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D E C I S I O N
of 5 March 2002

Case Number: T 0049/99 - 3.5.1

Application Number: 93921285.8

Publication Number: 0658260

IPC: G06F 15/40

Language of the proceedings: EN

Title of invention:

Information model based on a physical system

Applicant:

International Computers Limited

Opponent:

-

Headword:

Information modelling/INTERNATIONAL COMPUTERS

Relevant legal provisions:

EPC Art. 52(1)(2), 56, 84 R. 64(b)

Keyword:

"Admissibility of appeal (yes)"

"Information modelling - technical character (no)"

"Inventive step (no)"

"Claims - clarity (no)"

Decisions cited:

G 0002/88, T 1129/97

Catchword:

Information modelling is an intellectual activity and should be treated like any other human activity in a non-technical

field, which is, as such, not an invention for the purposes of Article 52(1) EPC. Only the purposive use of information modelling in the context of a solution to a technical problem may contribute to the technical character of an invention.



Case Number: T 0049/99 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 5 March 2002

Appellant: International Computers Limited
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Representative: Guyatt, Derek Charles
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Intellectual Property Department
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 23 July 1998
refusing European patent application
No. 93 921 285.8 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: S. V. Steinbrener
Members: R. R. K. Zimmermann
S. C. Perryman

Summary of Facts and Submissions

- I. The appeal concerns European patent application number 93 921 285.8 filed as International application (publication number WO-A-94/06 087). The invention, for which the application claims 1 September 1992 as date of priority, is in the field of systems analysis and concerns the object-oriented information modelling of physical systems.
- II. The International Preliminary Examination Report drawn up on the basis of the International application and the first communications issued in the European examination procedure express negative opinions regarding the question whether the invention involves an inventive step.
- III. In the decision under appeal, posted on 23 July 1998, the examining division refused the application essentially for lack of clarity and insufficient disclosure of the invention. In the reasons given for the refusal the examining division analyses the prior art, including among others the following textbook, which is also cited in the patent application:
- Sally Shlaer and Stephen J. Mellor: "Object-oriented system analysis: modeling the world in data", Prentice Hall, New Jersey (1988)
- IV. A notice of appeal was filed against the refusal of the application on 21 September 1998, and the appeal fee was paid on the same day.

The notice of appeal identifies the appealing party and the contested decision. It says literally, "On behalf

of the applicants , (...) the undersigned attorney herewith files a Notice of Appeal (...) against the decision of the Examining Division" and, "The Statement of Grounds for the appeal will be submitted together with our requests in due term and form".

A written statement setting out the grounds was filed on 30 October 1998. Together with the statement of grounds two sets of amended claims, according to a main request and an auxiliary request, were filed, the claims 1 thereof read as follows:

Main request:

"1. A method for modelling a physical system in a computer that executes an object-oriented information model based on the physical system, comprising the steps of:

- (a) identifying physical elements in the system and their characteristics;
- (b) deriving abstract objects and their attributes from the physical elements and their characteristics;
- (c) defining relationships between objects;
- (d) defining instances of the objects by assigning instance characteristics to the attributes; and
- (e) creating an object type hierarchy within the objects, the objects lower in the hierarchy being subtypes of the objects higher in the hierarchy and inheriting attributes from the higher-level objects; characterised in that
- (f) a sub-set of the object types within said hierarchy are designated as base types;
- (g) all objects, their attributes and the relationships between the objects are stored in tables with relational database technology, said tables including

an [corrected by the Board, originally reading "and"] object table and a plurality of type-specific tables, each type-specific table corresponding to a particular base type;

(h) said object table stores entries for objects of a plurality of different object types, each entry including attributes that are not specific to any particular object type; and

(i) said type-specific tables store attributes specific to their respective base types."

