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Datasheet for the decision of 7 June 2018

Case Number: T 0995/14 - 3.5.07

Application Number: 02015347.4

Publication Number: 1380963

IPC: G06F17/24, G06F17/18

Language of the proceedings: EN

Title of invention:
A method and computer based system for displaying of time variant tabular data

Applicant:
SAP SE

Headword:
Displaying time variant tabular data/SAP

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - all requests (no)

Decisions cited:
T 0049/99, T 0154/04, T 1834/10

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Case Number: T 0995/14 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 7 June 2018

Appellant: (Applicant)	SAP SE Dietmar-Hopp-Allee 16 69190 Walldorf (DE)
Representative:	Richardt Patentanwälte PartG mbB Wilhelmstraße 7 65185 Wiesbaden (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 17 December 2013 refusing European patent application No. 02015347.4 pursuant to Article 97(2) EPC**

Composition of the Board:

Chairman	P. San-Bento Furtado
Members:	M. Jaedicke
	M. Blasi

Summary of Facts and Submissions

I. The applicant (appellant) appealed against the decision of the Examining Division refusing European patent application No. 02015347.4, published as EP 1 380 963 A1.

II. The Examining Division decided that the subject-matter of the independent claims of the main request, and of auxiliary requests i to v, lacked inventive step over the common general knowledge, typically as disclosed in the following document:

D2: Tansel, A. et al.: "Temporal Databases - Theory, Design, and Implementation", Benjamin/Cummings Publishing Company, 1993, chapters 2 and 18.

In its decision, the Examining Division also cited the following prior-art documents:

D1: US 5,440,730 published on 8 August 1995;
D3: Dumas, M. et al.: "Pointwise Temporal Object Database Browsing", Objects and Databases 2000, Lecture Notes in Computer Science, volume 1944, 2001, pages 170 to 184.

III. In its statement of grounds of appeal, the appellant requested that the decision be set aside and that a patent be granted on the basis of the claims of one of the main request, corresponding to auxiliary request ii considered in the contested decision, and auxiliary requests i and ii, corresponding respectively to auxiliary requests iii and iv considered in the contested decision.

IV. In a communication under Article 15(1) RPBA accompanying a summons to oral proceedings, the Board *inter alia* expressed its provisional opinion that the subject-matter of claim 1 of the main request and of auxiliary requests i and ii lacked inventive step in view of document D3.

V. In a subsequently filed letter, the appellant submitted further arguments.

VI. Oral proceedings were held as scheduled, during which the appellant requested that the claim request assessed by the Examining Division in the decision under appeal as auxiliary request v be considered by the Board as auxiliary request iii and the appellant was heard on relevant issues. At the end of the oral proceedings, the chair pronounced the Board's decision.

VII. The appellant's final request was that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the main request or alternatively of auxiliary requests i to iii, considered in the impugned decision as auxiliary requests ii to v, respectively.

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

"A method of operating a digital computer (100) for displaying of tabular data of a first table (200), the tabular data comprising first data being descriptive of instances (a, b, c) of an entity (E) and second data, each of the second data comprising a parameter value (P) of one of the first data and having an associated first time interval (I) during which no change to the parameter value (P) occurs so that the parameter value (P) is considered valid, an observation time interval

covering the first time intervals (I), the method comprising the steps of:

a) determining (504) second time intervals (V), each of the second time intervals (V) being within the boundaries of at least one of the first time intervals (I) without partly overlapping any of the first time intervals (I), wherein the second time intervals are determined such that during each of the determined second time intervals all of the parameter values (P) considered remain constant for all of the instances of the entity (E), the concatenated second time intervals (V) completely covering the observation time interval,

b) generating (508) an index (600) comprising each one of the second time intervals (V) as keys to first data and associated parameter values (P) being valid during the considered second time interval (V),

c) generating a menu (404) for a user's selection of one of the second time intervals (V),

d) selecting (510) one of the second time intervals (V),

e) generating a second table (402) containing a sub-set of the first data, each of the tabular data contained in the first table (200) of the sub-set having a valid parameter value (P) during the selected second time interval (V), wherein the index (600) is used to generate the second table (402),

f) displaying the second table (402)."

