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Datasheet for the decision of 17 March 2011

Case Number: T 1235/07 - 3.5.01

Application Number: 00930702.6

Publication Number: 1190348

IPC: G06F 17/30

Language of the proceedings: EN

Title of invention:
Navigating data points in a multidimensional database

Applicant:
Microsoft Corporation

Opponent:
-

Headword:
Navigating data/MICROSOFT

Relevant legal provisions:
-

Relevant legal provisions (EPC 1973):
EPC Art. 56

Keyword:
"Inventive step - showing results of 'slice-and-dice' and 'drill-down' analysis on a tree diagram (no - presentation of information)"

Decisions cited:
T 1143/06

Catchword:
See points 11 and 12 of the Reasons

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Case Number: T 1235/07 - 3.5.01

D E C I S I O N
of the Technical Board of Appeal 3.5.01
of 17 March 2011

Appellant: Microsoft Corporation
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 9 February 2007 refusing European patent application No. 00930702.6 pursuant to Article 97(1) EPC 1973.**

Composition of the Board:

Chairman: S. Wibergh
Members: W. Chandler
P. Schmitz

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division to refuse the European patent application No. 00930702.6, which relates to navigating through data in a multidimensional database.

II. The examining division decided that the subject-matter of claim 1 of the main and auxiliary requests did not involve an inventive step (Article 56 EPC 1973) over US-A-5 767 854 (D1) and the skilled person's common general knowledge as exemplified by D2 (CHAUDHURI S. et al.: "An Overview of Data Warehousing and OLAP Technology", SIGMOD RECORD, SIGMOD, New York, NY, US, vol. 26, No. 1, March 1997, pages 65-74).

III. The examining division considered that the effect of the distinguishing features was to allow navigation through dimensions while preserving relationships between parent data points and child data points. Since slice-and-dice was known, e.g. from D2, the skilled person would have strived to implement it as part of the normal design strategy.

IV. In the statement setting out the grounds of appeal, dated 5 June 2007, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main or auxiliary request filed therewith and corresponding to the refused requests. The appellant also made an auxiliary request for oral proceedings.

V. The appellant argued that Dl did not explicitly describe how to navigate through the hierarchical data

point tree, but rather discouraged the skilled person from using one. Moreover, from the general representation of the data point tree in Figure 39 of Dl and from the general statement that there was a known slice-and-dice operation used for moving from one object of a given dimension to another object of a different dimension, the skilled person would not have considered it to be obvious to perform such movement between dimensions in a hierarchical data point tree and, more importantly, would not have received any hint on how this should or could have been performed in an efficient, comprehensible, and clearly laid out way, as claimed.

VI. In the communication accompanying the summons to oral proceedings, the Board summarised the issues to be discussed and tended to agree with the examining division that claim 1 of both requests lacked an inventive step. In particular, the Board raised the question of whether the formulated problem was technical at all. The Board referred to T 1143/06, in which the invention also related to a visual display of known techniques.

VII. The reply stated that the representative would not be attending oral proceedings and contained a request for a decision according to the state of the file.

VIII. At the oral proceedings, which took place in the appellant's absence, the Chairman announced the decision based on the appellant's above-mentioned requests.

IX. Claim 1 of the main request reads as follows:

"A computer-implemented method for displaying data points stored in an OLAP multidimensional database, the data points being defined as locations of data records along at least two dimensions including a first dimension and a second dimension, each of the dimension divided into at least three levels having a parent level, a first child level and a second child level in a hierarchical structure, the method comprising the steps of:

- receiving a selection of the first dimension;
- in response to receiving the selection, extracting a parent data point from the multidimensional database;
- displaying the parent data point as an icon in a data point tree;
- receiving a selection of the parent data point icon from the data point tree;
- extracting, from the multidimensional database, a plurality of first level child data points under the parent data point along the first dimension;
- displaying the first level child data points as respective icons in the data point tree;
- receiving a selection of one of the child data icons from the data point tree;
- displaying a menu associated with the selected first level child data point, the menu containing the first and second dimensions;
- receiving a selection of the second dimension from the menu;
- in response to receiving the selection, extracting, from the multidimensional database, a plurality of second level child data points under the selected first level child data point along the second dimension; and

- displaying the second level child data points as individual icons in the data point tree, together with the relationships between the selected first level child data point and the second level child data points."

Claim 1 of the auxiliary request replaces the penultimate feature of the main request by:

"- displaying a menu associated with the second dimension, the menu containing levels of said dimension;
- receiving a selection of one of the levels of said second dimension;
- in response to receiving the selections, extracting, from the multidimensional database, a plurality of second level child data points, the second level child data points corresponding to the selected level in the selected dimension; and".

