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Datasheet for the decision of 11 February 2015

Case Number: T 0538/09 - 3.5.07

Application Number: 04716917.2

Publication Number: 1602043

IPC: G06F17/50, G06F3/033

Language of the proceedings: EN

Title of invention:
System and method for dynamic propagation and display of graphical edits

Applicant:
Siemens Product Lifecycle Management Software Inc.

Headword:
Dynamic graphical edits/SIEMENS PRODUCT LIFECYCLE

Relevant legal provisions:
EPC Art. 54(2), 56, 113(1)

Keyword:
Right to be heard - violation (no)
Document made available to the public (yes)
Inventive step - (no)

Decisions cited:
T 0750/94, T 0151/99, T 0763/04, T 1134/06

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

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Case Number: T 0538/09 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 11 February 2015

Appellant: (Applicant)	Siemens Product Lifecycle Management Software Inc. 5800 Granite Parkway, Suite 600 Plano, TX 75024 (US)
Representative:	Maier, Daniel Oliver Siemens AG Postfach 22 16 34 80506 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 21 October 2008 refusing European patent application No. 04716917.2 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	R. Moufang
Members:	P. San-Bento Furtado
	M. Rognoni

Summary of Facts and Submissions

I. The applicant (appellant) lodged an appeal against the decision of the Examining Division refusing European patent application No. 04716917.2. The application concerns graphically editing a three-dimensional object in a history-based computer-aided design (CAD) system.

The decision was announced on 24 September 2008 at the end of oral proceedings conducted in the absence of the appellant. The written reasons were dispatched on 21 October 2008.

II. The Examining Division decided that the subject-matter of claim 1 of the main request was not new and that of the dependent claims was not new or not inventive. The subject-matter of independent claim 1 of the auxiliary request did not involve an inventive step.

Document D1 was taken as closest prior art:

D1: Sohrt W., "Interaction with Constraints in Three-Dimensional Modeling (Master's Thesis)", March 1991, University of Utah, Salt Lake City, Utah, USA.

The following documents were also cited in the search report:

D3: Hsu C. et al., "A Constraint-based Manipulator Toolset for Editing 3D Objects", Proceedings of the Fourth Symposium on Solid Modeling and Applications, Atlanta, GA, May 14-16, 1997, New York, ACM, US, vol. SYMP. 4, pages 168 to 180, 14 May 1997;

D4: Sohrt W. and Brüderlin B. D., "Interaction with constraints in 3D modeling", Symposium on Solid

Modeling Foundations and CAD/CAM Applications, Austin, TX, USA, pages 387 to 396, 5 June 1991.

The first examiner is the author of document D1 and the first author of document D4.

III. With letter dated 13 October 2008, received by the EPO by fax on that date and by post on 18 October 2008, the applicant submitted that it had come to its attention that the examiner had the same name as the author of document D1. It asked for clarification of the matter and raised doubts as to the date of publication of the thesis. In a telephone conversation on 14 October 2008 the examiner confirmed that he was the author of the thesis and stated that, even though he could not give an absolute guarantee that it had been published immediately, it surely had been soon after its submission. In the minutes of the telephone consultation the examiner added a remark mentioning that document D1 had been cited several times.

IV. In the notice and 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 main request or of the auxiliary request, both filed with letter dated 22 August 2008 and considered in the appealed decision.

With the statement of grounds of appeal the appellant complained about procedural matters. It questioned the public availability of document D1 at the priority date and the objectivity of the first examiner in interpreting document D1. It submitted two declarations by Mr. Jeffery E. Delmas dated 21 February 2009, described as "Witness Statement from an independent person skilled in the art". The appellant also appears

to have alleged that the right to be heard had not been observed.

V. In a communication accompanying the summons to oral proceedings the Board found that the complaints with respect to the conduct of the procedure seemed to be unjustified and that none of the requests appeared allowable. In the preliminary view of the Board, the subject-matter of the independent claim of each of the requests did not involve an inventive step.

In the preliminary opinion of the Board there appeared to be convincing proof of the public availability of document D1 before the priority date. The Board introduced printouts showing bibliographic information regarding document D1 retrieved using the online library services of the University of Utah.