IX. Claim 1 of auxiliary request i differs from claim 1 of the main request in that it replaces steps a) to f) of claim 1 of the main request as follows:

"a) selecting, by a user, one or more columns of the first table, thereby selecting one or more parameters of the entity,

b) determining (504) second time intervals (V), each of the second time intervals (V) being within the boundaries of at least one of the first time intervals (I) without partly overlapping any of the first time intervals (I), wherein the second time intervals are determined such that during each of the determined second time intervals all of the parameter values (P) of the selected one or more parameters remain constant for all of the instances of the entity (E), the concatenated second time intervals (V) completely covering the observation time interval,

c) generating (508) an index (600) comprising each one of the second time intervals (V) as keys to first data and associated parameter values (P) being valid during the considered second time interval (V),

d) generating a menu (404) for the user's selection of one of the second time intervals (V),

e) selecting (510) one of the second time intervals (V),

f) generating a second table (402) containing a sub-set of the tabular data contained in the first table (200), each of the first data of the sub-set having a valid parameter value (P) during the selected second time interval (V), wherein the index (600) is used to generate the second table (402),

g) displaying the second table (402)."

X. Claim 1 of auxiliary request ii differs from claim 1 of auxiliary request i in that it amends "the user's" to "a user's" in step d), relabels steps e) to g) of

claim 1 of auxiliary request i as steps f) to h) and introduces the following new step e):

"e) providing a selection component (408, 410) of a graphical user interface (112) for stepwise selection of second time intervals (V)".

XI. Claim 1 of auxiliary request iii differs from claim 1 of auxiliary request ii in that in step d) it adds the text "of a graphical user interface (112)" after the word "menu (404)", in step e) it amends the text "of a graphical user interface" to "of the graphical user interface" and in step g) it amends the text "to generate the second table (402)" to "for generating the second table".

XII. 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.

The invention

2. The application relates to the presentation of information contained in electronic spreadsheets and databases in tabular form (see description as published, paragraph [0001]). The invention aims to provide an improved method and computer system for displaying of tabular data which enables an intuitive and user-friendly display to be generated for time-variant data (description, paragraph [0009]). According to the description, in the prior art no intuitive

display format for time-variant data was known. Moreover, using tables wider than the window space available to display them posed problems for users (description, paragraphs [0002] to [0008]).

The application considers data describing entities, e.g. real-world objects such as buildings, that are modelled in the computer. An entity (e.g. all modelled buildings) may correspond to the data in a single table (description, paragraphs [0019] and [0020]). A specific object (e.g. a specific building) is an entity instance. The properties ("parameters" in the language of the application) of the modelled objects such as the sizes of areas in a building are modelled as entity attributes. An entity attribute often corresponds to a column in the table representing the respective entity. In the real world the properties of some of the modelled objects may change over time, i.e. they are time-variant (description, paragraph [0021]).

The application starts from given tabular data representing entities and their time-variant attribute data as follows: attributes of an entity instance have "parameter values" having associated valid time intervals, i.e. time intervals during which the parameter (attribute) value is valid (description, paragraphs [0021] to [0026]; Figure 2).

The application proposes determining a disjoint partition of a given observation time interval so that during each determined time interval of this partition the parameter values for selected parameters of the entity remain constant (time-invariant) for all instances of the entity (description, paragraph [0030]; Figure 4). In other words, the time intervals are determined by the points in time when the validity of a

value of a selected parameter of at least one entity instance changes. The determined time intervals are then used as keys in an index (a look-up table: see Figure 7 and paragraph [0043]). The index associates a determined time interval with an associated data record which indicates a subset of the table containing parameter data which is time-invariant during the considered time interval.