Auxiliary request:

"1. A method for modelling a physical system in a computer that executes an object-oriented information model based on the physical system, comprising the steps of:

a. identifying physical elements in the system and their characteristics;

b. deriving abstract objects and their attributes from the physical elements and their characteristics;

c. defining relationships between objects;

d. defining instances of the objects by assigning instance characteristics to the attributes;

e. creating a type hierarchy within the objects, the objects lower in the hierarchy being a subtype of the object higher in the hierarchy and inheriting attributes from the higher level object;

characterised in that

f. all objects, their attributes and the relationships between the objects are stored in tables with relational database technology, including

f1. creating an object table by collapsing a plurality of said objects and their corresponding attributes into a single object table,

- f2. creating a type-supertype-table by collapsing said type hierarchy of said objects into said type-supertype-table,
 - f3. creating a grouping table by collapsing said relationships between said objects into said grouping table,
 - g. said attributes including
 - descriptive attributes being an intrinsic characteristic of an object,
 - naming attributes being arbitrary names and labels,
 - referential attributes being facts that relate an instance of an object to an instance of another object, and
 - identifying attributes for uniquely identifying an instance of an object."
- V. With summons to oral proceedings the Board communicated its doubts regarding admissibility of the appeal due to lack of a statement compliant to Rule 64(b) EPC in the notice of appeal. Subject to a positive decision regarding admissibility of the appeal, the Board identified *inter alia* lack of inventive step as an issue to be discussed in the oral proceedings in the light of the textbook of Shlaer and Mellor and on the basis of the technical features of the invention. Furthermore the term "collapsing" was objected to under Article 84 EPC as a vague and obscure expression in the context of defining structural or functional features of database tables.
- VI. In response to a request submitted by the appellants, the Board considered the question of admissibility of the appeal and communicated, to the appellants, its

preliminary decision to accept the appeal as admissible.

- VII. In a subsequent written reply, the appellants indicated that they would not be able to attend the hearing and asked the Board to consider the arguments as submitted in writing and to allow the appeal "on its merits".

According to the written submissions, a method for modelling a physical system in a computer was a technical process, involving technical considerations, and the steps of a development process as defined in the claims had technical character. The storage of a hierarchy of objects in a computer system involved technical considerations such as how the objects were to be represented within the computer, which posed a problem of technical character.

The inventors had solved this technical problem by storing the object attributes in a series of relational database tables, using the single object table to store attributes that were not specific to any particular object type, and a number of further tables to store attributes that were specific to particular object base types. This table structure was a technical feature which represented a solution to the technical problem.

The invention was distinguished from the cited prior art in terms of its technical features, such as the designation of base types within a hierarchy of object types, and the storage of attributes specific to these base types in respective type-specific tables.

Regarding the use of the term "collapsing" the appellants argued that the term would be clear to a

person skilled in the art in the context and in the light of the application as filed. They neither cited any document nor furnished anything else to support this argument.

VIII. The oral proceedings took place as scheduled but without participation of the appellants. After deliberation the Board announced the decision.

Reasons for the Decision

1. The appeal is admissible. It certainly complies with the requirements of Articles 106 to 108 and Rules 1(1) and 64(a) EPC. In respect of the requirements of Rule 64(b) EPC, however, the notice of appeal requires closer consideration: pursuant to that provision the notice of appeal should contain a "statement" ("Antrag" and "requête", respectively, in the German and French language versions of the EPC) identifying the extent to which amendment or cancellation of the decision is requested. Failing to submit such a request within the two-month limit of Article 108 EPC has the consequence that the appeal must, right from the beginning, be rejected as inadmissible (see Rule 65(1) and Article 110(1) EPC).

The present notice of appeal does not include any explicit statement concerning the extent to which amendment or cancellation of the decision is requested; the notice of appeal rather indicates that the appellants wanted to submit their "requests" together with the statement of grounds, which actually happened to be after the relevant two-month period of Article 108 EPC.

However against the background that the application was refused in its entirety, and in accordance with the practice of the boards of appeal in such cases, it is to be inferred from the express statement that the notice of appeal is filed "against" the decision under appeal that the appellants' request was actually complete reversal of the decision. Consistent herewith, the explicit deferral of filing requests is merely considered as the announcement that amended claims were going to be filed together with the filing of the statement of grounds. Rule 64(b) EPC can thus be treated as complied with and the appeal considered admissible.

