Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 16 September 2019

Case Number: T 0064/16 - 3.5.07

Application Number: 04293051.1

Publication Number: 1612698

IPC: G06F17/30, G06F3/03

Language of the proceedings: EN

Title of invention:
Method and system for graphically navigating among stored objects

Applicant:
Dassault Systèmes

Headword:
Database navigation/DASSAULT SYSTEMES

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

Decisions cited:
T 0570/91, T 1543/06, T 1928/06, T 1214/09, T 1562/11, T 1734/11, T 1742/12, T 2418/12, T 0817/16

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0064/16 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 16 September 2019

Appellant: (Applicant)	Dassault Systèmes 9, quai Marcel Dassault, B.P. 310 92156 Suresnes Cedex (FR)
Representative:	Bandpay & Greuter 30, rue Notre-Dame des Victoires 75002 Paris (FR)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 31 July 2015 refusing European patent application No. 04293051.1 pursuant to Article 97(2) EPC**

Composition of the Board:

Chairman	R. Moufang
Members:	R. de Man
	M. Jaedicke

Summary of Facts and Submissions

I. The applicant (appellant) appealed against the decision of the Examining Division refusing European patent application No. 04293051.1.

II. The decision cited, *inter alia*, the following documents:

D1: "Matrix Basics - Version 6", 1998, pp. 1-47;

D3: J. Carrière and R. Kazman: "Interacting with Huge Hierarchies: Beyond Cone Trees", Proceedings of the IEEE Symposium on Information Visualization (InfoVis '95), October 1995, pp. 74-81.

The Examining Division decided that the subject-matter of claims 1, 14 and 15 of the then main request and claim 1 of the second to fifth auxiliary requests lacked inventive step in view of document D1, either taken alone or in combination with document D3. The first auxiliary request did not comply with Article 123(2) EPC.

III. With the statement of grounds of appeal, the appellant filed claims of a main request and first to third auxiliary requests. The main request corresponded to the previous first auxiliary request with a minor amendment. The first auxiliary request corresponded to the previous main request. The second and third auxiliary requests corresponded to the previous third auxiliary request with minor amendments.

IV. In a communication accompanying the summons to oral proceedings, the Board expressed the preliminary view that the subject-matter of claim 1 of each request lacked inventive step over document D1 and that the

second and third auxiliary requests infringed Articles 84 and 123(2) EPC.

V. In a letter dated 24 May 2019, the appellant maintained the main request and the first auxiliary request and replaced the second and third auxiliary requests with a new second auxiliary request.

VI. During oral proceedings held on 24 June 2019, the appellant withdrew the main request and the first auxiliary request and maintained the second auxiliary request as its sole substantive request. At the end of the oral proceedings, the chairman announced that the decision would be given in writing.

VII. The appellant requests that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the sole substantive request.

VIII. Claim 1 of the sole substantive request reads as follows:

"A computer-implemented method for navigating in a relational database of a product lifecycle management system, the database storing modeled objects and relations between said objects, the PLM system comprising a graphical user interface suitable for displaying to a user a graphical 3D representation of a hierarchy of stored objects, the method comprising the steps of:

- selecting a first object, a first relation and a first layout;

- finding descendants of said first object in the hierarchy, which descendants comprise second objects related to the first object according to the first relation;

- displaying a 3D representation of the first object comprising the second objects, wherein the selected first object is represented to the user as a set of its descendants that comprises the 3D representations of the second objects that are laid out in 3D space and distributed on the first layout;

- selecting one of the displayed second objects, a second relation and a second layout;

- finding descendants of the selected second object, which descendants comprise third objects related to the selected second object through the second relation;

- displaying a 3D representation of the first object, comprising the second and third objects, the selected second object is represented to the user as a set of its descendants that comprises the 3D representations of the third objects being laid out in 3D space and distributed on the second layout, wherein the second objects displayed are redistributed on the second layout in the graphical 3D representation according to a respective relative weight of said second objects, the relative weight of an object depends on the number of descendants of said object in the hierarchy, which are displayed in said graphical representation;

wherein the first and second layout are a circular layout, with objects represented in exploded perspective distributed on a disk;

wherein after selecting a circular layout, the disk links objects which belong to a same level in the hierarchy, and the intersection of two disks defines a cue representative of a hierarchy of the displayed object and its displayed descendants in the hierarchy;

wherein the disk is configured to be rotated, independently of any other disk, upon user action."