Users can select a determined time interval using a generated menu or another selection element of a graphical user interface. Then the index is used to generate a table containing a subset of the given tabular data containing parameter data which is time-invariant during the selected time interval. Finally, the generated table is displayed (paragraph [0043], Figures 5 and 6).

Main request

3. *Inventive step - document D3*

3.1 Document D3 discloses a computer-implemented method for pointwise temporal visual database browsing (D3, abstract). As the method of claim 1 is directed to supporting the browsing of temporal data in a graphical user interface, document D3 is a suitable starting point for assessing inventive step.

3.2 A schema of a temporal database is disclosed in Figure 3 of document D3. This schema describes attribute-versioned temporal data (for example, the attributes "wage" of the entity employee and the attribute "worksIn" of the entity worker are timestamped sets of values). These timestamps implicitly represent an associated "first time

interval" during which no change to the parameter value occurs. Hence, document D3 discloses the first and second data as specified in claim 1, with the exception that the data is data of a table.

3.3 A database browser is disclosed in section 3 of document D3 on pages 176 to 182 (see Figures 5 to 7 on pages 178, 179 and 181). The browser's user interface is composed of a time-line window and a tree of form-structured windows called snapshot windows. A snapshot window displays either a non-temporal object or a snapshot of a temporal object at a given instant (document D3, section 3.1). In the temporal browser of document D3, the instant with respect to which the object snapshots are determined is the same for all the windows in the tree, and is called the reference instant. As can be seen in Figures 5 to 7, snapshot windows are structured as forms containing one row per property of the visualised object or object snapshot. Each row is composed of two boxes: one labelled with the name of the property, the other labelled with its value at the reference instant. The value of a non-temporal property is always the same regardless of the reference instant. The value of a temporal property at a given instant is equal to the value of its history at that instant (document D3, page 177, fifth paragraph).

3.4 The reference instant is constrained to reside within a given interval called the "temporal browsing range" (document D3, page 177, first paragraph). This range is chosen so as to cover all the instants where at least one of the temporal properties of the object displayed by the main snapshot window (called the main object) is defined. In other words, the temporal browsing range is taken to be the smallest time interval containing all the timestamps within the

temporal property histories of the main object (document D3, page 179, fourth paragraph).

The appellant argued that the reference browsing range of document D3 and the observation time interval as defined in claim 1 were different, as the "observation time interval" covered many instances of an entity, whereas the browsing window of D3, Figure 5, would allow only browsing for a single object worker.

The Board is not persuaded by this argument, because the claim refers to "first data being descriptive of instances of an entity" and because document D3 also shows set-valued attributes descriptive of instances of an entity (see the "workers" or "supervises" attributes in the objects shown in snapshot windows 2 and 3 of Figures 5 and 6, for example). Hence, the temporal browsing range corresponds to the observation time interval as specified in claim 1 (D3, page 179, penultimate paragraph).

3.5 In the browser's graphical user interface, the role of the time-line window is to fix the reference instant (document D3, page 177, second paragraph, and Figures 5 to 7). At the beginning of a session, the reference instant is at the middle of the temporal browsing range. Its position varies thereafter according to the user interactions with the sliders and buttons composing the time-line window.

In its simplest form, the time-line window is composed of a slider (called the main slider) and four buttons placed at the ends of this slider. Two of the buttons (labelled by simple arrows), allow the user to move the reference instant forward or backward by one unit (step). The other pair of buttons (labelled with double

arrows) is used to move the reference instant to the next/previous instant where the value of a given navigation path (called the visualised path) changes. The instants at which the value of the visualised path changes are called change instants. Change instants are visually represented as vertical marks lying within a horizontal line just beneath the main slider (document D3, page 177, second paragraph, and Figures 5 to 7).