2. From the appellants' submissions the Board takes the appellants' requests as being reversal of the decision under appeal and the grant of a patent on the basis of the claims of either the main request or, alternatively, the auxiliary request.
3. Although admissible, the appeal, however, cannot be allowed for the following reasons.

Main request

4. The subject-matter of claim 1 according to the main request is not patentable in terms of Articles 52(1) and 56 EPC for lack of inventive step.
5. Article 56 EPC defines that an invention shall be considered to involve an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art.

Furthermore, consideration has to be given to the

"problem-and-solution approach" which is applied by the boards of appeal in examining inventive step (see the EPO publication "Case Law of the Boards of Appeal of the European Patent Office", 4th edition 2001, pages 101 ff.). According to this approach an invention is to be understood as a technical solution to a technical problem, if it involves an inventive step, demanding more from the person skilled in the art than the technical skills and knowledge a technical professional in the respective technical field is expected to have.

If the invention as claimed relates to non-technical subject-matter or activities, only those aspects or elements of the invention which contribute to its technical character are to be given significance in assessing inventive step.

6. In claim 1 of the present main request, steps (a) to (f) define a method for analysing a physical system and providing an information model reflecting the essential properties of the physical system (see also the description, page 1, lines 18 ff. or page 3, lines 9 ff.). The implementation of the data structure in a computer by means of relational database technology is the subject-matter of the remaining part of the claims, i.e. of steps (g) to (i).

7. Information modelling is a formalized process carried out by a system engineer or a similar skilled person in a first stage of software development for systematically gathering data about the physical system to be modelled or simulated and to provide so to say a real world model of the system on paper. Although information modelling embodies useful concepts and

methods in developing complex software systems, it is as such an intellectual activity having all traits typical for non-technical branches of knowledge and thus being closely analogous to the non-inventions listed under Article 52(2)(a) and (c) EPC.

In examining inventive step, it should hence be treated like any other human activity in a non-technical field, which is, as such, not an invention for the purposes of Article 52(1) EPC. Only the purposive use of information modelling in the context of a solution to a technical problem, as e.g. is the case for the preferred embodiment relating to the control and management of technical processes in a power system, may contribute to the technical character of an invention.

8. The claimed invention, however, is not restricted to power systems; as expressly indicated in the description the invention may be applied to various types of systems, "large, complex systems" including manufacturing plants and other physical systems (see description, page 30, lines 10 ff.). Claim 1 uses the generic expression "physical system", which is actually a term including any real world system, even business and administrative organisations.

In the light of the broad meaning of the expression "physical system", information modelling in terms of the first part of claim 1 has to be construed as an abstract non-technical activity using abstract constructs like objects, types, attributes, and relationships.

In addition to steps of abstract information modelling,

the second part of claim 1, however, includes features of a computerized database system, thus addressing technical aspects, which renders the method, at least in principle, a patentable invention. Expressions like "objects are stored in tables with relational database technology" refer to technical functions and data structures actually stored in hardware somewhere in the computer and thus belong to the technical part of such a database system.

This technical part of the claimed method relates to the technical implementation of an abstract information model on a computer system. The technical person responsible for this task, i.e. the person skilled in the art within the meaning of Article 56 EPC, is the programmer or the implementation expert, typically provided with the complete program description including the abstract data structures making up the information model.

9. Regarding the prior art, the textbook of Shlaer and Mellor, a tutorial "picture book", is considered as an appropriate starting point for examining inventive step since it gives an explicit example, although a very basic one, how to implement an information model on a technical system (Appendix B, pages 131 ff.).

According to Shlaer and Mellor, the data are stored in a block of shared memory, organized in tables, rows and columns. On page 135, the textbook indicates that this organization means that "a relational view has been imposed on the data", from which the relational database technology derives as an obvious option for storing and controlling model data.

