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Datasheet for the decision of 25 September 2020

Case Number: T 2085/17 - 3.4.03

Application Number: 14739834.1

Publication Number: 3028223

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Language of the proceedings: EN

Title of invention:
METHOD FOR SOLVING MULTIDIMENSIONAL OPTIMIZATION PROBLEMS

Applicant:
Siemens AG Österreich

Headword:

Relevant legal provisions:
EPC Art. 52(1), 52(2), 52(3), 56

Keyword:
Patentable invention - (yes) - technical character of the invention
Inventive step - (no)

Decisions cited:
T 1784/06, T 1954/08

Catchword:

Europäisches Patentamt
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Beschwerdekammern

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Case Number: T 2085/17 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 25 September 2020

Appellant: (Applicant)	Siemens AG Österreich Siemensstraße 90 1210 Wien (AT)
Representative:	Maier, Daniel Oliver Siemens AG Postfach 22 16 34 80506 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 18 April 2017 refusing European patent application No. 14739834.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	G. Eliasson
Members:	J. Thomas
	T. Bokor

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division refusing European patent application No. 14 739 834.1 on the grounds that the claimed method constituted subject-matter in the sense of Article 52(2) and (3) EPC and was therefore not patentable under Article 52(1) EPC.

II. The appellant requested that the appealed decision is set aside and the case remitted to the examining division with the order to continue search and examination. Oral proceedings were not requested.

III. In a communication dated 21 February 2020 the Board gave its provisional opinion that the method defined in claim 1 of the sole request on file did not constitute excluded subject-matter pursuant to Articles 52(2) and (3) EPC. However, the defined technical contributions were well-known so that the subject-matter defined in claim 1 would not involve an inventive step in the sense of Article 52(1) EPC in combination with Article 56 EPC, because the difference over the prior art was not technical and therefore could not contribute to inventive step.

IV. In its reply dated 24 April 2020 the appellant insisted on the fact that the claimed subject-matter has technical character which should be considered for an inventive step argumentation.

V. The appeal is directed at claim 1 as filed which reads as follows:

1. Method for solving multidimensional optimization problems on a set of feasible solutions {S_1, …, S_n} of a discrete combinatorial problem of a product configuration process by means of a computer program comprising steps of:

- calculating optimization values for the set of feasible solutions {S_1, …, S_n} by using a set of optimization functions {f_1, …, f_k}
- calculating mean values $\mu(f_i)$ to the set of optimization functions {f_1, …, f_k} according to $\mu(f_i)=\frac{1}{n}*\sum_{j=1}^{n} f_i(S_j)$
- calculating standard deviation values $s(f_i)$ to the set of optimization functions {f_1, …, f_k} according to $s(f_i)=\sqrt{\frac{1}{n-1}\sum_{j=1}^{n}(f_i(S_j)-\mu(f_i))^2}$
- normalize the optimization values for the set of feasible solutions {S_1, …, S_n} according to $norm(f_i(Sol))=\frac{f_i(Sol)-\mu(f_i)}{s(f_i)}$
- accumulate the normalized optimization values $norm(f_i(Sol))$ according to $f(Sol)=\sum_{i=1}^{k} norm(f_i(Sol))$
- find an extremum - minimum or maximum - for the accumulated normalized optimization values $\min_{i=1}^{n} f(S_i)$ or $\max_{i=1}^{n} f(S_i)$
- select and combine parts from a parts catalogue to a product configuration which meets the extremum for the accumulated normalized optimization values.

VI. The appellant's arguments relevant to the decision are briefly summarized below:

The method defined in claim 1 had without doubt technical character because it solved an optimisation problem by means of a computer program in order to configure a product in a "product configuration process". Based on the optimisation algorithm it was possible to select a concrete product in a production

process so that the concrete problem was solved. The technical input values were "a set of feasible solutions" and the output value was a certain "product configuration" whereby the technical effect obtained in this context concerned the efficiency and reliability of the computer implemented method. The appellant also argued that the defined method was particularly robust and therefore constituted a particular quality criterion for software. The claimed method had therefore technical character and was a technical invention under Article 52(1) EPC.

Reasons for the Decision

1. The appeal is admissible.

2. The appellant did not request oral proceedings and was informed about the preliminary opinion of the Board. Even after reconsideration of the grounds of appeal and the additional explanations in the appellant's letter of reply, the Board does not see any reason to deviate from its preliminary opinion.

A remittal of the case to the examining division pursuant to Article 11 RPBA 2020 as requested by the appellant does not seem appropriate. While the Board decides formally on the basis of a different legal provision, namely Article 56 EPC instead of Article 52(2) and (3) EPC (as did the examining division), the underlying issue of excluded subject-matter is the same and this finding of the Board is made on the basis of the same facts and arguments which seem to be quite clear. Also, no fundamental deficiency could be identified in the decision of the examining division. Therefore, the Board will decide on the case pursuant to Article 111(1) EPC.