3.6 As discussed during the oral proceedings, D3 in section 3.4 on page 182 discloses that computation of the change instants may involve a relatively large amount of data. For instance, in the example of Figure 5, when the visualised path expression is Worker.worksIn.supervisor.wage, computing the change instants involves the following histories: the history of the employee's assembly lines, the histories of the supervisors of each assembly line in which the visualised employee has ever worked, and the histories of the wages of each supervisor appearing within any of the histories referenced in the previous item. Hence, for a worker displayed in the main snapshot window, the computed change instants will involve changes of the assembly line in which this worker worked and changes of the wage of a supervisor of an assembly line in which this worker worked.

The change instants implicitly define time intervals each defined by neighbouring change instants. As the change instants define when the temporal data changes, these "second time intervals" are within the boundaries of at least one of the first time intervals without partly overlapping any of the first time intervals. Moreover, the second time intervals are determined such that during each of the determined second time

intervals all of the parameter values considered remain constant for all of the instances of the entity.

At the oral proceedings, the appellant disagreed with the Board's view that document D3 disclosed the computation of second time intervals. D3 did not disclose that, and how, any second time intervals were computed. Moreover, the change instants were computed only for a single object (the worker) or only for certain semantically related objects along a path, which was different from the application, which calculated second time intervals for unrelated entities. Hence, the change instants and the corresponding time intervals between two consecutive change instants corresponded rather to the first time intervals, i.e. the time intervals defining the temporal validity of attribute/parameter values of the entity instances.

The Board is not convinced by these arguments. It concedes that document D3 explicitly discloses only that change instants, not time intervals, are calculated. However, as discussed during the oral proceedings, the change instants nevertheless implicitly define the second time intervals as the time intervals defined by two consecutive change instants. As already discussed above, D3 explicitly discloses that the histories of several entity instances (different assembly lines or workers) are used to calculate the change instants. Moreover, the historical changes of entity values are not related. For example, the instants when the worker changes assembly lines and when the wage of a supervisor changes are normally not semantically
related. Hence, at least in general, the time intervals defined by the change instants (corresponding to the

second time intervals) do not correspond to the specific time intervals defining the validity of the entity instances' temporal attribute values over time (corresponding to the first time intervals).

3.7 Document D3 implicitly discloses a graphical user interface for stepwise selection of time intervals, since its graphical user interface allows the stepwise selection of change instants by means of the double arrows (see D3, Figure 5, for example) and the selection of a change instant corresponds in the context of the temporal database browser of D3 to a selection of the valid time interval starting at the selected change instant.

Moreover, document D3 discloses the generation and display of a subset of the data in a second table (see the snapshot windows in Figures 5 to 7 of D3). The database browser of document D3 supports the browsing of collections of temporal objects as described in section 3.3 on pages 180 and 181. As illustrated in Figure 7, the user can navigate through a collection of objects by using the arrow-labelled buttons in a snapshot window.

3.8 The claimed invention therefore differs from the method disclosed in document D3 in that the second time interval is explicitly selected and in that it includes the following features:

(i) the data is data contained in a first table;

(ii) the second time intervals are indexed as specified in step b) of claim 1, and the index is used to generate the second table in step e);

(iii) a menu is generated for the selection of the second time intervals as specified in feature c) of claim 1.

3.9 The claim gives no details about an implementation of the first table. Therefore, difference (i) does not contribute to a technical effect as, in the present case, the fact that the data is data in a table does not imply any technical features of the data or the method. Modelling the data as data of a table does not require technical considerations relating to the internal functioning of the computer system. Nor does the particular modelling of data as a table, at least in the present case, contribute to the solution of a technical problem in a technical field such as mechanical engineering. Hence, difference (i) does not provide a technical contribution to the prior art and is thus not taken into account in assessing inventive step (see decisions T 154/04, OJ EPO 2008, 46, and T 49/99 of 5 March 2002).

3.10 Difference (ii) concerns the indexing of the time intervals. As correctly argued by the appellant, the index may improve the efficiency of retrieving the relevant data for the display and thus contributes to an efficient retrieval and display of data when the user selects a second time interval in the graphical user interface. That effect is independent of whether a time instant or a time interval limited by two consecutive change instants is explicitly selected.