Reasons for the Decision

1. The appeal complies with the requirements referred to in Rule 65(1) EPC 1973 and is therefore admissible.

The application

2. The structure of data in a multidimensional database recognises generic aspects, or "dimensions", of the data. The application gives examples of "Time", "Customers", "Regions" and "Products" (Figure 3 and page 8, line 5ff.). Within each dimension, the data has a hierarchical structure with each "level" in the hierarchy having a name. Thus in the "Customers"

dimension in Figure 3, the customers each have a "Name" the names belong to a "Sector" and the sectors belong to a "Channel". For the "Regions" dimension, each "City" is part of a "State Prov", which is part of a "Country", which is part of a "Region".

3. Figure 4D shows some actual data in the "Customers" dimension. The "Channel" data includes "Direct" and "Indirect" customers. The "Direct" channel contains the sectors "Corporate", "Educational", "Government", and the "Indirect" channel contains the sectors "Distributor", "OEM" and "Reseller". The "Reseller" sector has the customer names "Aberdeen Information Syst", "Advance & Partners" etc.

4. The invention uses a tree diagram to view and navigate through the dimensions and levels of data in a multidimensional database. For example, Figure 16 shows the percentage of total sales in the customer dimension broken down in the "Corporate" sector by customer "Name", which is in the same dimension. This is called a "drill-down" in the customer dimension, which is a commonly used technique to find out more detailed information. When analysing results, the user may want to ask the question: What is the breakdown of "Corporate" sector sales by *"Country"* (instead of "Name")? This requires taking a slice of the data (the "Corporate" sales) and breaking them up in another direction, hence the term "slice-and-dice". Figure 3 shows that "Country" is the second level in the "Region" dimension. The invention allows this dimension and level to be entered via respective menus (Figure 16: 1604, 1606) to show the required result (Figure 17). Thus, Figure 17 represents a drill-down in the customer

dimension, a slice by the "Corporate" sector, and a dice (with drill-down) in the "Region" dimension. Alternatively, this can be seen as part of a pivot of the customer data by sector and country. In summary, the invention uses a tree diagram to show arbitrary combinations of "drill-down" and "slice-and-dice". In the diagrams the lowest values are all grouped in the box labelled "Bottom" to prevent cluttering.

Main request

5. It is common ground that D1 is the closest prior art. D1 discloses at column 23, lines 4 to 16 and Figure 39 displaying data points in a multi-dimensional database in the form of a data point tree including a parent level and a number of child levels. This corresponds to the opening part and the third, fifth and sixth features of claim 1.

6. It is also common ground that claim 1 differs from D1 by the features identified by the examining division, namely by selecting a data point (e.g. "Corporate" in Figure 16) in one dimension (e.g. "Customers/Sector"), selecting a desired new dimension (e.g. "Region") from a menu (1604) and displaying the child data points (e.g. "USA", "Germany", "Canada", etc.) along this dimension under the selected data point (Figure 17). These are the last five features of the claim.

7. According to page 7, middle of last paragraph of the grounds of appeal, the appellant appears to be expressing doubts that D1 discloses the selection of the first dimension and the selection of the parent data point in the first dimension, i.e. the first and

fourth features of the claim. However, in the Board's view, the tree can only start from one of the available dimensions, which must therefore be selected somehow, so that this feature is implicit. However, D1 does not disclose selecting any of the data points themselves.

8. D1 discloses at column 23, line 5, that the tree can represent multi-dimensional data. This leads to the question of whether the data points in the tree 136 are all in one, or are in more than one dimension. Assuming the former, it represents different levels of data in that dimension, i.e. already represents a drill-down. Thus, in the Board's view, claim 1 differs additionally from D1 by performing this drill-down in response to selecting a data point. This is in fact the most favourable interpretation for the appellant since, if the tree contained points in different dimensions, it would additionally disclose the claimed slice-and-dice operation.

9. It is common ground that the effect of the distinguishing features is to allow navigation through dimensions while preserving relationships between parent data points and child data points. The appellant considers that this is the problem to be solved, for which there is no motivation to consider a slice-and-dice operation. The examining division argued that since slice-and-dice was known, the skilled person would have strived to implement it as part of the normal design strategy. Thus the problem was seen as how to provide an interface having this effect. Essentially, the division incorporated the idea of using the slice-and-dice operation into the objective

problem by arguing that it was an obvious problem to solve.

10. However, in the Board's view a more compelling reason for incorporating the slice-and-dice operation into the problem is that it has no technical character. A slice-and-dice operation is merely a manipulation of data, like taking a square root, that does not in itself have technical character. According to the jurisprudence of the boards of appeal this can not contribute to inventive step. Similarly, showing the results in the tree structure is a presentation of information that has no technical character. Finally, the Board cannot see anything technical in the nature of the information itself, which not being tied to any particular application, just represents abstract data. The same applies to the drill-down operation, although this operation is already inherent anyway in the tree structure of D1 as discussed above. Thus, in the Board's view the problem solved by the invention boils down to showing the user what he wants to see in the tree structure, in this case the result of a slice-and-dice or drill-down analysis.

