled person, confronted with the technical problem including the non-technical requirements, would have arrived at the claimed technical implementation of the non-technical method.

In this exercise, it is **normally not possible to perform a meaningful obviousness analysis by completely disregarding the non-technical aspects of the claim, as they are normally the *raison d'être* for the claimed combination of technical features relating to their implementation.** This is taken account of by including these non-technical aspects in the technical problem as non-technical requirements (in accordance with T 641/00 Two identities/COMVIK, headnote II). This, in turn, ensures that an inventive step will not be found because the non-technical aspects are non-obvious, as required by the principle expressed in T 641/00, headnote I, that only features contributing to the technical character of a claimed invention may support the presence of an inventive step.

In T 688/05 Ticket auctioning system/TICKETMASTER, headnote and reasons 4.5, similar considerations were expressed by saying that features making no technical contribution "may well form the only logical link between technical features resulting from their implementation" and that "they must therefore be taken into consideration for the examination as to inventive step while at the same time not being permitted to contribute to it." This is, for instance, what is done in T 1027/06 (cited above), reasons 10.

13.2 In some cases, **it is possible to treat groups of technical features separately from each other, but this requires a proper definition of the respective partial technical problems** solved by them and an explanation of why this approach is justified in the case at hand.

It may also be possible to argue that a skilled person confronted with the general technical problem of providing a technical implementation of a given non-technical method, after having selected a particular IT infrastructure in a first step towards a solution, would necessarily have been confronted with several separate sub-problems arising when having to implement the non-technical method on that IT infrastructure (see e.g. T 1158/02 Vehicle web access/ICO SERVICES, reasons 3.9, for similar considerations).

But none of this has been argued by the examining division.

13.3 The **examining division also does not explain why the skilled person would have chosen grid computing (the topic of book D5) as the IT infrastructure for the implementation.**

It is **not clear to the board whether the examining division considered the technical problem to include the requirement that the non-technical method is to be implemented on such kind of IT infrastructure (and, if so, why such a definition of the technical problem would be justified) or whether the examining division considered it to be an obvious choice for developing and deploying analytical models.**

13.4 The **examining division's argumentation also lacks motivation** - starting from the technical problem including the non-technical requirements - for applying common general knowledge or prior art relating to "the known paradigm of message-based grid computing"

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13.5 Furthermore, **in particular in respect of groups C and D, the examining division's remains very general without giving sufficient consideration to the exact wording of the respective claim features.** The verbatim quotations of passages from D5 does not fill this gap in the reasoning as they do not readily reflect the claim features. Also, as already noted above, the summary of the technical features falling into group C in point 14.6 of the decision does not comprise all the related features underlined in point 14.3.

13.6 Hence, the **board considers that also for these reasons the decision is not sufficiently reasoned** within the meaning of Rule 111(2) EPC.

14. Re D5 as evidence of alleged **common general knowledge**

14.1 **D5 is a book titled "Grid Computing: Making the Global Infrastructure a Reality"** that comprises a collection of 43 individual papers on this topic, all from different groups of authors, which are referred to as "chapters". In the initial chapter, the editors of the book state:

"This book, Grid Computing: Making the Global Infrastructure a Reality, [1] brings together many of the major projects that are driving and shaping an emerging global Grid. In the chapters of this book you will find the perspectives of a pioneering group of Grid developers, researchers and application scientists whose vision forms the present and provides a view into the future of Grid computing."

14.2 The **board agrees with the appellant that in the present case a priori each of the "chapters" represent a separate piece of prior art, as they appear to be self-contained papers which do not build on each other, unlike chapters of a textbook.** Definitions given in one of these papers do not necessarily apply to the others. D5 rather resembles a conference proceedings volume including a collection of separate papers related to a common topic, as also argued by the appellant. **The mere fact that the papers are published in the same book, which has a single ISBN (as noted by the examining division), does not imply that the whole content of such a book forms a single piece of prior art.**

14.3 As to whether D5, or its individual chapters, is generally suitable as evidence for common general knowledge, the board notes the following.

An obviousness argument based on common general knowledge normally involves an allegation that some teaching was common general knowledge and that the skilled person would have relied on it to solve the technical problem and would thereby have arrived at a number of features. The allegation that this teaching was common general knowledge may be supported by specific evidence.

The deciding body will judge **whether the cited evidence establishes that the teaching in question was common general knowledge by applying the principle of free evaluation of evidence on a case-by-case basis**, as is generally the case for evaluation of evidence in proceedings before the EPO (see G 2/21, reasons 27 et seq.). This means that **while it may be relevant whether the cited evidence is a "book" or a "textbook", this fact cannot be on its own decisive, as there cannot be firm rules according which certain type of evidence are, or are not, convincing** (G 2/21, reasons 34).

Not everything that is written in a book or even a textbook was necessarily common general knowledge at the time of its publication. It is true that information often appears in a textbook because it was common general knowledge when the book was drafted. However, this **does not mean that any information contained in a textbook must have been common general knowledge before the textbook was written, nor even that it must have become common general knowledge with the publication of the textbook.** For instance, a textbook may comprise a section in which the author presents a particular software that has been developed in their research group. The details of this software disclosed in the book will not necessarily have been "common general knowledge" beforehand nor will they become common general knowledge merely due to the publication of the textbook.

On the other hand, a statement in the background section of a scientific paper explaining that something was a common measure to achieve a particular effect may, depending on circumstances, be considered to establish that this measure was common general knowledge, even though the cited evidence is not a textbook. This may also be case if that same measure is used for the same purpose in several papers by different authors.

14.4 The examining division refers in point 14.23 of the decision to section G-VII, 3.1 of the Guidelines for Examination in the EPO, in which it is stated:

"Information does not become common general knowledge because it has been published in a particular textbook, reference work, etc.; on the contrary, it appears in books of this kind because it is already common general knowledge (see T 766/91). This means that the information in such a publication must have already become part of common general knowledge some time before the date of publication" (emphasis added).

The board notes that the considerations expressed in point 14.3 above are consistent with those made in the board of appeal decision cited in this section of the Guidelines, namely T 766/91 Decorative laminates/BOEING, which only describe what is "normally" accepted and what is "usually" the case (see reasons 8.2). The board also notes, in accordance with Article

20(2) RPBA, that the Guidelines have lost this nuance when saying "must" in the passage cited above.

14.5 Hence, as regards the examining division's reliance on chapters of D5 as evidence for alleged common general knowledge, there may at worst only be an error of judgement, not an issue of insufficient reasoning.

14.6 However, the board considers the examining division's reasoning to be insufficient within the meaning of Rule 111(2) EPC as regards what the alleged common general knowledge is that is being relied upon.

For instance, the examining division refers merely to the "known paradigm of message-based grid computing" in respect of group C without indicating which features of this paradigm are considered to be also common general knowledge, even though the examining division appears to rely on more than the knowledge of the existence of that paradigm when considering that all the features relating to the processing pipeline "form part of the common general knowledge of the skilled person" (decision, point 14.6).

15. The objections of lack of inventive step against the other independent claims of the main request are only substantiated by reference to the one against independent claim 5 (decision, point 14.8) and hence are insufficiently reasoned for the same reasons.