3.11 Difference (iii) concerns the graphical user interface. In the graphical user interface disclosed in D3, the user can jump either from one change instant to the next using the buttons labelled with double arrows or to a specific time/change instant by positioning the

slider (D3, Figure 6, page 177, second paragraph). Hence, the claimed menu and the time-line window of D3 offer the user the same functionality for selecting second time intervals, but by means of different elements in the graphical user interface (a menu versus a slider). Hence, difference (iii) implements the same selection functionality through an alternative graphical user interface.

3.12 It follows that differences (ii) and (iii) solve the technical problem of implementing an alternative user interface for navigation through historical data and supporting the efficient retrieval of data valid during the (implicitly) selected time interval.

3.13 The appellant argued that the distinguishing features of the invention interacted to provide the effect of allowing a user to quickly and concurrently navigate "snapshot states of entity instances". The objective technical problem would be "finding possible use case scenarios where a graphical user interface with the slider as disclosed in D3 is of any use."

The alleged effect is however already known in part from document D3, which shows, for example in Figures 5 to 7, concurrently navigating through time for multiple entity instances (such as instances of the assembly line, worker and supervisor entities). The Board accepts that the generation and use of an index contribute to quick navigation, but this is properly reflected in the problem as formulated by the Board. Consequently, the Board is not convinced that the problem formulated by the appellant is to be used in the problem-and-solution approach.

3.14 At the filing date, the generation of a menu in a graphical user interface was well-known, and the application (see paragraph [0041]) does not explain in detail how this generation is implemented. Consequently, the Board judges that it was an obvious alternative to replace the slider of document D3 with a menu for selecting time intervals.

The use of indexing for efficient retrieval was common general knowledge, as acknowledged by the appellant at the oral proceedings. Hence, even though D3 itself is silent on indexing, the skilled person trying to provide efficient navigation through time in the browser of D3 would, as a matter of routine development, consider as an implementation option the use of an index to map the selectable time intervals to associated parameter values valid during a respective time interval.

3.15 The appellant argued that the claimed index generation was not obvious, as time intervals, not points in time, were indexed and as the use of a conventional indexing scheme for time intervals was known to be difficult, as disclosed in D1 and D2 (see D2, section 18.2.2, for example).

However, as the data to be displayed does not change between two consecutive change instants and as the second time intervals corresponding to the change instants do not overlap, the skilled person would have recognised that indexing the second time intervals did not involve the well-known difficulties of indexing overlapping time intervals.

Hence, the skilled person could and would have considered indexing the time intervals using a look-up

table or the like without the exercise of inventive skill.

3.16 At the oral proceedings, the appellant argued that the invention would support displays with a small screen size, since, in a second time interval, the displayed values of each column had a predictable length, whereas the number of values over time could be different for different entities, leading to an unpredictable length per column for the full historical data.

The Board is not convinced by this argument, as document D3 already displays the data at a specific reference time point, where only a single value for each object property is shown. Hence, the Board does not see an advantage over D3 with respect to small screens.

3.17 The appellant also argued that the skilled person, when starting from document D3, would not have arrived at the claimed solution. He would rather have considered extending the browser of D3 by adding further sliders in order to display further entities.

The Board doubts that the skilled person would have added further sliders, as D3 already teaches a different way of displaying collections of objects in section 3.3 and as its idea is to show the state of all displayed entities at a particular time instant. Moreover, as discussed during the oral proceedings, D3 in section 2.3 on page 176, second paragraph, mentions a known system for browsing temporal relational databases, i.e. tabular data. Hence, document D3 contains a hint on how to browse a data table containing temporal data: a snapshot of the browsed table is displayed, and the user has the possibility of

navigating through time using a scroll bar. Hence, the skilled person would have considered displaying multiple entity instances associated with a single slider in order to navigate through time.

3.18 The appellant argued that it was artificial to separate the graphical user interface, the query used in this interface and the index for answering the query, as the combination of these elements was needed for a solution.

