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**Datasheet for the decision
of 22 March 2024**

Case Number: T 0111/21 - 3.5.04

Application Number: 17811820.4

Publication Number: 3347879

IPC: G06T19/00, G06F17/50, G06T17/10

Language of the proceedings: EN

Title of invention:
METHOD FOR IMMEDIATE BOOLEAN OPERATIONS USING GEOMETRIC FACETS

Applicant:
CAO, Shangwen

Headword:
Basis of decisions/CAO

Relevant legal provisions:
EPC Art. 113(2), 111(1) sentence 2
EPC R. 111(2), 103(1) (a)
RPBA 2020 Art. 11

Keyword:

Basis of decision - text submitted or agreed by applicant (no)
- substantial procedural violation (yes)
Remittal - fundamental deficiency in first-instance
proceedings (yes)
Reimbursement of appeal fee - (yes)

Decisions cited:

G 0001/19, T 0802/97, T 2238/11



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Case Number: T 0111/21 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 22 March 2024

Appellant: CAO, Shangwen
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Montreal QC H2V 2P1 (CA)

Representative: Stolmár & Partner
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 27 August 2020
refusing European patent application
No. 17811820.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair B. Willems
Members: G. Decker
A. Seeger

Summary of Facts and Submissions

- I. The appeal is against the examining division's decision to refuse European patent application No. 17 811 820.4.
- II. The decision under appeal was based on the ground that the subject-matter of claims 1 and 2 of the request filed on 11 March 2020 did not involve an inventive step within the meaning of Article 56 EPC.
- III. On 21 April 2020, i.e. one day before the oral proceedings before the examining division, the applicant submitted an amended set of claims by email.
- IV. According to the minutes of the oral proceedings before the examining division, the course of events regarding the requests filed by the applicant was as follows:

"In response to the Brief Communication, the representative sent a new set of claims the day after and the Chairman asked the representative if he has the intention to replace the current set of claims with the new one or if the [sic] has the intention to submit the new set of claims in the Oral proceedings. The representative answered that he submits the new set of claims as new main request replacing the request on file" (see minutes of the oral proceedings, points 3 and 3.1: emphasis added by the board).

Subsequently, the examining division did not admit this new main request into the proceedings, as can be seen from the minutes:

"[T]he Chairman announced to the representative the decision of not admitting the submitted new set of claims, because the application does not disclose an object being manufactured or simulated and therefore the submitted new set of claims does not fulfil with [sic] Article 123(2) EPC" (see minutes of the oral proceedings, point 4.3).

The examining division then continued the examination on the basis of the withdrawn previous main request:

"In consequence, the current request is the set of claims filed on 11th. March 2020" (see minutes of oral proceedings, point 4.3).

The decision under appeal is based on this request:

"Claims, Numbers 1-11 received on 11-03-2020 with letter of 11 March 2020" (see decision under appeal, point 12).

V. In point III of the decision headed *"Obiter dicta"*, the examining division set out the following opinion:

(a) The subject-matter of the dependent claims did not involve an inventive step (*"Obiter dictum 1"*).

(b) The amended set of claims submitted on 21 April 2020 was not admitted into the proceedings (*"Obiter dictum 2"*). The reasoning was as follows:

"This set of claims was not admitted to the procedure because it prima facie infringes Art.123(2) EPC and because it prima facie does not overcome the objections raised under Art.56 EPC against claim 1 on file.

The reasons being that the only amended feature which complies with Art.123(2) is the feature implemented in a computer aided design system. The reason why this feature is not regarded as conferring a technical character to the claim is already given in the reasoning above for claim 1 on file."

(c) The features of claim 1 gave rise to objections under Articles 83, 84 and 123(2) EPC ("*Obiter dictum 3*").

- VI. The applicant (appellant) filed notice of appeal. With the statement of grounds of appeal, the appellant filed claims in accordance with an auxiliary request. It indicated a basis for the claimed subject-matter in the application as filed and provided arguments to support its opinion that the claims met the requirements of Articles 56, 83, 84 and 123(2) EPC.
- VII. The appellant was summoned to oral proceedings. In a communication under Article 15(1) RPBA, the board provided its preliminary opinion that the first-instance proceedings were tainted by fundamental deficiencies and that the decision under appeal was therefore to be set aside. The board further expressed its intention to remit the case to the examining division for further prosecution.
- VIII. In reply to the board's communication, the appellant requested that the case be remitted to the examining division. The board subsequently cancelled the oral proceedings.