T 2353/22 (Lineage metadata/AB INITIO) 10-10-2024

European Case Law Identifier ECLI:EP:BA:2024:T235322.20241010

Generating, accessing, and displaying lineage metadata

Inventive step - (yes)

Application number	17851913.8
IPC class	G06F 17/30
Applicant name	AB Initio Technology LLC
Cited decisions	G 0001/19, T 0115/85, T 0641/00, T 0619/02, T 1351/04, T 0756/06, T 1670/07, T 0697/17, T 0731/17, T 2626/18, T 3176/19, T 1272/20

Board 3.5.07

<https://www.epo.org/boards-of-appeal/decisions/pdf/t222353eu1.pdf>

1. The invention concerns a method, a system and a device for supporting the storage of, access to and display of lineage metadata about data stored in a storage system. The lineage metadata of a data object provides information about the sources from which the data object was derived. For instance, how the data object was generated, from which source it was

imported, how it has been used by applications, how it relates to other datasets or how its modification will affect tables (see original description, page 1 to page 2, fifth line).

1.1 The method according to the claimed invention includes a first step of receiving metadata from a data source, the metadata describing nodes and edges. Each node represents a metadata object, which can be a data element or a transformation. An edge represents a one-way effect of one node upon another node. According to the description, page 10, first paragraph, the data elements can represent, for instance, "datasets, tables within datasets, columns in tables, and fields in files, messages, and reports". An example of a transformation is "an element of an executable that describes how a single output of a data element is produced".

1.2 After the step of receiving metadata from a data source, the claimed method further includes steps of generating a data structure representing the received metadata and receiving a query for lineage metadata. In response to receiving the query, the data structure is accessed and a response to the query is generated and sent to a computer system for display. The response includes the lineage metadata responsive to the query.

5. Article 56 EPC

5.1 In the decision under appeal, the examining division decided that the method of claim 1 defined "an abstract graph model of data lineage describing a network of nodes and edges, in the form of a customized query processing formulation" which was "void of any further technical considerations". The only features of claim 1 which were technical were the features "storing", "random access", "computer", and "for causing a display of the computer system". The application did not describe "any technical interaction between the apparent non-technical features and the technical features", besides the use of a computer to perform the method.

The examining division was of the opinion that no technical effect serving a technical purpose could be derived from the claim wording. The description disclosed non-technical purposes of the metadata, e.g. finding out the meaning of business terms, the relationship between those terms and the data to which the terms referred. These were non-technical aspects of an administrative task. In the context of general-purpose computers, pointers referencing memory locations inevitably had to be used. They were thus regarded as an integral part of the general purpose computer.

5.2 The appellant argued that the "problem-solution-approach" exercised by the examining division in points 11.2.20 to 11.2.27 of the decision under appeal was intrinsically biased and based on hindsight, as the **objective technical problem included the solution**. The examining division's assessment that several claim features were non-technical resulted from an incorrect legal approach for assessing the technical character and from an incorrect understanding of the claimed features. This assessment was arbitrary and involved an artificial, hypothetical separation of features that were actually claimed together. Claim 1 specified an instance of a data structure stored in RAM that included a pointer/reference to a further instance of the data structure stored in RAM as well. The pointer established a reference between two portions of RAM. It was not any pointer but rather a specific pointer representing the edge between the two nodes, i.e., representing an effect one node had on

another node. All the features of claim 1 were based on technical considerations and made a technical contribution.

The appellant further argued that even commonplace or generic computer components could be involved in making a technical contribution. The examining division had failed to acknowledge that the computer components of the claimed system did, in fact, make a technical contribution. The examining division had not provided any evidence of the implicit presence of the instances of the data structures in a general purpose computer and of the alleged common general knowledge. The cited prior art did not disclose the claimed pointer and instances of the data structure.

5.3 The board agrees with the decision under appeal that the lineage data itself should not be considered "a technical state of the underlying hardware", as argued by the appellant, or as "data about a technical process" or "conditions prevailing in an apparatus or system" within the meaning of decisions T 1670/07, T 115/85 and T 756/06 cited by the appellant. A "data element" and a "transformation" are not further specified in the claim and can thus not be seen as technical entities (see also T 1670/07, Reasons 12; T 756/06, Reasons 13), except for the fact that they are stored in computer memory. The display of lineage information thus corresponds to presentation of information as such under Article 52(2)(d) and (3) EPC and does not make a technical contribution.

5.4 However, the fact that the ultimate goal of the claimed method is not technical is not sufficient to conclude that the whole implementation is not technical (T 619/02, Reasons 2.1). The board agrees with the appellant that the reasoning of the decision under appeal is not convincing.

5.4.1 In the decision under appeal, the examining division identified the computer programmer as the skilled person (point 11.2.24) and **described the "expert in graph models" as a non-technical expert who defines the set of requirement specifications** (point 11.2.26). The examining division argued that the abstract graph model was given "to the skilled person who will use a computer to implement it without the use of any 'further technical considerations', let alone technical considerations of the internal functioning of the computer" (point 11.2.18). However, **in the board's opinion**, in the conventional problem-solution approach as further developed by decision T 641/00 (COMVIK approach), **the skilled person solves the objective technical problem by technical means based on technical considerations. If that is not the case, either the skilled person is inaccurately defined or the non-technical features were not added to the formulation of the technical problem to be solved.** According to the COMVIK approach, the skilled person is a fictional person skilled in a technical field, who has the task of technically implementing the non-technical requirements passed on to them as part of the technical problem to be solved. The skilled person searches a technical solution based on their ordinary technical skills, common general knowledge and knowledge of the prior art. **Each claim feature**, or each aspect of a claim feature, is **either a contribution of the non-technical expert**, e.g. an expert on graph models, in which case it can appear in the formulation of the technical problem to be solved, **or a contribution of the technical expert**, in which case it is part of the technical solution (see also decision T 2626/18, Reasons 4.13).

5.4.2 The same comment applies to the examining division's argument that "When automating the method on the computer system comprising a query processing method the computer programmer does not have to overcome any technical problem, commonplace programming skills and computer knowledge will suffice." (point 11.2.27).

In addition, this statement **confuses** commonplace features and/or **obvious solutions with non-technical subject-matter** by expressing that the programmer, who was identified as the technically skilled person, does not have to overcome any technical problem because only commonplace programming skills and computer knowledge are necessary.

It is true that since computer programming involves technical and non-technical aspects, it is difficult to distinguish between the "programmer as such" who, as long as they only develop abstract algorithms, are not a skilled person within the meaning of the case law, and the "technical programmer" (see also T 697/17, reasons 5.2.4). But in the decision under appeal, the programmer was identified as the skilled person who receives the objective technical problem.

5.4.3 The decision under appeal **did not take into account all the claim features making a technical contribution.**

Citing decision G 1/19 of the Enlarged Board of Appeal, the examining division argued correctly that "merely" performing a method, the result of which did not cause any "technical effect(s) on a physical entity in the real world", did not suffice to contribute to the technical character of the invention, and that "the mere calculation of the behaviour of a (technical) system as it exists on the computer, and the numerical output of such calculation, should not be equated with a technical effect" (see point 11.2.16). The **board notes however, that according to decision G 1/19, "technical effects" or "technical interactions" do not occur only through the generation of "technical output". Technical contributions can result, for example, from "adaptations to the computer or its operation, which result in technical effects (e.g. better use of storage capacity or bandwidth)" and "technical effects can occur within the computer-implemented process** (e.g. by specific adaptations of the computer or of data transfer or storage mechanisms)" (see pages 39 and 40, points c, 85 and 86).

