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# Datasheet for the decision of 11 July 2024

**Case Number:** T 1199/20 - 3.5.01

**Application Number:** 14757089.9

**Publication Number:** 2962270

**IPC:** G06Q50/24, G06F19/00, G06F19/10, G06F17/30

**Language of the proceedings:** EN

**Title of invention:**
CLOUD-LIKE MEDICAL-INFORMATION SERVICE

**Applicant:**
ACTX, Inc.

**Headword:**
Medical information service/ACTX

**Relevant legal provisions:**
EPC Art. 56
RPBA 2020 Art. 12(6)

**Keyword:**
Inventive step - data structure defining different types of biomedical data and their relationships (no - non-technical organisation of cognitive data)

**Decisions cited:**

T 0049/99, T 1153/02, T 1351/04, T 1159/15, T 1227/05, T 1954/08

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**Case Number: T 1199/20 - 3.5.01**

# D E C I S I O N
# of Technical Board of Appeal 3.5.01
# of 11 July 2024

| | |
|---|---|
| **Appellant:** (Applicant) | ACTX, Inc.<br>1100 Dexter Avenue North<br>Suite 100<br>Seattle, WA 98109 (US) |
| **Representative:** | Boult Wade Tennant LLP<br>Salisbury Square House<br>8 Salisbury Square<br>London EC4Y 8AP (GB) |
| **Decision under appeal:** | **Decision of the Examining Division of the European Patent Office posted on 8 January 2020 refusing European patent application No. 14757089.9 pursuant to Article 97(2) EPC.** |

**Composition of the Board:**

| | |
|---|---|
| **Chairman** | W. Chandler |
| **Members:** | I. Kürten |
| | D. Rogers |

## Summary of Facts and Submissions

I. This appeal is against the decision of the examining division to refuse the European patent application No. 14757089.9 for *inter alia* lack of inventive step (Article 56 EPC) over the notoriously known prior art of a distributed information system. Some of the auxiliary requests were not admitted under Rule 137(3) EPC.

II. In the statement setting out the grounds of appeal, the appellant requested that the decision of the examining division be set aside and that a patent be granted on the basis of the main or the first to eleventh auxiliary request annexed thereto. Despite being renumbered, these requests corresponded to the requests in the decision under appeal.

III. In a communication accompanying the summons to oral proceedings, the Board tended to agree with the examining division's conclusion on the lack of inventive step. Furthermore, the Board was minded not to admit the requests which had not been admitted in the first instance proceedings.

IV. In a reply, the appellant's representative announced that they would not attend the oral proceedings. The Board thus cancelled the oral proceedings.

V. Claim 1 of the main request reads:

*A medical-information system comprising:*
*physical servers and data-storage facilities within a cloud-computing facility;*

*virtual servers and data-storage facilities implemented within the physical servers and data-storage facilities; and*

*computer instructions executed by the virtual servers that control the medical-information system to*

*receive a request message from a user device through a secure communications medium, the request message containing a query for medical information of a patient,*

*authenticate and authorize the request,*

*access a clinical-knowledge data structure stored in the virtual data-storage facilities, the clinical-knowledge data structure including clinical-action nodes, biological-element nodes, and variant nodes linked together in a data structure, each biological-element node representing genomic information, each variant node representing a genomic variant of the genomic information;*

*wherein each clinical-action node in the data structure includes:*

*a list of a plurality of biological-element nodes in the data structure;*

*one or more expressions or data substructures that include one or more of (i) references to one or more biological-element nodes included in the list, and (ii) routines that access genomic biological-element nodes referenced by the clinical-action node;*

*and medical information related to those patients for which evaluation of at least one of the one or more expressions or data substructures with respect to patient genomic data stored in one or more data-storage facilities within the cloud-computing facility indicates that the*

*patient described by the patient genomic data has a biology characterized by the expression or data substructure;*

*select candidate substructures from the data structure, each candidate substructure having a clinical-action-node root node,*

*evaluate each candidate substructure for relevance to the query by identifying whether a variant represented by a variant node in the candidate substructure matches a genomic variant stored in patient genomic data for the patient referenced by the query,*

*prepare a response message from information extracted from each clinical-action-node root node of the respective one or more relevant substructures, and*

*return the response message to the user device through the secure communications medium.*

VI. Claim 1 of the first auxiliary request further specifies that the request message contains "*one or more clinical actions for a patient and a query for medical information related to the one or more clinical actions for the patient*". It further adds that the medical information in each clinical node "*comprises clinical information related to the biology characterized by the expression or data substructure*" and that the clinical-action-node root node of each candidate substructure represents "*a clinical action of the one or more clinical actions specified in the query*".