3. The Board is of the opinion that the subject-matter defined in claim 1 is of technical character and does not fall under the provisions of Article 52(2) and (3) EPC. However, the subject-matter defined in claim 1 cannot fulfil the requirements of Article 52(1) EPC in combination with Article 56 EPC, because the features which contribute to the technical character of the subject-matter defined in claim 1 do not involve an inventive step as will be detailed below.

3.1 **Article 52(2) and (3) EPC**

3.1.1 Claim 1 defines a "Method for solving multidimensional optimization problems on a set of feasible solutions ... by means of a computer program ..." indicating that the use of technical means, i.e. a computer, is part of the claimed subject-matter. The solution of the optimization problem by means of the computer program is only possible if the computer program is executed on a computer, so that the use of a computer is (at least implicitly) defined and provides the required technical character. The subject-matter defined in claim 1 consequently goes beyond a purely mathematical method as such and is not excluded from patentability pursuant to Article 52(2) and (3) EPC.

3.2 **Articles 52(1) and 56 EPC**

Concerning Article 52(1) EPC in combination with Article 56 EPC, the non-obvious technical contribution of the technical character shall be examined (see *Case Law of the Boards of Appeal*, 9th edition 2019, I.D.9.1.3), in particular whether the mathematical method contributes to the technical character of the invention.

A mathematical method may only contribute to the technical character of the invention if it serves a technical purpose or if the technical character comes from a specific technical implementation of the mathematical method (i.e. T 1954/08, Reasons, points 5. and 6.1 to 6.3; T 1784/06, Reasons, point 2.1).

None of these two conditions are fulfilled in the present application:

The technical purpose concerns the provision of a selection rule for the last method step defined in claim 1 which reads "select and combine parts from a parts catalogue to a product configuration which meets the extremum for the accumulated normalized optimization values". Therefore, the purpose is the selection and combination of parts for a product configuration. A product configuration is however not conceivable without the steps of selecting and combining parts. Therefore, the question is whether the specific selection criteria being the output of the mathematical method would provide the necessary technical purpose. However, no technical purpose can be derived from an abstract formulation of the product configuration, in particular because the product configuration could concern a purely economic, administrative or even aesthetic or creative purpose.

Not only the output, a product configuration, raises doubts whether it relates to any technical field at all, but also the input of the mathematical method fails to clear these doubts as a number of "feasible solutions" leave the way open for many potential and arbitrary solutions in different fields including various non-technical fields (economical, administrative, aesthetic or design). No specific

technical field of application is defined and the definition remains completely general and abstract, even arbitrary, so that no technical purpose of the product configuration can be derived.

Finally, the argument that the method has the purpose to increase the reliability and efficiency of the computer is also not convincing. The provision of a 'robust method' is a general, well-known objective for every computer-implemented method and the extremely general formulation of the method makes it impossible to evaluate any specific technical contribution of the robustness of the defined method.

The applicant argued that robustness has a well-defined meaning in the field, namely the capacity to deliver correct results even under adverse conditions. The application does not explain what exactly is meant by a robust method in the context of the claimed invention. It can be implied from the disclosure from page 3, line 15 to page 4, line 7 and further on page 4, lines 21 to 29 in the application as filed that a robust method will avoid wrong results, deformed or distorted optimization functions or will avoid disadvantages of a heuristic normalization. Even if these effects are not disputed, the Board is unable to identify any technical effect of the stated robustness of the claimed method. It is not apparent how robustness in this sense achieves a technical effect beyond the field of pure mathematics, given that no technical effect of the mathematical method itself could be established.

The technical implementation of the mathematical method in the computer program does also not necessitate any special technical input going beyond a generic

implementation. A programmer with expected skills would know how to implement the defined mathematical method in a computer program.

The mathematical method and its implementation can consequently not contribute to the technical character of the invention, because they do neither serve a well-defined technical purpose nor necessitate a special technical implementation going beyond a generic implementation.

The remaining features, which do not concern the mathematical method itself, cannot achieve it either, since, as discussed above, the claimed step of selecting and combining parts from a parts catalogue to a product configuration does not necessarily have technical character. It is furthermore noted that a step of assembling the configurated product, which arguably would contribute to the technical character of the claimed invention, is not part of the claimed method.

No convincing inventive step argumentation could be based on it, apart from a selection and combination of parts in general, which is well-known and therefore not inventive.

4. To sum up, it is noted that even if the claimed subject-matter has a technical character, the technical contribution of the computer implementation of the defined mathematical method in the abstract field of the application as defined in the claims does not go beyond well-known contributions (no technical purpose, no special technical implementation).

Claim 1 does therefore not fulfil the requirements of Article 52(1) EPC in combination with Article 56 EPC. Therefore, the appeal must fail.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

S. Sánchez Chiquero G. Eliasson

Decision electronically authenticated