Under point 14.2.1 of the decision under appeal, the examining division argued that "pointers referencing memory locations inevitably have to be used, therefore, they are regarded as an integral part of the general purpose computer that is always implicitly comprised within the general-purpose computer and its usage. Therefore, the reasoning of the applicant that the data structure with the pointer as claimed is a specific implementation is not convincing."

The **board does not agree with this argument.** In the assessment of technical contribution and inventive step, the **claim should not be analysed as a collection of disconnected terms but as a whole** (see e.g. T 731/17, Reasons 6.2 to 6.4; T 1272/20, Reasons 3.1). Even though a pointer to data in computer memory is commonplace, its purposive use in a method for retrieving data from computer memory makes a technical contribution (see e.g. T 1351/04, Reasons 7.2 to 7.4; T 697/17, Reasons 5.2.5; T 3176/19, Reasons 10.3) and **cannot be ignored in the inventive-step assessment.**

The data structure specified in the claim serves the technical purpose of providing access to the data stored in memory, as claimed for example in features (c3), (e) and (f) and thus makes a technical contribution.

5.5 In its preliminary opinion, the board introduced prior-art documents D2 to D9 into the appeal proceedings. Of all the cited prior art, document D2 is the best starting point for assessing inventive step and closest prior art. It discloses a metadata viewing environment which displays a data lineage diagram (paragraph [0028]). The system receives metadata from data sources, the metadata including metadata objects (paragraphs [0017], [0023],[0024] and [0027]). The metadata objects can represent different types of data elements (e.g., data used as input or output of an executable program) and/or transformations (for instance, any type of data manipulation associated with a data processing entity). The metadata objects are represented as nodes in the diagram. The system can automatically extract relationships (i.e. lineage information) between the metadata objects and compute the lineage information (paragraph [0027]). The computed lineage information corresponds to a data structure according to feature (b) of claim 1. In the board's opinion, it is implicit that the instances of the data structure are stored at least temporarily in RAM. Since the nodes represent data elements and transformations, and are connected by edges representing their relationships, an edge between two nodes represents a one-way effect as in feature (a3). Therefore, document D1 discloses a method comprising features (a) to (c), (a1) to (a4) and (f1).

5.6 The subject-matter of claim 1 differs from the method of D2 in that it includes features (c1) to (f), (f2), (g) and (g1). These features specify details of the data structure (features (c1) to (c4)), the step of receiving a query for lineage metadata including the identification of a data element, a type of lineage and a walk plan (features (d) to (d2)), the steps of traversing the data structure and collecting data using the data structure and the walk plan (features (d3), (d4) and (e) to (e4)), the step of generating a response including lineage metadata responsive to the query ((f) and (f2)) and the steps of sending the response to a computer system and displaying the lineage data (features (g) and (g1)).

5.7 The appellant argued that in the system of document D2 the metadata was not kept in RAM but in persistent storage. The walk plan instructed the computer how to create a lineage diagram according to the selection of the user and was not a part of said selection. By using a walk plan in the traversal of the data structure, data which was not responsive to the query was not collected. The distinguishing features collectively enhanced speed and computational efficiency when provisioning lineage data, thereby addressing a technical problem that was not solved by the prior art.

According to the description, the walk plan can be selected by the metadata server using the identity of the data element or taking into account the type of lineage (paragraph bridging pages 6 and 7; page 20, lines 12 to 18).

5.8 The board agrees with the appellant that creating the specific data structure of claim 1 and generating lineage metadata in RAM, which are not disclosed in document D2, contribute to a more efficient generation of the lineage metadata. However, loading data into RAM for more efficient processing is well-known to the skilled person, for example from in-memory

databases, as the board explained at the oral proceedings. In addition, not all the distinguishing features are directed to improve efficiency.

5.9 In the board's opinion, **obtaining and displaying lineage information for a particular data element are non-technical requirements**. The distinguishing features solve the technical problem of supporting in the system of document D2 the functionality for obtaining and displaying, in a computer system, lineage metadata of a given type for a particular element.

5.10 None of the cited prior-art documents disclose the combination of distinguishing features (c1) to (f), (f2), (g) and (g1). In the **board's opinion, it would be within the ordinary skills of the computer expert to arrive at the data structure specified in the distinguishing features, which corresponds directly to the non-technical lineage structure**. However, the **board is not convinced that the skilled person would arrive at the combination of all the distinguishing features, including a walk plan to direct the way the data structure is traversed and the data is collected as claimed**.

5.11 Therefore, the subject-matter of claim 1 of the **main request involves an inventive step (Article 56 EPC)**.

T 0758/22 27-11-2024

Europäischer Rechtsprechungsidentifikator ECLI:EP:BA:2024:T075822.20241127

VERFAHREN ZUR STEUERUNG KONTINUIERLICHER CHROMATOGRAPHIE UND MULTISÄULEN- CHROMATOGRAPHIE-ANORDNUNG

Patentansprüche - Klarheit (nein)

Anmeldenummer 16825323.5
IPC-Klasse G01N 30/86, G01N 30/88, G01N 30/46

Name des Anmelders Karlsruher Institut für Technologie
Name des Einsprechenden Bayer AG / Bayer Intellectual Property GmbH, Dr. Aechter, Bernd

Kammer
3.4.02

<https://www.epo.org/boards-of-appeal/decisions/pdf/t220758du1.pdf>

Merkmal 12.8 g) des Hauptantrags:

„mindestens eine Recheneinheit mit mindestens einem Datenverarbeitungsprogramm mit mindestens einem chemometrischen Rechenverfahren, welches auf einem trainierten und validierten mathematischen Modell beruht,“

...

Hilfsantrag 9

Das Merkmal 1.4 des Anspruchs 1 des Hauptantrags wurde in Anspruch 1 des Hilfsantrags 9 wie folgt geändert:

"Berechnen von zumindest einem Prozessparameter basierend auf dem multivariaten Signal mittels zumindest eines Datenverarbeitungsprogramms einer Recheneinheit durch Anwendung eines chemometrischen Verfahrens, wobei das chemometrische Verfahren ein anhand mehrerer Chromatographieläufe trainiertes und validiertes mathematisches Modell umfasst, wobei zum Training Komponentenkonzentrationen mittels analytischer Verfahren genau bestimmt werden, wobei das Berechnen von zumindest einem Prozessparameter mittels des einen Datenverarbeitungsprogramms mit dem folgenden chemometrischen Verfahren durchgeführt wird: Berechnungen mittels eines neuronalen Netzes".

1. Hauptantrag - Klarheit

Anspruch 1 ist nicht klar (Artikel 84 EPÜ).

1.1 Anspruch 1 enthält den Schritt des Berechnens eines Prozessparameters "durch Anwendung eines chemometrischen Verfahrens, welches ein trainiertes und validiertes mathematisches Modell umfasst" (Merkmal 1.4). Das Merkmal "welches ein trainiertes und validiertes mathematisches Modell umfasst" wurde während des erstinstanzlichen Einspruchsverfahrens in das Merkmal 1.4 des Anspruchs 1 aufgenommen und ist daher auf das Erfordernis der Klarheit zu prüfen.