The Board considers that it was already known from document D3 to provide a graphical user interface for navigation through time based on the change instants and thus based on second time intervals. Starting from such a graphical user interface, it was obvious to support the efficient retrieval of data valid at a change instant or during a second time interval by indexing the second time intervals. Hence, the Board does not agree that there is an artificial separation of features of the solution.

3.19 In its reply to the Board's communication, the appellant argued that the database tables used to store the data in D3 were not disclosed and hence it could not be determined how the data should be indexed, as the indexing would depend on the database tables.

This argument is not persuasive. As the index is generated only after extraction of the data from a table, the indexing does not depend on the storage scheme of the data in the database. Consequently, the database tables are not relevant for the generation of the index.

3.20 It follows that the subject-matter of claim 1 does not involve an inventive step over document D3 (Article 56 EPC).

Auxiliary request i

4. Claim 1 of auxiliary request i essentially differs from claim 1 of the main request in that it introduces the selection of one or more columns of the first table, thereby selecting one or more parameters of the entity (see step a) of claim 1), and amends the determination of the second time intervals to consider the selected parameters (see step b) of claim 1). Moreover, it amends the wording of the step of generating a second table.

Auxiliary request i - inventive step

5. The step of generating a second table in claim 1 of auxiliary request i reads as follows, additions to claim 1 of the main request being highlighted in bold and deletions shown in strikethrough:

"generating a second table (402) containing a sub-set of the **tabular** ~~first~~ data~~, each of the tabular data~~ contained in the first table (200)**, each of the first data** of the sub-set having a valid parameter value (P) during the selected second time interval (V), wherein the index (600) is used to generate the second table (402)".

6. A comparison between the two wordings of the step leaves no doubt that step f) of claim 1 of auxiliary request i and step e) of claim 1 according to the main request express essentially the same step, although

differently worded. This is in line with the appellant's submissions during oral proceedings before the Board. According to the appellant, the amendments relevant for inventive step concerned the introduction of the selection of columns (see steps a) and b) of claim 1). The further amendments were rather clarifications of the wording. Consequently, the Board considers that the amendments to the step of generating a second table do not change its assessment of the inventive merit of the subject-matter of claim 1.

7. As to the introduction of the step of selecting columns (see step a) of claim 1) and the consideration of the selected columns for determining time intervals according to step b), the appellant argued at the oral proceedings that the invention allowed a user first to select columns for display and then to display content limited to the selected columns efficiently by means of an index which was generated only after the selection had been made. The index was based on the second time intervals, which changed depending on the selection. This approach was very different from the use of indexes in traditional database management systems, where an index was created by a system administrator, for example, before the user started to query the database. The claimed solution was also very different from the solution for the display of tabular data in spreadsheet software as described in the application's background section.

7.1 The Board agrees with the appellant that document D3 does not disclose that the user selects columns of a table in order to select parameters for display. Hence, the amendments in steps a) and b) relating to the selection of parameters introduce further features

distinguishing the invention from document D3.

7.2 These differences allow users to select the data to be displayed according to their subjective wishes. In other words, they relate to the selection of content that is to be presented to the user. For the technical functioning of the system, however, it is not relevant which columns are selected or even if all or only a subset of the columns are selected. Consequently, the Board considers that the wish to select columns for presentation does not contribute to the solution of a technical problem (see also decision T 1834/10 of 25 February 2015, Reasons 5).

As to the appellant's argument that the second time intervals are redefined by selecting columns, the Board agrees that the selection influences the second time intervals. However, that the set of data to be displayed influences the second time intervals is already known from document D3, which discloses that the path to be visualised determines the set of data to be selected from the database for display and which considers the relevant time-variant data of all objects of the visualised path (D3, section 3.4). For example, in the system of D3, selecting a shorter path containing fewer objects to be visualised will reduce the amount of data to be displayed and will result in fewer change instants and thus a different set of second time intervals.