IX. The appellant's arguments, where relevant to the decision, are discussed in detail below.

Reasons for the Decision

1. The appeal complies with the provisions referred to in Rule 101 EPC and is therefore admissible.

2. The application relates to "product lifecycle management" (PLM) systems. Such systems comprise a relational database system that contains textual data and relations between the data. The textual data is representative of products, which are often modelled objects (page 1, lines 33 to 37, of the description of the application as filed). According to the application, there is a need for a navigation solution that allows the user to navigate in a database of a product lifecycle management system in a user-friendly manner (page 4, lines 12 to 19).

3. *The invention as defined by claim 1*

3.1 Claim 1 relates to a computer-implemented method for navigating modelled objects and relations between the objects that are stored in a relational database of a PLM system.

The PLM system comprises a graphical user interface for displaying, to a user, a graphical 3D representation of a hierarchy of stored objects. As explained on page 8, lines 1 to 7, the application uses the term "hierarchy" in a loose way. In particular, an object can have multiple parents via multiple relations.

The claimed method includes steps that essentially describe two steps of navigation.

3.2 In the first navigation step, the user selects a first object, a first relation and a first layout. In response, the PLM system identifies the descendants of the first object in the hierarchy that are related to the first object by the first relation. The claim refers to these descendant objects as second objects ("which descendants comprise second objects related to the first object according to the first relation").

When the second objects have been found, "a 3D representation of the first object comprising the second objects" is displayed, "wherein the selected first object is represented to the user as a set of its descendants that comprises the 3D representations of the second objects that are laid out in 3D space and distributed on the first layout". This is to be understood as meaning that, on the display, the displayed representation of the first object is replaced with (the first object "is represented as") 3D representations of the second objects. Hence, in a sense, the representation of the first object is "exploded" to a set of representations of the second objects (see page 11, lines 4 to 19).

3.3 In a second navigation step, the user selects one of the displayed second objects, a second relation and a second layout. As in the first step, the descendants of the selected second object related by the second relation are identified. These "third objects" are then displayed by replacing, in the above-mentioned "3D representation of the first object", the 3D representation of the selected second object with 3D representations of the third objects, laid out in 3D

space distributed on the second layout. To make place for the third objects, the remaining second objects are redistributed "according to a respective relative weight of said second objects, the relative weight of an object depend[ing] on the number of descendants of said object in the hierarchy, which are displayed in said graphical representation".

3.4 The claim specifies that the selected first and second layouts are a "circular layout, with objects represented in exploded perspective distributed on a disk" and that "the disk links objects which belong to a same level in the hierarchy, and the intersection of two disks defines a cue representative of a hierarchy of the displayed object and its displayed descendants in the hierarchy".

These layouts are illustrated in Figure 12:

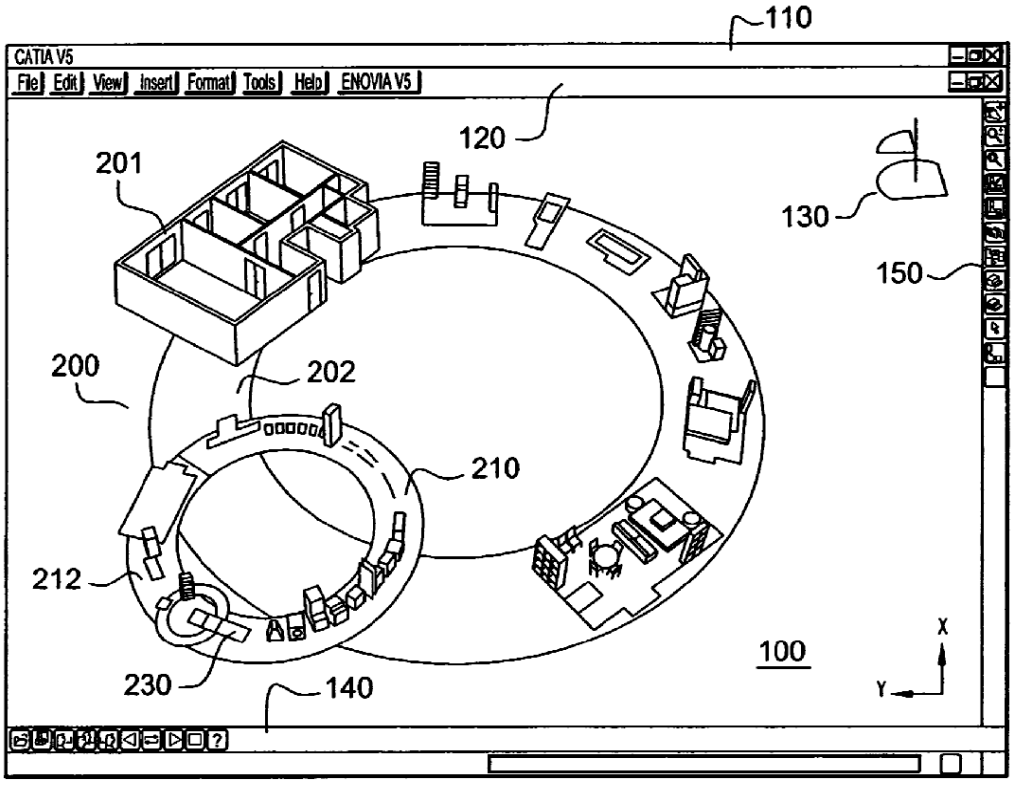

Fig. 12

The original first object has been replaced with second objects distributed on the disk (or rather, ring) 202. One of the second objects has been replaced with third objects distributed on the disk 212.

3.5 Each disk is "configured to be rotated, independently of any other disk, upon user action". Hence, the PLM system's graphical user interface allows the user to rotate disks 202 and 212 in Figure 12.

4. *Inventive step - Article 56 EPC*

4.1 Document D1 discloses an information management system comprising a database which contains types of products, attributes associated with these products, and the processes that govern their lifecycles (page 5, lines 1 to 6 and 26 to 32), which thus falls within the scope of the term "product lifecycle management system". Document D1 is therefore a suitable starting point for assessing inventive step.

4.2 In its statement of grounds of appeal, the appellant argued that document D1 was not "the most promising springboard" and that - after further discarding documents D2 and D4 - the skilled person would have selected document D3 as the closest prior art.

In the Board's view, the problem-and-solution approach does not require a selection of the "most promising" springboard to the exclusion of any other document. The claimed invention lacks inventive step within the meaning of Article 56 EPC if the skilled person, starting from some item of prior art, would have arrived at something falling within the terms of the claim in an obvious manner. In practice, it makes sense

to limit this investigation to prior-art items that are at least "promising" in that potentially a realistic path exists from the prior-art item towards the invention. In many cases, only one "closest" prior-art item needs to be considered because all other available documents are objectively further removed from the invention (see decisions T 570/91 of 26 November 1993, reasons 4.2; T 1928/06 of 20 October 2009, reasons 1.3.2; T 1734/11 of 13 January 2015, reasons 5.4; T 1742/12 of 22 June 2016, reasons 6.3 to 6.6 and 10.3; T 2418/12 of 14 July 2017, reasons 3.10).

Hence, the existence of document D3 cannot invalidate document D1 as a suitable starting point for assessing inventive step.