...

1.3 Begründung der mangelnden Klarheit des Anspruchs 1

Das **Merkmal in Anspruch 1 "welches ein trainiertes und validiertes mathematisches Modell umfasst" ist unklar** aus den folgenden Gründen:

Die Kammer teilt die im schriftlichen Verfahren und in der mündlichen Verhandlung vor der Kammer vorgetragene Auffassung des Einsprechenden, dass "**in beiden unabhängigen Ansprüchen [1 und 12] ein Zustand des mathematischen Modells beansprucht**" wird (O1, Seite 12, dritter Absatz; Hervorhebung durch die Kammer). Das **Trainieren und Validieren an sich eines untrainierten und unvalidierten mathematischen Modells** findet nicht während des beanspruchten Verfahrens statt, sondern davor. Das mathematische Modell liegt bereits vor der Ausführung des beanspruchten Verfahrens "**zum Regeln einer Multisäulen-Chromatographie-Anordnung**" in einem trainierten und validierten, abgeschlossenen Zustand vor.

"Dem erstellten mathematischen Modell kann jedoch nicht 'angesehen' werden, ob es überprüft [validiert] wurde oder nicht. (...) Ähnlich verhält es sich mit einem trainierten mathematischen Modell. Liegt das mathematische Modell vor, ist nicht erkennbar, ob das mathematische Modell trainiert wurde oder nicht trainiert wurde" (O1, Seite 12, vorletzter und letzter Absatz). Wie von dem Einsprechenden weiter vorgetragen, "[i]n dem beanspruchten Zustand lässt sich ein trainiertes und validiertes mathematische Modell jedoch nicht von einem untrainierten und unvalidierten Modell unterscheiden, das durch geschickte Modellierung gefunden wurde. (...) Dadurch lässt sich der Schutzbereich nicht genau erkennen. Die unabhängigen Ansprüche 1 und 12 erfüllen also nicht die Erfordernisse von Art. 84 EPÜ" (O1, Seite 16, vorletzter und letzter Absatz).

1.4 Das Merkmal in Anspruch 12 "welches auf einem trainierten und validierten mathematischen Modell beruht" ist aus den gleichen Gründen unklar, wie sie oben in Punkt 1.3 für das entsprechende Merkmal in Anspruch 1 angeführt sind.

1.5 Im schriftlichen Verfahren hat der Patentinhaber kein relevantes Gegenargument zu der vom Einsprechenden schriftlich vertretenen Auffassung vorgebracht, dass das mathematische Modell in seinem fertigen Zustand nicht erkennen lässt, ob das mathematische Modell bei seiner Herstellung tatsächlich trainiert und validiert wurde. Während der mündlichen Verhandlung vor der Kammer trug der Patentinhaber folgende Argumente für die Klarheit des Anspruchs 1 vor:

1.5.1 Der im vorliegenden Fall in Betracht kommende Fachmann verfügt über fundierte Kenntnisse in Chemie und Mathematik sowie über umfangreiche Erfahrungen mit chemometrischen Berechnungen. Dieses Wissen sei auch in der Patentschrift beschrieben, z.B. in den Absätzen [0049], [0051], [0070], [0072] und [0077]. Aufgrund seines einschlägigen Fachwissens wisse er genau, was ein "trainiertes und validiertes mathematisches Modell" sei. Insbesondere erkenne er eindeutig den Unterschied zwischen einem "trainierten und validierten" und einem "untrainierten und unvalidierten" mathematischen Modell.

1.5.2 Der Patentinhaber verwies auf die Rechtsprechung der Beschwerdekammern, wonach die Ansprüche aus Gründen der Rechtssicherheit zwar klar sein müssten, weil sie dazu dienen, den Schutzbereich des Patents festzulegen (Rechtsprechung der Beschwerdekammern, II.A.1.1). Allerdings sei ein gewisser Aufwand für den Fachmann bei der Abgrenzung des Schutzbereichs in Kauf zu nehmen. Nach der Rechtsprechung müsse der Schutzbereich für den Fachmann "nur" ohne unzumutbaren Aufwand erkennbar sein. Da das "trainierte und validierte mathematische Modell" immer besser sei als das "untrainierte und unvalidierte mathematische Modell", könne der Fachmann dies ohne unzumutbaren Aufwand erkennen. Zudem sei dem Fachmann bekannt, dass **mathematische Modelle dieser Art in der Regel käuflich erworben würden, so dass man sich an den Hersteller des Modells wenden könne, um zu erfahren, ob das Modell trainiert worden sei.**

1.5.3 Entgegen der Auffassung der Einsprechenden und der Kammer, sei das "trainierte und validierte mathematische Modell" nicht vor der Ausführung des beanspruchten Verfahrens trainiert und validiert worden. Anspruch 1 definiere nämlich keine fertige Vorrichtung,

sondern ein Verfahren mit einem Verfahrensschritt in dem das mathematische Modell ausdrücklich verwendet werde. Daher seien das Trainieren und Validieren des mathematischen Modells Verfahrensschritte des beanspruchten Verfahrens.

1.6 Die **Kammer ist nicht überzeugt** von den Argumenten des Patentinhabers.

1.6.1 **Dass der Fachmann aufgrund seines Fachwissens erkennen würde, ob das ihm vorliegende mathematische Modell bereits trainiert und validiert ist oder nicht, ist eine reine Behauptung, die nicht auf überprüfbaren Tatsachen oder sonstigen Beweisen beruht.** Wie der Einsprechende in der mündlichen Verhandlung vortrug, kann der Fachmann nicht ad hoc erkennen, ob das Modell trainiert und validiert ist oder nicht. Um dies eindeutig zu erkennen, müsse er das ihm vorliegende Modell mit dem entsprechenden untrainierten und unvalidierten Modell vergleichen können. Ohne diesen Vergleich werde er im Unwissen gelassen, ob das ihm vorliegende Modell bereits trainiert und validiert ist oder ob es zwar untrainiert und unvalidiert ist, aber vom Fachmann auf der Grundlage einschlägiger Erfahrungen mit chemometrischen Berechnungen von Prozessparametern in Aufreinigungsprozessen von Biopharmazeutika ursprünglich so entwickelt wurde, dass es einem trainierten und validierten mathematischen Modell bereits sehr nahe kommt.