11. The Board is thus in this case taking a wider view of "presentation of information" than just the actual information that is displayed, the so-called cognitive content, to include also structural aspects of *how* the information is displayed. In the Board's view, such additional aspects can only contribute to inventive step if they have technical character.

This broader meaning is supported by almost the only reference to presentation of information in the travaux

préparatoires, namely the Record of the Washington Conference, 1970 at point 1183. When asked what "mere presentations of information" meant, "Mr. FERGUSSON (United Kingdom) said that the intent of the provision was to remove from what an International Searching Authority had to search just ‘a presentation of information,' say in tabular form, particular ways of writing, and that sort of thing." Although the discussion was in connection with Rule 39 PCT, Article 52(d) EPC was ultimately based on the same provision (see "Minutes of the 9th meeting of Working Party I held from 12 to 22 October 1971, in Luxembourg", BR/135/71, point 95). These examples show that it was envisaged that parts of how the information, namely the form and way it is presented, may also be part of the presentation of information. In the Board's view, this applies to the arrangement of information in the tree diagram in the present case.

12. Moreover, there is jurisprudence in this field holding that similar presentations of information are not technical. In particular, T 1143/06 (not published in EPO OJ) discussed some of this jurisprudence and concluded that representing, by the speed of an element moving on a display, the relevance of data in a database to sort statements had no technical effect. The case was similar in that the information was presented to the user in a way that made it easier to evaluate and the user could then respond by selecting and displaying data (see point 3.8). The Board noted that the information was known per se, but only differed in the visual form in which it was displayed; i.e. speed of a moving element instead of in tables. In the Board's view, the present case is even less

convincing because the invention is merely a visual display of a known analysis technique using known means, whereas in T 1143/06 the idea of varying the speed of the element was at least not known.

13. The Board essentially agrees with the division that the solution is the implementation of user choices using known techniques that would be matters of routine design. In particular, the Board considers that, faced with the problem of showing the user the results of a slice-and-dice operation, it would be self-evident that the value at a child point on the tree already gives the "slice" in a certain dimension. Thus, the skilled person would be faced with the practical problem of selecting the required "slice". Furthermore, since, by definition, the "dice" is the set of values along another dimension, this dimension must also be selected. The use of mouse clicks and menus to make such selections are routine design options in this field and are common general knowledge. The same applies to implementing the "drill-down" operation. D1 also confirms the common general knowledge of selecting various data types by using a menu, an icon or double clicking (column 13, lines 14 to 16).

14. The appellant argues that D1 only discloses navigation in connection with the "n-gonal" representation, but not in a tree structure. Moreover, the tree structure would not be suitable because it grows wider and taller with each successive level and thus requires scrolling to view all the data. However, these arguments relate to aspects of the invention that concern the presentation of the information, which as mentioned above, do not contribute to inventive step. The only

technical contribution is how to present a particular piece of data at a particular point using menus and selections.

15. Having said that, the Board considers that D1 does actually disclose the techniques of analysing multi-dimensional data, including drill-down and slice-and-dice, as well as all the essential navigation functions of the invention. Thus the user can specify a hierarchy of data points (Figure 18: 50), each data point having a dimension (47a - e.g. "Country", "Manufacturer", "Racket Attribute" or "Racket Type"), in turn having levels (48 - e.g. "Badminton", "Racket Ball", "Squash", "Table Tennis" or "Tennis"). The hierarchy can then be transformed into a "n-gonal" representation (e.g. as in Figure 10). The user may perform analyses on the data and change the hierarchy if necessary (column 18, lines 32 to 36). Thus the invention could be considered to differ only in the presentation as a tree rather than an "n-gonal" structure. However, the passage in D1 at column 23, lines 25 to 28 states that the "n-gonal" representation 138 is more compact and visually understandable than the equivalent tree structure 136, which would tend to imply that they are alternative presentations.

16. Accordingly, claim 1 of the main request does not involve an inventive step (Article 56 EPC 1973).

Auxiliary request

17. Claim 1 of the auxiliary request adds the above-mentioned aspect that the level (e.g. Country) of the new dimension can be determined at the same time as the

shift to the new dimension by a further menu 1606. However, the Board agrees with the examining division at point 2.1 of the decision essentially that this feature is the implementation of an additional aspect that the user would want to see, namely the level in the new dimension, and would have to specify in some way. Thus, the Board agrees that it is obvious for reasons analogous to those of the main request.

18. Accordingly, the subject-matter of claim 1 of both requests does not involve an inventive step (Article 56 EPC 1973), so that it follows that the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

T. Buschek S. Wibergh