IX. Claim 1 of the request filed on 11 March 2020 reads as follows:

"A method of performing Boolean operations on two geometric objects A and B thereby building a three dimensional geometric model for product design, implemented in a computer system and operating with a computer, wherein the geometric objects A and B consist of geometric facets, the method comprising: decomposing the geometric facets of each object by triangulation into triangles thereby building a first triangle set (*TriangleSet*) and adding neighboring triangles to each triangle of the first triangle set thereby building a second triangle set (*BlOpTriangleSet*); building intersection lines between the second triangle sets starting with searching for a pair of triangles (T_a , T_b) that hold the first intersection point of an intersection line by detecting if two axis aligned minimum bounding boxes overlap then performing edge-triangle intersection calculations, catching next neighboring triangle(s) and checking edge-triangle intersection to extend the intersection line until the first intersection point is identical to the last intersection point of the intersection line or until all triangles are traversed, wherein T_a belongs to A 's second triangle set, and T_b belongs to B 's second triangle set; splitting triangles through which intersection lines pass using modified Watson method building Delaunay 2D mesh with a set of sub-intersection lines consisting of intersection line segments, wherein the modified method decides that a triangle in the mesh is to be split when a point of the sub-intersection lines is inserted into the mesh if the triangle's circumcircle contains the point or the last segment passes through the triangle;

checking each triangle in A's second triangle set and B's second triangle set whether it is bounded by other triangles and thus obscure, by calculating line-triangle intersections that determine a depth buffer, *Buffer-t*; copying triangles and deleting triangles in the second triangle sets to form one or more than one new object; and mapping the second triangle set of each new object to a set of geometric facets by mapping points and triangles thereby building the three dimensional geometric model."

Reasons for the Decision

1. The appeal is admissible.
2. *Basis of decisions (Article 113(2) EPC)*
 - 2.1 Under Article 113(2) EPC the EPO "*shall examine, and decide upon, the European patent application ... only in the text submitted to it, or agreed, by the applicant ...*". Article 113(2) EPC guarantees the principle of party disposition (*ne ultra petita*). This is a fundamental procedural principle, being part of the right to be heard, such that any infringement of it, even as the result of a mistaken interpretation of a request, must, in principle, be considered to be a substantial procedural violation (see Case Law of the Boards of Appeal of the European Patent Office, 10th edn., 2022 ("CLBoA"), III.B.1 and III.B.3.1).
 - 2.2 As a consequence of the principle of party disposition, if an applicant withdraws a request containing a set of claims this principle prevents the examining division from deciding on it. By the same token, the examining

division must decide on a claim request that has been filed and not withdrawn. Failing to do so at the same time amounts to a violation of the requirement of sufficient reasoning under Rule 111(2) EPC.

- 2.3 To avoid any misunderstanding, in particular when requests were amended during oral proceedings, the examining division should clarify the final requests before pronouncing its decision at the conclusion of oral proceedings. Failing to do so may lead to a violation of Article 113(2) EPC and thus to a substantial procedural violation (see CLBoA, III.B.3.4).
- 2.4 Turning now to the case at hand, the board notes that during the oral proceedings before the examining division the appellant explicitly withdrew the sole claim request then on file (i.e. the one filed on 11 March 2020) and replaced it with the new claim request submitted by email on 21 April 2020 and officially filed during the oral proceedings the next day (see first quotation in point IV. above). The examining division then decided not to admit this new claim request into the proceedings (see second quotation in point IV. above). Contrary to what the examining division stated (see third quotation in point IV. above), the non-admission of the new claim request did not automatically revive the previous set of claims unless the appellant had indicated that it was relying on these as an auxiliary request. A corresponding indication by the appellant is however absent from the minutes. As a result, the examining division decided on a claim request (see fourth quotation in point IV. above) which had been withdrawn by the appellant. This constitutes an infringement of

the fundamental principle of party disposition under Article 113(2) EPC.