The claim does not specify how the selection of columns is performed, and so, apart from the mere automation, no non-trivial technical contribution relating to an implementation of the selection in a computer can be recognised.

Moreover, the selection of columns does not credibly contribute to the solution of the problem of displaying a predetermined set of data on a small screen size, as it does not contribute to the presentation of the predetermined set of data in a manner that is particularly suited to a small display. The invention does not adapt the manner of presentation specifically to a small screen, but rather leaves it to the user to select a subset of the data for display. Allowing the user to make a selection according to his subjective wishes does not contribute to the technical character.

7.3 Moreover, the fact that the data to be displayed is tabular data with columns is a further difference to document D3, which is concerned with object data. However, a skilled person could easily adapt the object database browser disclosed in D3 for tabular data having columns where, for example, a row corresponds to an object instance and the object's properties correspond to the columns. A selection of columns then corresponds to a selection of object properties, which simply results in the omission of certain fields in an object's box in the display. Hence, the skilled person could and would adapt the browser known from document D3 to tabular data and to the selection of columns without the exercise of inventive skill.

7.4 As to the appellant's argument that the solution was different from the use of an index in a traditional database management system, the Board accepts that the claimed subject-matter does not concern the generation and use of an index to support the extraction of data from a database. The index is instead specifically generated to support efficient access to data to be displayed when the user selects a second time interval.

However, the skilled person would consider implementing, in the system of document D3, an additional index in order to support efficient access to data by time interval, as the full set of data to be visualised has to have already been retrieved from the database management system in order to compute the change instants (D3, section 3.4). Moreover, the use of indexes such as look-up tables is not limited to database management systems, but rather is normal practice in programming. Hence, the skilled person trying to support the efficient display of data in the system of D3 would not create another index in the database, but would instead index the data already retrieved from the database.

8. It follows that the subject-matter of claim 1 lacks inventive step (Article 56 EPC).

Auxiliary request ii

9. Claim 1 of auxiliary request ii essentially differs from claim 1 of auxiliary request i in that it introduces the feature

"e) providing a selection component (408, 410) of a graphical user interface (112) for stepwise selection of second time intervals (V)".

Auxiliary request ii - inventive step

10. At the oral proceedings, the appellant submitted that the amendments made in auxiliary requests ii and iii served essentially to clarify the claims, but introduced no changes in substance.

11. As detailed above for the main request, document D3 already discloses the stepwise selection of second time intervals by allowing the user to jump to the next/ previous change instant via the buttons labelled with double arrows in the time-line window (D3, page 177, second paragraph; Figures 5 and 6).

12. As the Board does not see that claim 1 of auxiliary request ii introduces a further distinguishing feature over D3, its conclusions concerning the subject-matter of claim 1 of auxiliary request i also apply to the subject-matter of claim 1 of auxiliary request ii. Hence, the subject-matter of claim 1 of auxiliary request ii lacks inventive step (Article 56 EPC).

Auxiliary request iii

13. Claim 1 of auxiliary request iii differs from claim 1 of auxiliary request ii in that in step d) it adds the text "of a graphical user interface" after the word "menu", in step e) of claim 1 it amends the text "of a graphical user interface" to "of the graphical user interface" and in step g) it amends the text "to generate the second table (402)" to "for generating the second table".

Auxiliary request iii - inventive step

14. The Board agrees with the appellant that the amendments introduced with claim 1 of auxiliary request iii essentially provide some clarification of the subject-matter of claim 1 of auxiliary request ii. The amendment whereby the menu is part of a graphical user interface does not lead to a different assessment, as document D3 already discloses a graphical user interface, and the Board, in the context of the

appellant's higher-ranking requests, has already interpreted the term "menu" in the sense of a menu of a graphical user interface. It follows that the subject-matter of claim 1 of auxiliary request iii lacks inventive step (Article 56 EPC).

Conclusion

15. As none of the appellant's requests can form the basis for the grant of a patent, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Nachtigall P. San-Bento Furtado

Decision electronically authenticated