Additionally, in the communication the Board referred to documents D5 and D6 which cite document D1:

D5: Alberti M. A. et al., "Modelling Constrained Geometric Objects with OBJSA Nets", Concurrent OOP and PN, LNCS 2001, Springer-Verlag Berlin Heidelberg, pages 319 to 337, 2001;

D6: "Handbook of Computer Aided Geometric Design", Edited by Farin G. et al., Elsevier Science B. V., Amsterdam, The Netherlands, 2002, cover page, page with editorial information, pages xvii, xviii, 526, 541.

VI. With a letter of reply the appellant provided information regarding the qualifications and professional experience of Mr. Delmas and submitted arguments in response to the preliminary view of the Board.

VII. Oral proceedings were held on 11 February 2015. At the end of the oral proceedings the chairman announced the Board's decision.

VIII. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request or, alternatively, on the basis of the auxiliary request, both filed with letter dated 22 August 2008.

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

"A method of graphically editing a three dimensional object in a history-based computer aided design system, the method comprising:

receiving a selection of a feature of the three dimensional graphical object, wherein the three dimensional object comprises a plurality of features that are related chronologically in a dependency tree, and wherein the feature has at least one downstream feature that is downstream of the selected feature in the dependency tree;

receiving an event indicating the beginning of an edit process for the feature;

displaying an updated three dimensional graphical object including any changes to the feature and changes to the at least one downstream feature; and

repeating the step of displaying an updated three dimensional graphical object multiple times before an event indicating the end of the edit process is received."

X. Claim 1 of the auxiliary request reads as follows:

"A method of graphically editing a three dimensional object in a history-based computer aided design system, the method comprising:

receiving a selection of a feature of the three dimensional graphical object, wherein the three dimensional object comprises a plurality of features that are related chronologically in a dependency tree, and wherein the selected feature has at least one downstream feature that is downstream of the selected feature in the dependency tree;

receiving an event indicating the beginning of an edit process for the feature;

solving constraints for the edit process, including constraints for the at least one downstream feature;

displaying an updated three dimensional graphical object including any changes to the feature and changes to the at least one downstream feature; and

repeating the steps of solving constraints and displaying an updated three dimensional graphical object multiple times before an event indicating the end of the edit process is received."

XI. In the contested decision, the Examining Division was of the opinion that the subject-matter of claim 1 of the main request was not novel over the prior art disclosed in document D1. The system of document D1 was also to be considered a "history-based CAD system", because the chronological sequence of operations was automatically transformed into a corresponding dependency tree.

The Examining Division further held that the subject-matter of claim 1 did not involve an inventive step even if document D1 was not taken into account. It was obvious to want the "live" dragging preview of affected objects, if the speed of hardware and software allowed

it. Claim 1 did not disclose technical means for achieving that speed.

The subject-matter of claim 1 of the auxiliary request did not involve an inventive step over the disclosure of document D1. It was obvious for the skilled person that in order to update dependent objects the constraint solver might have to be run multiple times during the interactive operation. Document D1 disclosed that the constraint solver was run for a "live" dragging update of dependent objects. The skilled person would consider repeatedly performing the step described in document D1 of running the solver during dragging, thus arriving at a solution as set out in the claim.

XII. In the grounds of appeal the appellant stated that it did not believe that a useful deliberation had taken place in the oral proceedings conducted by the Examining Division in the absence of the applicant. According to the minutes the deliberation had taken five minutes. The basic right under Article 113(1) EPC for the applicant's case to be demonstrably heard was not forfeited by non-attendance, as indicated by decision T 763/04.

In the appellant's opinion there was no direct proof that document D1 in its entirety had been available to the public. The examiner had stated that copies of the thesis had been handed in to the University of Utah in March 1991 but could not provide any proof as to when the document was made available to the public. Where novelty was alleged, the burden of proof invariably lay with the party claiming that the information was available to the public before the relevant date, and in the present case it lay with the Examining Division.

The standard of proof should be high. The appellant cited several decisions of the boards of appeal to support its case.

Furthermore, the appellant felt that the first examiner, as author of document D1, could be reading too much into it. His work for his Master of Science and his published scientific papers showed that he had inventive ability and hence could not properly take on the mantle of the skilled person when reading document D1. Therefore, a witness statement from an independent person skilled in the art had been provided.