Furthermore, the reader will find on page 131 the statement that the mapping between the application information model and the physical data organization is "quite straightforward". Knowing that Shlaer and Mellor explain the abstract information modelling on the basis of an object-oriented table-based notation (see, e.g. pages 40 ff. of the textbook), it must be inferred that the "tables" of the abstract information model are, in a one-to-one manner, mapped onto corresponding tables of the relational database.

This renders it obvious to store all objects with their attributes, in particular the base type objects of the abstract information model, the type hierarchy and other relationships, in corresponding database tables.

10. The present application, and in particular the claim wording, leaves open whether the specific "object table" defined in the second part of claim 1 has its *raison d'être* in the abstract information modelling, or whether it is a system catalog supporting the technical functions of the database system. It is only the last meaning which conveys a technical character to said object table.

In any case, however, Appendix B already discloses a construct called "Table table" (see page 135), which has the technical function of a system catalog storing the table names and lengths of all database objects. The attributes stored in the Table table are not specific to any particular object type. Even if construed as a technical system catalog, using an "object table" in terms of present claim 1 is thus an obvious feature of database systems.

11. In summary, the claim features are either non-technical or, as far as they concern technical aspects of the invention, they are to be regarded obvious in the light of the implementation example given by Shlaer and Mellor. The invention in claim 1 of the main request does thus not involve an inventive step within the meaning of Article 56 EPC.

Auxiliary request

12. Claim 1 of the auxiliary request proves not to meet the claim requirements of Article 84 in respect of clarity.

The meaning of this requirement follows from the legal functions of patent claims (see decision G 2/88 Friction reducing additive / MOBIL OIL III, OJ EPO 1988,347, in particular Reasons 2 to 2.5). On the one hand, the claims define the matter for which protection is sought and are thus the basis for determining the extent of protection conferred by the patent (or application). On the other hand, the claimed subject-matter must fairly correspond to an invention which fulfills the patentability requirements of the EPC. A claim meets the clarity requirement of Article 84 EPC if it defines the technical features and thus the technical subject-matter of the invention so that both, the protection conferred by the patent (or application) can be determined and a comparison can be made with the prior art to ensure that the claimed invention meets the patentability requirements of the EPC (see Reasons 7 of the decision cited above). Any deficiency in the claim wording which impedes either one of these functions infringes the clarity requirement of Article 84 EPC.

Furthermore, Article 84 EPC defines clarity as a claim requirement. A clarity deficiency in the claim wording is thus not removed by the circumstance that in the light of the description and drawings the reader might gain an understanding of the technical subject-matter which the claim possibly defines (see also decision T 1129/97 Benzimidazole derivatives/ GALDERMA, OJ EPO 2001, 273, in particular Reasons 2.1.2 and 2.1.3).

13. Compared with the main request, claim 1 of the auxiliary request defines the steps of generating database tables by using a particular formula of the kind "creating table X by collapsing the object Y into said table X". In the communication annexed to the summons to oral proceedings, the Board objected to the term "collapse" as a vague and obscure expression, without having prompted, however, any response on the parts of the appellants which may be considered to clarify said definitions.

To the knowledge of the Board, "collapse" is a jargon term used in the context of producing table views hiding parts of the table. In particular in windows programming, it may also indicate the dimensional reduction of a complex data construct. Both meanings do not readily apply here, they only connote vague assumptions about what could be meant by said formulae. In the absence of a definite meaning this term is a factor of uncertainty regarding the extent of protection conferred by the claim as well as the technical aspects inherent in the invention.

The Appellants' argument that the term would be clear in the context and in the light of the application as filed does not lead to a different result. Even if this

argument were accepted, it would, for the reasons given above, not justify the conclusion that the clarity requirement of Article 84 EPC is fulfilled. In any case, the term is used in the description only in a text portion on page 21 of the WO-publication, and there in an as vague and obscure manner as in the claim itself.

14. Hence, the result is that neither one of the appellants' requests is allowable so that the appeal cannot succeed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

M. Kiehl

S. V. Steinbrener