VII. Claim 1 of the second auxiliary request adds before the feature of selecting candidate substructures in claim 1 of the main request the following text:

*"wherein each biological-element node in the data structure includes:*

*references to one or more clinical-action nodes;*

*references to one or more variant nodes; and*

*one or more expressions or data substructures that include one or more references to variant nodes;*

*wherein each variant node in the data structure includes:*

*references to one or more biological-element nodes; and*

*information that describes a genomic variant;*

*wherein the references from the variant nodes to the biological element nodes and the references from the biological element nodes to the variant nodes are such that the relationship between the variant nodes and the biological element nodes in the clinical-knowledge data structure is many-to-many;"*

VIII. Claim 1 of the third auxiliary request combines the features of claim 1 of the first and second auxiliary requests.

IX. Claim 1 of the fourth to seventh auxiliary request is based on claim 1 of the main and first to third auxiliary requests. It replaces the term "medical information" with "*medication-related medical information*" and specifies that the query in the request message is for "*medication-related medical information of a patient for a particular pharmaceutical*". Furthermore, it adds at the end of the clinical-action node feature

"*said medication-related medical information comprising information regarding effectiveness,*

*metabolism, dosing and adverse effects of the particular pharmaceutical.*"

X. Claim 1 of the eighth to eleventh auxiliary requests is identical to claim 1 of the main and first to third auxiliary requests, respectively.

## Reasons for the Decision

1. The invention

1.1 The invention concerns storing and retrieving biomedical information (page 6, lines 5 to 11 of the published application).

1.2 The claimed system stores biomedical information in a three-level hierarchical data structure. As shown in Figure 16A, the top level 1602 comprises "clinical-action nodes" (1604 to 1606), corresponding to e.g. medical conditions or medicaments. The second level 1610 comprises "biological-element nodes" (1616, 1618), corresponding to e.g. genes or proteins. The bottom level 1612 comprises "variant nodes" corresponding to genomic variants, such as single nucleotide polymorphisms (SNPs), insertions or deletions (page 31, line 21 to page 33, line 4). A node at each level is linked to one or more nodes at the adjacent level(s). Each clinical-action node stores medical information and one or more (Boolean) expressions specifying combinations of genomic variants for which the medical information is relevant (see Figure 21).

1.3 When queried for information about a patient, the system retrieves the medical information of those clinical-action nodes whose expressions match the patient's genomic variants (Figure 19 and page 36, line 18 to page 37, line 26). The retrieved information may relate e.g. to the effectiveness or adverse effects of a medicament (page 32, lines 1 to 5).

2. Third auxiliary request - inventive step

2.1 The Board finds it convenient to start with the third auxiliary request as it has the most limited scope among the requests admitted in the first instance proceedings.

2.2 The examining division held that claim 1 defined a mixture of technical and non-technical features. They considered that the technical features were part of a notorious distributed information system, while the non-technical features essentially related to the definition of the data structure. The claimed implementation of the non-technical features within the known system was deemed to be obvious.

2.3 The Board agrees that a generally known distributed information system can be taken as a starting point for assessing inventive step. Such a system comprises (virtual) data facilities for storing information and (virtual) servers for receiving user queries, retrieving and returning relevant information.

Claim 1 essentially differs by the data structure, specifying the types of stored data and their relationships.

The Board agrees with the examining division that the data structure is not technical. It describes the organisation of biological data at an abstract logical level, which is in the realm of information modelling (as noted in point 2.2 of the decision under appeal). Information modelling is an intellectual activity and cannot contribute to the technical character of the invention unless it serves a technical purpose (see e.g. T 49/99 - *Information modelling/INTERNATIONAL COMPUTERS*, point 7). As elaborated in more detail below, the Board does not consider that the claimed data structure serves such a purpose.

2.4 The appellant put forward two main lines of argument in favour of the data structure's technicality.

2.5 Firstly, they argued that retrieving medical information relevant to a patient's genomic variants was a technical purpose since this information objectively described a human being. The appellant cited section G-II, 3.3 of the Guidelines for Examination, according to which the processing of biological data might serve a technical purpose, such as providing a medical diagnosis or estimating a genotype.

The Board agrees that in certain cases the provision of a medical diagnosis or a genotype estimate might be regarded as a technical purpose. However, the system of claim 1 retrieves "medical information". This broad term encompasses administrative or financial details related to health care, such as information about suitable insurance policies or the cost of medical treatments. Therefore, the Board considers that retrieving such general information does not constitute a technical purpose for the claimed data structure.

The Board furthermore notes that claim 1 only defines the data structure, i.e. the types of stored data and their relations, but not the actual content of the stored information, i.e. which medical information, expressions and variants are stored and linked. The retrieved information, however, can only be as good as the stored information. Since the latter is not part of the claim, it is impossible to say anything about the relevance or objectivity of the retrieved medical information. Technical advantages or achievements that depend on the undisclosed content of stored information cannot form the basis for assessing inventive step (see e.g. T 1153/02 - *Diagnostic system/FIRST OPINION*, point 3.6).

2.6 In this context, the appellant asserted that the system of claim 1 did not merely retrieve pre-stored patient data but could infer new information about patients from their genomic data and the generic information stored in the data structure.