1.6.2 **Ob das vorliegende mathematische Modell bereits trainiert und validiert ist, ist keine Frage des Ausmaßes oder der Zumutbarkeit des Aufwands, sondern der Kenntnis des ursprünglichen, untrainierten und unvalidierten Zustands des mathematischen Modells.** Genau dieser Anfangszustand ist in Anspruch 1 jedoch nicht definiert. Das chemometrische Verfahren, das gemäß Merkmal 1.4 in dem beanspruchten Verfahren verwendet wird, **umfasst somit ein mathematisches Modell in einem bestimmten Zustand, der einfach vorliegt und auch nicht mit hohem Aufwand mit einem Anfangszustand des Modells verglichen werden kann. So ist insbesondere aus keinem der technischen Merkmale in Anspruch 1 ersichtlich, dass das mathematische Modell erworben wurde, geschweige denn, wer der Hersteller des mathematischen Modells sein sollte.**

1.6.3 Anspruch 1 definiert zwar keine Vorrichtung sondern ein Verfahren. Nichtsdestotrotz definiert der Wortlaut des Merkmals 1.4 "... durch Anwendung eines chemometrischen Verfahrens, welches ein trainiertes und validiertes mathematisches Modell umfasst ..." lediglich den Verfahrensschritt der "Anwendung eines chemometrischen Verfahrens". Dieses verwendete chemometrische Verfahren umfasst eindeutig ein Produkt (das mathematische Modell) in einem bestimmten, fertigen und abgeschlossenen Zustand. Dieses **"Umfassen" ist kein Verfahrensschritt**, da der Anspruch 1 keine aktive Verbindung zwischen dem chemometrischen Verfahren und dem mathematischen Modell definiert. Das mathematische Modell hängt, wie von dem Einsprechenden während der mündlichen Verhandlung vorgetragen, sozusagen "in der Luft". Es ist einfach nur vorhanden und von dem chemometrischen Verfahren umfasst.

2. Hilfsanträge 1 bis 7, 1b, 1a, 2b, 2a, 3b, 3a, 4b, 4a, 5b, 5a

Die Kammer teilte dem Patentinhaber in der mündlichen Verhandlung ihre vorläufige Meinung mit, dass auf der Grundlage, dass der Anspruch 1 der Hilfsanträge 1 bis 7, 1b, 1a, 2b, 2a, 3b, 3a, 4b, 4a, 5b, 5a ebenfalls das Merkmal "ein trainiertes und validiertes

mathematisches Modell umfasst" aufweist, der Anspruch 1 dieser Hilfsanträge aus denselben Gründen unklar sei wie Anspruch 1 des Hauptantrags. Der Patentinhaber verwies lediglich allgemein auf seinen schriftlichen Vortrag. Da die Kammer jedoch in den Schriftsätzen des Patentinhabers keine weiteren relevanten Argumente zur Frage der Klarheit des Merkmals "trainiertes und validiertes mathematisches Modell" fand, gab es für die Kammer keinen Grund, von ihrer vorläufigen Meinung abzuweichen, die somit endgültig ist.

Infolgedessen ist Anspruch 1 der Hilfsanträge 1 bis 7, 1b, 1a, 2b, 2a, 3b, 3a, 4b, 4a, 5b, 5a aus denselben Gründen unklar wie Anspruch 1 des Hauptantrags.

3. Hilfsantrag 8

3.1 Zulassung des Hilfsantrags 8

3.1.1 Der Einsprechende beantragte während der mündlichen Verhandlung vor der Kammer, den Hilfsantrag 8 nicht in das Verfahren zuzulassen, weil der Hilfsantrag 8 zu einem sehr späten Zeitpunkt in das Verfahren eingereicht wurde und weil er prima facie nicht den vorliegenden Einwand der mangelnden Klarheit behebe.

3.1.2 Die Kammer kann die Argumente des Einsprechenden nicht nachvollziehen. Da die Einspruchsabteilung in dem erstinstanzlichen Verfahren einen höherrangigen Antrag für gewährbar hielt, bestand für den Patentinhaber kein zwingender Grund, den vorliegenden, weiter eingeschränkten Hilfsantrag 8 bereits im erstinstanzlichen Verfahren zu stellen. Da zudem Anspruch 1 des Hilfsantrags 8 hinsichtlich des Merkmals des "trainierten und validierten mathematischen Modells" weiter präzisiert wurde, kann nicht behauptet werden, dass die Änderung des Anspruchs 1 den Klarheitseinwand prima facie nicht ausräumt. Daher wird der Hilfsantrag 8 in das Verfahren zugelassen.

3.2 Klarheit

Anspruch 1 ist nicht klar (Artikel 84 EPÜ).

3.2.1 Anspruch 1 enthält wie Anspruch 1 des Hauptantrags das Merkmal, dass das chemometrische Verfahren ein "trainiertes und validiertes mathematisches Modell umfasst". Die im Vergleich zum Anspruch 1 des Hauptantrags hinzugefügte Information, wonach das mathematische Modell ein "anhand mehrerer Chromatographieläufe trainiertes und validiertes mathematisches Modell" ist, **ändert nichts an der Tatsache, dass das mathematische Modell sich in einem abgeschlossenen Zustand befindet anhand dessen nicht erkennbar ist, ob das mathematische Modell trainiert und validiert ist**. Daher ist Anspruch 1 des Hilfsantrags 8 aus den gleichen Gründen unklar, wie sie oben in Punkt 1.3 für das entsprechende Merkmal in Anspruch 1 des Hauptantrags angeführt sind.

3.2.2 Gemäß des Patentinhabers gebe Anspruch 1 des Hilfsantrags 8 eine klare Anweisung wie das mathematische Modell zu verwenden sei, nämlich soll es anhand mehrerer Chromatographieläufe trainiert und validiert werden. Aufgrund des Zusatzes "anhand mehrerer Chromatographieläufe" sei das mathematische Modell jetzt spezifisch auf das beanspruchte Verfahren zugeschnitten, nämlich auf ein Verfahren zur Aufreinigung von

Biopharmazeutika. In diesem speziellen Bereich der Herstellung von Biopharmazeutika müssten alle Details des Verfahrens sehr präzise und vollständig angegeben werden, insbesondere ob das in dem chemometrischen Verfahren verwendete mathematische Modell trainiert und validiert sei. Ein untrainiertes und unvalidiertes mathematisches Modell sei nämlich für die Anwendung eines chemometrischen Verfahrens zur Berechnung eines Prozessparameters nicht sinnvoll. Daher erkenne der Fachmann in dem speziellen Bereich der Herstellung von Biopharmazeutika notwendigerweise, dass das mathematische Modell trainiert und validiert ist.

3.2.3 Die Kammer ist nicht überzeugt von dem Argument des Patentinhabers. Entgegen der Auffassung des Patentinhabers **definiert auch Anspruch 1 des Hilfsantrags 8 nicht, wie das mathematische Modell in dem chemometrischen Verfahren verwendet wird.** Wie Anspruch 1 des Hauptantrags, definiert Anspruch 1 des Hilfsantrags 8 lediglich, dass das chemometrische Verfahren das mathematische Modell umfasst. Ob und wie das chemometrische Verfahren das mathematische Modell tatsächlich verwendet, bleibt auch im Anspruch 1 des Hilfsantrags 8 offen. Die Aussage des Patentinhabers, dass auf dem Gebiet der Aufreinigung von Biopharmazeutika, der Fachmann immer und automatisch Kenntnis davon hat, ob das mathematische Modell trainiert und validiert ist, ist eine reine Behauptung, ohne dass eine nachvollziehbare Begründung erfolgt oder ein Beweis erbracht wird.

4. Hilfsantrag 9 - Klarheit

Unbeschadet der Frage, ob der Hilfsantrag 9 in das Verfahren zugelassen werden sollte, ist der Anspruch 1 des Hilfsantrags 9 nicht klar (Artikel 84 EPÜ).