2.5 Furthermore, the examining division did not deal with the appellant's sole pending claim request (i.e. the one submitted on 21 April 2020) in the reasons for the decision under appeal. Rather, the decision was exclusively based on the legal and factual reasoning as to why claims 1 and 2 according to the request filed on 11 March 2020 lacked inventive step. The claim request submitted on 21 April 2020 is merely dealt with in "*Obiter dictum 2*" (see point V.(b) above). However, observations in an *obiter dictum* do not, by definition, form part of a decision (see T 802/97, Reasons 3; T 2238/11, Reasons 5). It follows that the examining division also contravened Article 113(2) EPC (and equally Rule 111(2) EPC) by not deciding on a claim request that has been filed and not withdrawn.

2.6 Incidentally, the board notes that even if the content of *obiter dictum 2* were to be considered part of the decision, there would still be a fundamental deficiency. The examining division stated in *obiter dictum 2* that the set of claims submitted on 21 April 2020 was not admitted into the proceedings because it *prima facie* contravened the requirements under Article 123(2) EPC (see point V.(b) above). However, no reasons were given as to which feature(s) caused the alleged infringement and why. This lack of reasoning is contrary to the requirements of Rule 111(2) EPC and constitutes a further fundamental deficiency.

2.7 To summarise, the first-instance proceedings were fundamentally flawed in two respects, as the examining division violated the principle of party disposition

under Article 113(2) EPC by dealing only with a withdrawn claim request but not with a pending one.

3. *Remittal to the examining division (Article 111(1), second sentence, EPC; Article 11 RPBA)*
- 3.1 Due to the fundamental deficiencies established above, the decision under appeal is to be set aside and the appeal is allowable under Article 111(1), first sentence, EPC.
- 3.2 Under Article 111(1), second sentence, EPC, a board may either exercise any power within the competence of the department which was responsible for the appealed decision or remit the case to that department for further prosecution.
- 3.3 Under Article 11 RPBA, the board should not remit a case to the department whose decision was appealed for further prosecution, unless special reasons present themselves for doing so. As a rule, fundamental deficiencies which are apparent in the proceedings before that department constitute such special reasons.
- 3.4 Since there were two fundamental deficiencies in the proceedings before the examining division (see points 2.4 and 2.5 above), there are special reasons within the meaning of Article 11 RPBA to remit the case.
- 3.5 Moreover, the board cannot identify any other special circumstances of the case that would argue in favour of not remitting it, despite the fundamental deficiencies in the first-instance proceedings.

- 3.5.1 Such special circumstances could be affirmed if the relevant issues had been comprehensively examined in the first-instance proceedings and the board had all the information necessary to decide on the matter.
- 3.5.2 The board notes that the examining division's analysis of inventive step is based on mere references to passages of the Guidelines without considering whether technical effects might occur within the claimed computer-implemented process by specific adaptations to data transfer or storage mechanisms (see G 1/19, OJ EPO 2021, 77, Reasons 85).
- 3.5.3 Furthermore, the appellant submitted the following arguments in its statement of grounds of appeal:
- The feature of *"decomposing the geometric object into triangles thereby building a first triangle set"* produced a technical effect (see statement of grounds of appeal, point 35).
 - The method *"adresse[d] thus computer components differently and enhance[d] the creation of three-dimensional geometric product models with a higher flexibility and concision"* (see statement of grounds of appeal, point 36).
 - *"[F]eatures (2) to (7) [were] determinant for building a special and unique data structure, called BIOpTriangleSet"* (see statement of grounds of appeal, point 44).

The board is, however, unable to derive from these submissions what exact technical effect is produced and in what manner.

3.5.4 Hence neither the examining division's objection nor the appellant's rebuttal provide the board with the necessary information to review the core issue of whether a, and what, technical effect is achieved by the claimed subject-matter.

3.5.5 Therefore the board sees no special circumstances of the case at hand that would argue in favour of not remitting it, despite the fundamental deficiencies which occurred in the first-instance proceedings.

3.6 In view of the above, the board decides to remit the case to the examining division for further prosecution, in accordance with Article 111(1) EPC and Article 11 RPBA.

4. *Reimbursement of the appeal fee (Rule 103(1)(a) EPC)*

Since the fundamental deficiencies established above at the same time constitute substantial procedural violations within the meaning of Rule 103(1)(a) EPC, the board orders reimbursement of the appeal fee.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division for further prosecution.
3. The appeal fee is to be reimbursed.

The Registrar:

The Chair:



K. Boelicke

B. Willems

Decision electronically authenticated