Whilst the appellant did not accept that document D1 had been proved to be prior art, argumentation was provided regarding inventive step in the light of it. According to the appellant, starting from either document D1 or document D3 as closest prior art the skilled person would not arrive at the claimed invention. The claimed invention related to a history-based system for updating a CAD model during editing whereas the teaching of document D1 used a geometric constraint solver for updating the model after editing. The invention solved the problem of providing an alternative CAD method for updating a CAD model. The solution was not obvious in view of document D1, which did not make any reference to history-based systems. Document D3 taught away from the use of such systems. Hence the claimed invention was inventive.

XIII. At the oral proceedings before the Board the appellant maintained its comments regarding procedural matters but confirmed that it was not requesting reimbursement of the appeal fee.

Reasons for the Decision

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

Right to be heard

2. In the grounds of appeal the appellant alleged that the examination proceedings had not been conducted properly in the context of Article 113(1) EPC and the "partiality" of the first examiner. In oral proceedings before the Board the appellant did not withdraw these allegations.

3. In the grounds for appeal the appellant stated the following with respect to the duration of the deliberation of the Examining Division:

"The need for the other members of the Examining Division to hear the applicants'[sic] case is particularly important in the current case since the applicant's letter of 18 October 2008 points out to the EPO that the partiality of the Primary Examiner is in question."

Under the heading "Partiality of Primary Examiner" the appellant also mentioned the letter of 13 October 2008 expressing the applicant's concerns regarding the reading of document D1 by the first examiner as its author.

Since there is no letter dated 18 October 2008, it can be assumed that in both cases the appellant

was referring to the same letter dated 13 October 2008 and received by post at the EPO on 18 October 2008.

Also the applicant's question regarding the availability of the closest prior-art document D1 was posed for the first time in said letter and discussed in a telephone consultation with the first examiner on 14 October 2008.

3.1 The Board notes that the oral proceedings took place already on 24 September 2008. On that day the decision refusing the patent application was announced. Since this decision could not be changed later by the Examining Division the applicant's letter of October could not be taken into account by the Examining Division in the written reasons for the decision.

3.2 Moreover, the short duration of the oral proceedings in absence of the appellant is not sufficient to conclude that the deliberations of the Examining Division failed to observe the applicant's right to be heard. The communication annexed to the summons to oral proceedings was signed, and therefore presumably reviewed, by all three members of the Examining Division. It can also be assumed that the Examining Division had prepared the case in advance of the oral proceedings. Given that the appellant did not appear, there were no new arguments or submissions to take into account, and the Examining Division was in a position to quickly reach a conclusion without violating the right to be heard.

4. The appellant argued that the first examiner, holding a Master's degree in the area of technology of the present invention and as author of document D1 and of scientific papers in the same field, had inventive

ability and could not properly assess how the skilled person would interpret document D1.

The Board disagrees and observes that many patent professionals hold degrees, for example PhDs, in the areas of technology in which they work. This is no obstacle to a competent assessment of the abilities of the skilled person.

Furthermore, only the reasons given by the Examining Division are relevant, not the person of the examiner. The Examining Division gave a substantiated reasoning for its interpretation of document D1.

5. Therefore, the Board cannot discern any violation of the right to be heard.

Public availability of document D1

6. In the above-mentioned letter of 13 October 2008 and in the appeal proceedings the appellant questioned whether document D1 in its entirety had been available to the public at the priority date. The appellant was of the opinion that the burden of proof of publication of document D1 lay with the Examining Division.

7. In the grounds for appeal the appellant argued that the standard of proof for deciding whether a document was available before the priority date was high, especially where lack of novelty was at issue. The appellant cited several decisions of the Boards of Appeal. The most relevant of those decisions for the present case is T 750/94 (OJ EPO 1998, 32). The Board will additionally refer to the more recent decision T 151/99 of 24 October 2001.

7.1 In decision T 750/94 the Board had to establish whether a document was made available to the public before the priority date of the application (reasons 1). According to the decision, "the more serious the issue the more convincing must the evidence be to support it". The Board held that the evidence which points in favour of a means of prior publication must be weighed and assessed, mentioning that evidence indicating that prior publication was unlikely should also be taken into consideration. The decision also emphasises that the reliability of the source of evidence must always be considered (reasons 8). The Board concluded that having regard to all the available evidence it was equally possible that the document had been received or not received by a subscriber before the priority date (reasons 11). The document was therefore not to be considered part of the state of the art (reasons 14).