4.1 Anspruch 1 des Hilfsantrags 9 enthält wie Anspruch 1 des Hilfsantrags 8 das Merkmal, dass das chemometrische Verfahren ein "trainiertes und validiertes mathematisches Modell" umfasst. Die im Vergleich zum Anspruch 1 des Hilfsantrags 8 **hinzugefügte Information, dass das Berechnen eines Prozessparameters nicht nur durch Anwendung eines beliebigen chemometrischen Verfahrens, sondern mittels eines neuronalen Netzes erfolgt, ändert nichts daran, dass auch dieses nun näher spezifizierte chemometrische Verfahren ein "trainiertes und validiertes mathematisches Modell" umfasst.** Der genaue Zusammenhang (der Einsprechende benutzte das Wort "Brücke" in der mündlichen Verhandlung) zwischen dem neuronalen Netz und dem mathematischen Modell ist weiterhin undefiniert. Wie der Einsprechende in der mündlichen Verhandlung vortrug, ist das zusätzliche Merkmal des neuronalen Netzes "losgelöst" von dem "trainierten und validierten mathematischen Modell" und kann das mathematische Modell daher nicht klarstellen.

Infolgedessen ist Anspruch 1 des Hilfsantrags 9 aus den gleichen Gründen unklar, wie sie oben in Punkt 1.3 für das entsprechende Merkmal in Anspruch 1 des Hauptantrags angeführt sind.

4.2 Der Patentinhaber machte geltend, dass es sich bei dem chemometrischen Verfahren des Hilfsantrags 9 nicht mehr um ein beliebiges chemometrisches Verfahren, sondern um ein auf einem neuronalen Netz basierendes Verfahren handle. Der Fachmann erkenne das Vorhandensein des neuronalen Netzes strukturell. Es sei allgemein bekannt, dass sich ein neuronales Netz nur in einem trainierten Zustand befinden könne, wenn es in einer

Berechnung verwendet wird. Daher sei das Merkmal des "trainierten und validierten mathematischen Modells" klar.

4.3 Die **Argumente des Patentinhabers überzeugen die Kammer nicht**. Wie von dem Einsprechenden vorgetragen, definiert Anspruch 1 des Hilfsantrags 9 **keine Verknüpfung zwischen dem "trainierten und validierten mathematischen Modell" und dem neuronalen Netzes**. Insbesondere **definiert Anspruch 1 weder, dass das "trainierte und validierte mathematische Modell" ein neuronales Netz ist, noch dass das neuronale Netz trainiert und validiert wird**.

5. Aus den oben dargelegten Gründen kommt die Kammer zum Schluss, dass keiner der Anträge der Patentinhaberin gewährbar ist.

T 1676/23 (Contact modeling/SIEMENS) 10-02-2025

European Case Law Identifier ECLI:EP:BA:2025:T167623.20250210

Contact modeling between objects

Inventive step - second auxiliary request (no)

Application number 15778905.8
IPC class G06F 17/50
Applicant name Siemens Industry Software NV
Cited decisions G 0003/08, G 0001/19, T 1127/05, T 0625/11
Board 3.5.07

<https://www.epo.org/boards-of-appeal/decisions/pdf/t231676eu1.pdf>

Claim 1 of the second auxiliary request reads as follows (itemisation added by the board):

- (a) A computer-implemented method
 - (b) for modeling contact of a gear with one or more objects,
 - (c) for modeling gear contact,
 - (d) wherein said modeling gear contact is done for designing a gear box and/or individual gears and optimizing their performance to ensure the overall product quality in terms of performance and efficiency,
 - (e) wherein contributions of dynamically responding Eigen modes are subtracted from compliance, resulting in a residual compliance,
- the method comprising:

- (f) calculating a matrix for residual bulk compliance of an object, the calculating being performed prior to a simulation of contact interaction of the first object with another object, bulk compliance being a function that maps the contact loads at possible contact points to the bulk deflection at those possible contact points;
- (g) performing the simulation of the contact interaction of the first object with the other object, the simulation using the matrix for the residual bulk compliance and treating residual flexibility of the first object quasi-statically;
- (h) outputting an output of the simulation, wherein said output is a value, an image, a video, or a table,
- (i) wherein said output comprising a stiffness as a function of radius of a lightweight gear or an instantaneous meshing stiffness as function of a roll angle or gear meshing forces, a transmission error, an angular speed, or other values or a value or force in the frequency domain or the Fourier transform of the transmission error for a period of time after transients are damped out presented as a graph or chart, or a system-level analysis of a transmission or any characteristic of noise vibration harshness (NVH).

Main request

2. Added subject-matter

2.1 Claim 1 of the main request is directed to a computer-implemented method which performs a simulation and includes a step of "using the output information of the simulation for assessing NVH for a transmission design", where NVH stands for noise vibration hardness. The **application as filed discloses such a step only in paragraph [00108] of the description, which states that "[t]he simulation may be used to output information for assessing NVH for a transmission design".** However, this passage **does not disclose this step as being carried out by a computer**. Rather, the skilled reader would understand that assessing NVH for a transmission design using the "output information" is to be **done by a human**.

2.2 The **appellant did not dispute the board's reading** of claim 1 and paragraph [00108], nor did it indicate another basis in the application as filed.

2.3 Hence, the subject-matter of claim 1 of the **main request extends beyond the content of the application as filed**. The main request therefore does not comply with Article 123(2) EPC.

8. Inventive step

8.1 The board interprets the features of claim 1 referring to the design and optimisation of a gear box or of individual gears as expressing the intended subsequent use of the simulation results, i.e. their suitability for such use (see point 7. above). Consequently, the method of claim 1 amounts to a computer-implemented method which carries out a calculation (including a simulation) on the basis of certain input data and then outputs the result of the

calculation, where the result represents a predicted physical property of the gear box or an individual gear and may take the form of a value.

8.2 Hence, the subject-matter of claim 1 differs from a well-known conventional computer only in the computer program that it runs. This computer program contributes to an inventive step only to the extent that it achieves a technical effect going beyond the normal functioning of a conventional computer over substantially the whole scope of the claim. However, **the presence of such a technical effect is not apparent to the board.**

8.3 In this respect, the appellant argued that the output of the claimed simulation represented necessary information for an engineer to compare the different designs underlying different simulation runs. The features (b), (c) and (d) achieved a technical effect since they related to designing a gear transmission using the tool provided by the claimed method. The invention made it possible to design and optimise gear boxes without the need to carry out physical experiments. It had an impact on the real world because the final product had improved technical properties such as a lower weight. Moreover, the claimed implementation of the calculations permitted simulations with a speed and precision that could not be achieved with prior-art methods.

However, **the use of calculated information representing predicted physical properties for the evaluation and comparison of different designs is not a technical use or effect but amounts to gaining knowledge about the designs**, which is in itself not a technical effect (see decision G 1/19, OJ EPO 2021, A77, points 97 and 98; decisions T 1227/05, OJ EPO 2007, 574, and T 625/11, both referred to by the appellant, are no longer relevant in so far as they might support a different conclusion).