The Board notes, however, that the novelty of retrieved information does not make this information relevant. As claim 1 does not specify the stored content, it permits linking any variants to any medical information, potentially allowing the storage and retrieval of biologically meaningless or factually erroneous information.

2.7 Secondly, the appellant argued that the data structure was characterised by functional data indexing stored information by genetic variants. It defined a particular way of storing, retrieving, and processing data which affected the system's storage space and processing speed. The appellant referred to earlier

decisions, in particular T 1351/04 (*File search method/ FUJITSU*) and T 1159/15 (*Model determination system/ Accenture*), in which the boards of appeal had recognised such data structures as technical.

In the Board's view, however, the data stored in the claimed data structure are not functional as they do not comprise or otherwise reflect any technical aspects of the system. Rather, the data structure defines a conceptual model of biological information that takes into account the inherent hierarchical properties of the modelled information.

2.8 Furthermore, the Board finds that decisions T 1351/04 and T 1159/15 are not relevant to the present case:

In T 1351/04, it was held that a data structure defining a search index was technical since the information it comprised was intended to control the computer by directing it to a certain memory location (see points 7.2 and 9). The information stored in the data structure of claim 1, however, is not intended to provide such a functionality. The system does not use the patient's variants to access and retrieve clinical-action nodes. Instead, it retrieves clinical-action nodes based on clinical actions specified in the query and only uses the patient's variants to assess the relevance of the retrieved information.

In T 1159/15, the invention related to a hierarchical data structure storing cognitive data as well as instructions for aggregating these data from a lower to a higher level. The deciding Board held that the instructions were functional data as they defined how the system responded to a query independently of the cognitive data (point 5). The data structure in claim

1, however, does not comprise any system instructions that are independent of the stored biological information.

The Board in case T 1159/15 further held that the data structure was technical because it defined a particular way of storing, retrieving and processing data which affected the storage space and the speed of processing (point 5.1). The present Board, however, notes that any data structure or algorithm (whether technical or not) when implemented on a computer would affect the computer's storage space and speed of processing. Therefore, in the Board's view, de facto changes in the memory usage or the processing speed are not suitable criteria for distinguishing between technical and non-technical features (see e.g. T 1227/05 - *Circuit simulation/Infineon*, point 3.2.5 and T 1954/08 - *Marketing simulation/SAP*, point 6.2).

2.9 In summary, the Board judges that the data structure in claim 1 is an abstract model of biological information. It does not contribute to the technical character of the invention because it neither serves a technical purpose nor involves any technical considerations about the internal functioning of the system. The Board thus agrees with the examining division that the data structure is non-technical and forms part of the requirements specification given to the skilled person for implementation. The Board considers that the claimed implementation amounts to straightforward automation of these requirements that would have been obvious to the skilled person.

Accordingly, claim 1 lacks an inventive step (Article 56 EPC).

3. Main request, first, second and eighth to eleventh auxiliary requests

Claim 1 of each of these requests is either identical to or broader than claim 1 of the third auxiliary request. Hence, the inventive step arguments above also apply to these requests.

4. Fourth to seventh auxiliary requests

4.1 The examining division exercised its discretion under Rule 137(3) EPC not to admit these requests based on the procedural ground that the requests were late filed (on the day before the scheduled oral proceedings) and on the substantial ground that the requests were *prima facie* not clearly allowable as they did not overcome the inventive step objections raised with regard to the higher-ranking requests.

4.2 The appellant argued that the additional feature, which specified that the medical information related to the effect of a pharmaceutical on a patient, clarified the technical purpose of the data structure. The amendment was made in response to the examining division's preliminary opinion that the limitation to genomic data did not establish the technical character of the claims. As this opinion was received less than three weeks before the scheduled oral proceedings, it was not possible to file the requests earlier.

4.3 Under Article 12(6) RPBA the Board shall not admit requests which were not admitted in the proceedings leading to the decision under appeal, unless the decision not to admit them suffered from an error in the use of discretion or unless the circumstances of the appeal case justify their admittance.

4.4 The Board cannot identify any error in the examining division's decision not to admit these requests. In the Board's view, the division reasonably applied generally established admissibility criteria (late filing and *prima facie* allowability). As to the examining division's opinion about the limitation to genomic data, the Board notes that this opinion had already been expressed in the summons to oral proceedings in relation to the dependent claims (see the paragraph bridging pages 10 and 11). The applicant thus should have expected that amending claim 1 to incorporate this limitation would not have changed the examining division's inventive step assessment.

Nor can the Board identify any circumstances justifying the admittance of these requests in appeal. On the contrary, limiting the retrieved medical information to "*information regarding effectiveness, metabolism, dosing, and adverse effects*" of a pharmaceutical has no bearing on the conclusions drawn by the Board under points 2.5 to 2.9 above. Hence, these requests indeed appear to be not allowable.

4.5 The Board thus does not admit the fourth to seventh auxiliary requests into the appeal proceedings.

5. In the absence of an allowable claim request, the appeal must be dismissed.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar: The Chairman:

T. Buschek W. Chandler

Decision electronically authenticated