4.3 The database of document D1 contains a set of business objects and relations between the objects (page 18), which form "a hierarchy of stored objects" within the meaning of claim 1 (see point 3.1 above). Among the objects are three-dimensional modelled objects (see pages 15 and 19).

4.4 The system of document D1 includes a "primary browser" (pages 15 and 16) and a "navigator browser" (pages 18 to 20), which are graphical user interfaces for displaying the hierarchy of stored objects.

4.5 The navigator browser allows the user to "navigate" from one object to other objects via a relationship connecting the objects (pages 18 and 19).

The definition of "navigate" on page 44 reads "the action of exploring the database by selecting an object and requesting a view of the objects connected to it". This is the same type of navigation as in the

invention, except that the navigation is not limited to objects connected/related to the selected object by a specific selected relation.

4.6 Objects can be displayed as an "Icon" or "ImageIcon", the latter being images depicting the 3D modelled objects (pages 14 and 15). This applies to both the primary browser and the navigator browser (page 15, "with ImageIcon option selected"; page 18, "with Icon option selected").

The appellant argued that the "3D representations" of claim 1 do not encompass the ImageIcons of document D1 since the former could be rotated, whereas the latter could not.

Claim 1 arguably does not limit the 3D representations of the modelled objects to objects that can be three-dimensionally rotated on the screen. After all, the 3D representations are necessarily drawn on the two-dimensional screen as two-dimensional projections of 3D modelled objects. Nevertheless, the Board adopts the appellant's interpretation for the purpose of assessing inventive step.

4.7 Hence, the subject-matter of claim 1 differs from what is disclosed in document D1 in that:

(a) the database is a relational database;
(b) two consecutive navigation steps are performed (from a selected first object to second objects and from a selected second object to third objects);
(c) navigation is based on a selected relation;
(d) each navigation step leads to the selected object being "replaced" in the graphical user interface

with the set of objects to which it is connected via the selected relation;

(e) the various second and third objects are displayed as 3D representations "in 3D space" according to selected first and second layouts and distributed over the layouts on the basis of the number of the displayed "descendants" in "the hierarchy" (the objects' "relative weights");

(f) the selected first and second layouts are a circular layout, with objects represented in exploded perspective distributed on a disk;

(g) after selecting a circular layout, the disk links objects which belong to a same level in the hierarchy, and the intersection of two disks defines a cue representative of a hierarchy of the displayed object and its displayed descendants in the hierarchy;

(h) the disk is configured to be rotated, independently of any other disk, upon user interaction.

4.8 As to feature (a), the Board notes that relational databases were well known in the art at the priority date of the application. As stated in the background section of the present application on page 1, line 33, PLM systems of the prior art in fact included relational databases. The skilled person would therefore have considered adapting the system of document D1 to use a relational database. Since the application contains no details on how to map data objects and relations between data objects to the database structures of a relational database, it has to be assumed that the skilled person would have had no difficulty in carrying out this adaptation. He would therefore have arrived at feature (a) without the exercise of inventive skill.

4.9 Feature (b) merely reflects an obvious way of operating the system of document D1 as there is nothing in document D1 that could stop the user from exploring the hierarchy of objects by performing two consecutive navigation steps.

4.10 As to feature (c), in the context of document D1, in which objects are connected by various types of relation, it was an obvious desire to be able to navigate to all objects that are connected to a user-selected object by a user-selected relation. Feature (c) achieves no technical effect other than fulfilling that desire. The skilled person, starting from document D1 and faced with the problem of facilitating such navigation, would have modified document D1 to allow the user to select both an object and a relation by which to navigate and would thus have arrived at feature (c).

4.11 Features (d) to (h) all relate to the presentation of the result of a navigation step to the user. The appellant argued that feature (c) interacted with these presentation features to provide a synergetic effect in that displaying fewer objects reduced the computing resources used for rendering the graphical 3D representation.