The board does not dispute that the knowledge gained may **allow an engineer to improve the design of a gear transmission**, which ultimately may lead to an improved physical product. But this is not the only relevant use of the calculated information, i.e. this **is not an "implied use" within the meaning of points 94, 95 and 98 of decision G 1/19** which can be considered to extend across substantially the whole scope of the claimed method. Moreover, any specific technical improvement achieved by such use would in any event have to be attributed to the ingenuity of the engineer rather than to features of the claimed method.

8.4 The appellant further argued that the method of claim 1 resulted in an interaction with the physical environment via the energy consumption of the computer, the heat dissipation during the calculation, and the reception of the output by the user.

However, **such effects do not go beyond the normal functioning of a conventional computer.** Any calculation carried out by a computer consumes energy and produces heat.

8.5 The appellant further argued that the method steps (f) and (g) enabled a "fast and accurate calculation" for a specific technical application because, as explained in paragraph [0022], last sentence, of the application, other calculations would be much more time consuming.

However, a **mere speed comparison with a conceivable reference method is not a suitable criterion for distinguishing between technical and non-technical procedural steps** (see decision T 1227/05, Reasons 3.2.5).

8.6 The appellant extensively criticised the COMVIK approach commonly applied by the boards of appeal for the assessment of inventive step of an invention involving both technical and non-technical features. According to the appellant, there was no basis in the EPC for distinguishing between technical and non-technical features in the assessment of inventive step in accordance with Article 56 EPC. The exclusion under Article 52(2)(c) EPC concerned only computer programs, which were regarded as non-inventions to avoid overlapping protection between patent and software copyright laws. A computer was a technical device based on physical laws. The execution of different software instructions led to distinct technical processes, thereby establishing a direct link between the software and the physical operation of the computer. The EPO's approach to assessing inventive step of computer-implemented inventions was arbitrary and backward-looking.

In its **opinion G 3/08** (OJ EPO 2011, 10), the **Enlarged Board of Appeal** noted that the list of "non-inventions" in Article 52(2) EPC could play a very important role in determining whether claimed subject-matter was inventive and that the COMVIK approach appeared to have created a practicable system for delimiting the innovations for which a patent may be granted (Reasons 10.13.1 and 10.13.2). In its decision **G 1/19**, the Enlarged Board of Appeal again did not call into question the validity of the COMVIK approach (see in particular points 30 to 39 and 61).

This **board therefore sees no compelling reason to reconsider the COMVIK approach**.

8.7 Hence, the subject-matter of claim 1 of the second auxiliary request **lacks an inventive step over a conventional computer** (Article 56 EPC).

T 0725/21 (Eye-tracking/MICROSOFT TECHNOLOGY LICENSING) 27-02-2025

European Case Law Identifier ECLI:EP:BA:2025:T072521.20250227

INCORPORATING USER USAGE OF CONSUMABLE CONTENT INTO RECOMMENDATIONS

Remittal - (yes- technical features not notorious; additional search required)

Application number	14736549.8
IPC class	G06Q 30/02, G06F 15/16, G06F 17/30
Applicant name	Microsoft Technology Licensing, LLC
Cited decisions	T 0641/00, T 1515/07, T 0929/18

Board 3.5.01

<https://www.epo.org/boards-of-appeal/decisions/pdf/t210725eu1.pdf>

Claim 1 of the main request reads:

"A computer-implemented method for generating a profile (105) for a user (101) in a recommender system (150) comprising:

detecting that the user (101) has opened a consumable content in an e-reader application (310) on a device (300), the consumable content comprising at least a portion of an electronic book;

determining a set of characteristics for the consumable content;

identifying at least one action performed by the user (101) on the consumable content through the e-reader application (310); and

updating the profile (105) for the user (101) based on the identified at least one action and the set of characteristics;

wherein the device (300) has the ability to track eye movement, and

wherein the identifying at least one action performed by the user (101) comprises recording information related to the movement of an eye of the user when the user (101) is consuming the consumable content".

1. The invention

1.1 The invention concerns a method for generating a profile reflecting the user's eye movements when they are reading an electronic book, see paragraphs [23] and [47] of the original application.

1.2 In more detail, once the user has opened a book in an e-reader application running on their computer device ([23]), the method determines the book's characteristics, such as its genre (not claimed), and stores them in the user profile that the computer device holds, see [43]. Although not claimed, the user profile is shared with a recommendation system and used for making purchase recommendations, see [24] and [38].

1.3 The **key aspect and focus** of the discussion in this appeal are the features stating that, when the user is reading the displayed book, the method tracks information related to their eye movements and records it in the user's profile. Those features' only support in the application is:

"In embodiments where the e-reader has the ability to track eye movement the monitoring application 340 may record various pieces of information related to the movement of the eye, such as tracking that the user is rereading a particular sentence multiple times or is reading the

words very fast. The monitoring application 340 stores this information in the record for the content.", see [47].

2. Main request, Articles 56 and 83 EPC

2.1 The examining division considered that the starting point for inventive step (Article 56 EPC) was a web-enabled personal computer or mobile device that ran a web browser corresponding to the e-reader application in claim 1. Such devices were notoriously known at the priority date, and their existence did not need to be proved by written evidence, see decision, points 14 (last paragraph) and 15.

2.2 The examining division further found that, since the application lacked technical detail on how eye-tracking was implemented, these features had to be considered either insufficiently disclosed (Article 83 EPC) or obvious (Article 56 EPC). Specifically, at point 16 of the decision, they argued: "Therefore, for the sake of sufficiency of disclosure (Article 83 EPC), the principles described must be understood as well-known for the person skilled in the art (Article 56 EPC) for purposes known. He merely reutilises this well-known functionality".

2.3 The **Board agrees with the examining division's interpretation of the device as a web-enabled personal computer** or mobile device, especially considering that paragraph [23] of the published application says the e-reader might be an application running on a personal computer. The Board also agrees that such web-enabled devices were notoriously known at the priority date.

Furthermore, the **Board agrees with the examining division's assessment of the claim features that do not concern eye-tracking.** More specifically, the Board concurs that, using the COMVIK approach (T 641/00 - Two identities/COMVIK), these features are an obvious implementation of a business requirement given to the skilled person to implement for non-technical reasons. Although not clearly stated in the decision, this business requirement dictates that upon determining that the user starts reading a book, this book's characteristics should be recorded in their profile, see decision, points 14 and 17 to 19.

2.4 The **crucial features in this appeal, on which the appellant's arguments focus, are those concerning eye-tracking.** It is common ground that these features have technical character, see decision, points 25 and 34.

2.5 Concerning sufficiency of disclosure, the **Board agrees with the appellant that the requirements of Article 83 EPC are met.**

It is true that the application provides little technical detail on eye-tracking and relies in this regard on the skilled person's common general knowledge, see point 1.3 above.

The Board considers however that **the skilled person to whom the disclosure on eye-tracking is aimed (see Case Law of the Boards of Appeal, 10th edition, II.C.4.1) is a human-computer interaction expert with experience in hardware integration and sensor interfacing. Given the common ground that eye-tracking sensors were known in general, the skilled person would have been aware of their existence and capable of selecting a suitable one to connect to a**

computer device running the e-reader application to detect the user's eye movements.

Furthermore, in order to store the detected information in the user's profile, the skilled person would have known how to provide the information in a format suitable for computer storage.