7.2 The case of decision T 151/99 is similar to the present one. The relevant document D1 was a master's thesis presented at Washington University. The patentee argued that document D1 had not been available to the public before the priority date: the evidence failed to prove that the thesis was public and since it had been supported by four companies it was highly probably confidential (point 2.1 of T 151/99). However, the Board in T 151/99 decided on the evidence at its disposal that document D1 had been made available to the public before the claimed priority date. It considered that it would *a priori* appear highly plausible that papers submitted to obtain an academic degree were not confidential. Furthermore, since another pre-published document (D3) cited the relevant document D1, the Board was of the opinion that it was overwhelmingly probable that document D1 had been made

available to at least one member of the public before the claimed priority.

8. In the present case, the cover page of document D1 includes the sentence "A thesis submitted to the faculty of The University of Utah in partial fulfillment of the requirements for the degree of Master of Science". A consultation of the online library services of the University of Utah, as explained in the Board's communication (see Section V above), returned bibliographic information about a "Thesis (M. S.)" meeting the description of document D1 and further information including bibliographic details, e. g. the number of 103 pages and indexing information extracted from the bibliographic databases used by the system.

The bibliographic information, including "**Imprint** 1991", "**Creation Date**: 1991" and "**Publisher**: Thesis (M. S.)--Dept. of Computer Science, University of Utah, 1991", corresponds in all details to document D1.

According to T 750/94, and also to T 1134/06 of 16 January 2007 (point 4.2), an important criterion in evaluating evidence is the reliability of the source. The Board regards the University of Utah and, in particular, its library services, as a reliable source of information about publications, especially of documents written by students and researchers of the university.

As in T 151/99, the Board finds it highly plausible that an academic thesis is not confidential. Besides, document D1, as well as the results of the online consultation, do not provide any indication that the

circulation of the thesis was restricted or in any way confidential.

From the above evidence it seems already very probable that document D1 was made available to the public soon after its submission as master's thesis in 1991 and before the priority date of the present application twelve years later in 2003.

9. Additionally, the thesis was cited several times before the priority date of the present application, as explained by the first examiner in the minutes of the telephone conversation dated 14 October 2008. It was cited for example in documents D4, D5 and D6.

9.1 Document D4 is a research paper published in 1991 having as first author the author of document D1. It cites the master's thesis of document D1 and has very similar passages, including some cited in the novelty analysis of the appealed decision. In particular, it describes the same system, which was developed in the research work for the master's degree, showing similar examples of interaction, modelled objects and display results. Therefore, the features and functionality of the system were presented in detail in document D4 and in the corresponding symposium in 1991. The Board also concludes from this evidence that document D1 was most probably made available to interested readers of document D4 in 1991.

9.2 In document D5, the authors cite document D1 with reference [12] on page 319, the references being listed on page 336. Document D6 cites document D1 in Chapter 21, titled "Parametric Modeling" and authored by Hoffmann and Joan-Aringo, see pages 526 and 541. The

authors of these research papers most likely had access to the thesis.

9.3 The circumstances of the present case are therefore quite similar to those of decision T 151/99 (see point 2.9). As in that case, the Board is convinced that these references in D4, D5 and D6 make it overwhelmingly probable that D1 had indeed been made available to the public before the priority date.

10. As a final point it should be noted that, even though the appellant questioned document D1 as prior art, it did not provide any evidence to suggest document D1 was not publicly available in its entirety before the priority date.

11. From the above the Board concludes that the evidence at its disposal is convincing proof of the public availability of document D1 before the priority date of the present application. Document D1 therefore constitutes prior art according to Article 54(2) EPC relevant for the question of inventive step under Article 56 EPC.

The invention

12. The application relates to the dynamic propagation and display of graphical edits in feature- or history-based modeling systems and, in particular, to improving user feedback during graphical edits of a model (see title, abstract and paragraph [0009] of the international publication).

An object is represented by a "feature tree" or "dependency tree", a data structure reflecting how the solid shape of the object has been created as a

sequential list of "features, states, or events" (paragraphs [0004] and [0023]).

In order to improve the graphical feedback while a user edits a model, the system dynamically propagates each incremental edit through the dependency tree in order to display real-time updates to the graphic representation as the updates are being made. By updating the image without waiting for the user to complete his edit, graphical feedback during the editing process is improved (paragraph [0022]).