However, displaying fewer objects reduces the computing resources used for rendering the objects independently of whether the objects are displayed in a simple two-dimensional or in a complicated three-dimensional setting. This reduction of computing resources is merely an expected effect of the decision to limit the objects returned by a navigation step to the objects related to the selected object by a selected relation.

4.12 Features (d), (e), (f) and (g) specify how the objects returned by a navigation step are presented to the user. They therefore relate to a presentation of information, which contributes to inventive step only to the extent that it interacts with the technical features of the claim to achieve a technical effect.

4.13 In this respect, the appellant argued that the claimed layouts, in particular the disk layout, allowed restraining the display of representations to a delimited screen area. This introduced "a management of the locations of representations on the display device", which was technical as such. The layouts also reduced mouse travel during the navigation process.

The Board is not convinced. Even if it were accepted that the claimed disk layout distinguishes itself from arbitrary layouts by achieving a particularly compact display of information, this effect would be the result not of technical considerations, but of considerations that are typical for a graphical designer. It would therefore not be a technical effect but rather an effect that is inherent in the presentation of information (see decisions T 1543/06 of 29 June 2007, reasons 2.7 and 2.8; T 1214/09 of 18 July 2014, reasons 4.8.8; T 1562/11 of 3 June 2015, reasons 2.5; T 817/16 of 10 January 2019, reasons 3.12). And the alleged reduction in mouse travel is merely the expected result of the compact display of information.

4.14 The appellant also argued that replacing the parent object with its descendant objects in the presentation (rather than displaying the parent object together with its descendant objects) was unconventional and saved computing resources.

However, the choice to omit the parent object from the presentation is a matter of presentation of information. Although it does save the computing resources needed for displaying the parent object, this is not the result of a technical decision.

4.15 The Board therefore concludes that the presentation of information defined by features (d) to (g) is not technical. These features therefore make no technical contribution beyond their implementation.

4.16 Feature (h), which specifies that the user interface allows the user to rotate each disk independently, introduces an interactive element into the claimed presentation of information. The appellant argued that, in the layout shown in Figure 12, an object could be hidden behind another object and be made visible by rotating one of the disks. Feature (h) allowed the user to get a better view of the displayed objects and therefore improved the user's interaction with the database.

The Board observes that feature (h), which merely expresses that the user can rotate the disks, does not specify a particular input mechanism by which the user can control the rotation action. Nor is the rotation action part of a mechanism for performing some task other than changing the angle under which the user views certain three-dimensionally represented objects. Although allowing the user to rotate the disks does improve the disk-layout presentation defined by features (f) and (g) in that hidden parts of the three-dimensional representations can be made visible, this effect still does not go beyond controlling what is displayed to the user and how. A better presentation may allow the user to make better-informed navigation

choices, but this depends on the cognitive content of the presentation and the subjective wishes of the user.

Thus, feature (h) also makes no technical contribution beyond its implementation.

4.17 It remains to be considered whether the implementation of features (d) to (h) in the navigator browser of document D1 would have required an inventive step. In this respect, the appellant is correct in stating that the navigator browser displays the modelled objects in a two- rather than a three-dimensional arrangement. Nevertheless, the Board fails to see why the skilled person, given the task of implementing the presentation of information described by features (d) to (h), would not have been able to modify the browser to implement that presentation. Indeed, CAD systems allowing a user to construct and manipulate complex three-dimensional models of objects or assemblies of objects existed (as admitted in the background section of the present application on page 1, lines 8 to 23), and such systems were able to display rotatable three-dimensional representations of modelled objects. Moreover, document D1 discloses, on page 21, that CAD files could be stored in business objects and could be viewed by launching an appropriate program.

4.18 Hence, the subject-matter of claim 1 lacks inventive step (Article 56 EPC).

5. *Conclusion*

Since the sole substantive request cannot be allowed, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

I. Aperribay R. Moufang

Decision electronically authenticated