2.6 Turning to inventive step, the examining division argued that the **combination of a computer or mobile device with an eye-tracker was obvious and would have involved merely reusing the well-known functionality**, see point 2.2 above. At point 25 of the decision, they added that: "Indeed, as the applicants rightfully argue, the eye movement sensor may not be given to the person skilled in the art, because this is part of the solution. However, the person skilled in the art is confronted with the question: How to capture how a user interacts with the content? This does not refer to any technical solution, but the person skilled in the art would realise, especially in the context of reading electronic books, that the eye is an important attribute in this process. He would therefore have chosen to also capture this type of activity, and would have used the very well-known eye movement sensor as an "of-the-shelf" solution without having to exercise any inventive skills". The examining division did not provide any documentary evidence concerning eye-tracking.

2.7 The Board agrees with the appellant (see section VIII) that the claimed **combination of a computer or mobile device with an eye-tracker was not notoriously known**. Moreover, these features are not part or a direct implementation of the underlying non-technical scheme, but solve the technical problem of automatically detecting user interactions.

2.8 Accordingly, **claim 1 includes technical features which, in combination, were neither notoriously known nor acknowledged as part of the common general knowledge**. Inventive step should therefore be assessed on the basis of pertinent prior art after performing a search, see T 1515/07 - Cost estimate/SAP, reasons, point 6.

2.9 In the absence of any pointer in the prior art, the **examining division's argument that the skilled person would have recognised the crucial role of the eye in book reading and then decided to automatically detect the user's eye movements is considered to involve hindsight**. Generally, such speculative reasoning, not based on verifiable facts, cannot replace a proper assessment of pertinent prior art.

2.10 Even though the International Search Report cites several prior art documents (D1 to D3), the Board cannot know whether the claimed combination of features has been searched. As rightly observed by the appellant, none of these documents concerns the use of eye-tracking, which is not surprising, as this report was directed to claims that did not include these features. They were only added to claim 1 upon entering the examination phase.

2.11 In view of the above, the **Board judges that performing an additional search is necessary to assess inventive step**.

T 1508/23 18-02-2025

European Case Law Identifier ECLI:EP:BA:2025:T150823.20250218

METHOD AND SYSTEM FOR GEO-REFERENCING AT LEAST ONE SENSOR IMAGE

Main request - clarity (yes)

Application number 13871515.6

IPC class G06T 17/05, G01C 11/06, G06T 7/00, G06T 17/20, G06T 17/30, G06F 17/30, G06K 9/00, G01C 11/02, G06K 9/62

Applicant name Maxar International Sweden AB

Board 3.5.04

<https://www.epo.org/boards-of-appeal/decisions/pdf/t231508eu1.pdf>

Claim 1 of the main request reads as follows:

"Method (700) for geo-referencing at least one sensor image, said method comprising the steps of

- generating (701) said at least one sensor image of a first scene with at least one sensor,
- accessing (702) a 3D model of the environment comprising geo-coded 3D coordinate data and related to at least one second scene, said second scene encompassing said first scene,
- matching (703) the sensor image with the 3D model to find a section of the 3D model where there is a match between the first and the second scenes,
- geo-referencing (704) the sensor image based on the geo-coded 3D coordinate data of the found section of the 3D model, and
- determining (705) a measure related to an uncertainty in the matching between the sensor image and the 3D model,

characterized in that

the 3D model of the environment comprises a mesh describing the environment and comprising nodes interconnected by means of edges and surfaces boarded by the edges, wherein each node and/or edge and/or surface is associated to geo-coded 3D coordinate data and an associated mesh uncertainty, wherein the mesh uncertainty represents the uncertainty at that specific node and/or edge and/or surface of the model in at least two dimensions,

the 3D model is textured,

the matching involves matching texture information of the sensor image with texture information of the textured 3D model related to the second scene, and

the determining of the measure related to the uncertainty in the matching between the sensor image and the 3D model, takes into account the uncertainty associated with the mesh."

2. Main request - clarity (Article 84 EPC)

2.1 Under Article 84 EPC, the claims must be clear.

2.2 The examining division found that the feature

"the determining of the measure related to the uncertainty in the matching between the sensor image and the 3D model, takes into account the uncertainty associated with the mesh"

in claim 1 was vague to such an extent that it did not define how the mesh uncertainty and the matching uncertainty were related or how the mesh uncertainty was taken into account to determine the matching uncertainty (see points 13.1 and 13.3 of the decision under appeal).

2.3 The appellant submitted that the relation between the uncertainty in the matching and the uncertainty in the mesh was clear since one related to an uncertainty in the matching and the other to an uncertainty in the 3D model. It was clear that the measure relating to an uncertainty in the matching between the sensor image and the 3D model was based on the uncertainty in the matching itself and in addition thereto it comprised a component from the uncertainty in the 3D model itself (see the section "Compliance with article 84 EPC" on pages 1 to 3 of the statement of grounds of appeal).

2.4 Claim 1 specifies the mesh uncertainty as an uncertainty at nodes, edges and/or surfaces of the 3D model's mesh. It further specifies that determining the measure related to the uncertainty in the matching between the sensor image and the 3D model takes into account the mesh uncertainty. **The board finds that by taking into account the mesh uncertainty for determining the measure related to the uncertainty in the matching, claim 1 defines how the two uncertainties are related.**

2.5 The **question of how the uncertainty associated with the mesh is taken into account for determining the measure related to the uncertainty in the matching between the sensor image and the 3D model does not preclude the clarity of the claim.**

2.5.1 Under the case law of the boards of appeal, since the primary function of a claim is to set out the scope of protection sought for an invention, **it is not always necessary for a claim to identify technical features or steps in detail**. This **primary function of the claims should be clearly distinguished from the requirement that the European patent application has to disclose the invention in such a way that it enables a person skilled in the art to carry out that same invention** (see Case Law of the Boards of Appeal of the European Patent Office, 10th edition, 2022, "Case Law", II.A.3.2).

Broad features can only be considered clear under the proviso that the borders of the - broad - scope of protection could be clearly inferred by the skilled person. **A broad claim is not to be equated with one lacking clarity** (see Case Law, II.A.3.3).

2.5.2 By not detailing how the mesh uncertainty is to be taken into account, claim 1 covers various possibilities. However, **this breadth results in a claim that is broad rather than unclear**. In the board's view, **the examining division's statement that this feature was "technically understood" supports this conclusion** (see point 13.1 of the decision under appeal).

The broad scope does not jeopardise the identification of the exact distinctions which delimit the scope of protection sought for the invention defined in claim 1. This is because this claim explicitly specifies that the mesh uncertainty is taken into account, i.e. it is a contributing factor, in determining the measure related to the uncertainty in the matching. Furthermore, the wording of claim 1 does not introduce ambiguity or risk of misinterpretation.

For the sake of completeness, the board notes that strategies for taking into account uncertainties or errors from different sources form part of the basic toolkit of the person skilled in the art for estimating uncertainty or error propagation. Therefore, the **person skilled in the art would not encounter any difficulties in determining the measure related to the uncertainty in the matching by taking into account the mesh uncertainty**.

2.6 The comments above also apply, mutatis mutandis, to independent claims 11 and 12.

2.7 In view of the above, the board finds that the examining division erred in its finding that the independent claims of the main request did not meet the requirements of Article 84 EPC.