Main request - inventive step

13. It is common ground that document D1 discloses a method of graphically editing a three-dimensional object in a CAD system, including the steps of receiving a selection, receiving an event and displaying an updated object essentially as claimed (see also the last paragraph of section XII above). As explained in the decision under appeal, those features are described on pages 52 to 54. Document D1 also discloses on page 46 that a three-dimensional object comprises a plurality of features related in a group hierarchy. Figure 6.10 of page 47 depicts such a hierarchy for a model of a robot finger. It is clear from pages 46 and 47, and page 54, fifth full paragraph, that a group hierarchy reflects dependencies and therefore is a dependency tree including downstream and upstream features.

13.1 The appellant argued that document D1 did not disclose two features of the claim: a history-based computer-aided design system where the features are related chronologically in a dependency tree, and repeating the step of displaying before the event indicating the end of the edit process is received.

The Board acknowledges that document D1 does not disclose a history-based CAD system in the sense that it does not explicitly describe storing chronological information.

Regarding the second feature of dynamic display, the Board disagrees with the interpretation of document D1 by the appellant. In the Board's view, the system of document D1 also updates the display of the object during dragging, i.e. before the user releases the mouse button.

In this point the Board follows the analysis of document D1 by the Examining Division. The last paragraph of page 54 reads: "To interactively move a specific portion of the arm, the user selects that portion, so it is displayed with its handles, and drags the appropriate handle. The dependent parts (subgroups) automatically move along with it." In the decision the Examining Division reasoned that the skilled person would interpret that passage as meaning that dependent objects were updated during the dragging motion. This interpretation was further supported by the citation of the two-dimensional simulation program ThingLab in section 2.1.3 on pages 4 and 5, in which the constraint solver was split into two phases (as was also done in the system described in page 57 et seq.) to make it fast enough for "interactive constrained dragging of graphical objects".

13.2 From the above the Board concludes that the subject-matter of claim 1 differs from the method of document D1 in that the system is a history-based system.

13.3 In the Board's view, this distinguishing feature is not inventive. It brings about the known advantages of history-based systems.

For the purposes of the method of the invention, the dependency tree of document D1 is very similar to that of a history-based system. In the claimed step of displaying an updated object including any changes to the edited feature and its downstream features, an update of a downstream feature only has a visible effect if it depends on the edited upstream feature. As stated in the contested decision, "pure chronological creation order of unrelated objects does not cause a visible update effect if the first-created object is modified".

The application does not refer to any technical problem specifically solved, in the context of the dynamic display of model changes, by the storage of the "chronological sequence of steps employed to construct the solid shape" in place of the dependencies between the features. The original claims did not explicitly specify a history-based system. The description only mentions briefly, in paragraphs [0001], [0004], [0005], [0009] and [0023], aspects related to the CAD system of the invention being history-based.

The appellant argued that in history-based systems the user could always go upstream in the chronological order of creation of the features to modify an upstream feature or to visualise an intermediate geometry of an object. However, these are only generally known advantages of history-based systems, independent of the issues of dynamic display of changes to a model.

As acknowledged in the application (see paragraphs [0004] to [0008]), history-based systems were known. The skilled person was acquainted with the benefits of such a system. The Board does not recognise a further technical advantage achieved by the combination of the history-based system with the other features of the claim. It would therefore be obvious for the skilled person to adopt the method of document D1 in a history-based system, in order to profit from the known advantages of such systems.

14. The Board therefore concludes that the main request does not fulfil the requirements of Articles 52(1) and 56 EPC.

Auxiliary request - inventive step

15. Claim 1 of the auxiliary request differs from that of the main request in that the feature "solving constraints for the edit process, including constraints for the at least one downstream feature" was added, and that the feature "repeating the step of displaying ..." was amended to "repeating the steps of solving constraints and displaying ...".

15.1 The system of document D1 also discloses solving constraints for the displaying process, for example on pages 54 to 60. The feature is disclosed first with regard to previous systems on page 4, section 2.1.3, where it is stated that a constraint solver is divided into two phases in order to support "interactive constrained dragging of graphical objects". The constraint solver is optimised so that only phase two of the solving process has to be repeated during dragging, as can be read from pages 8 and 54 to 62. Page 8, first paragraph, states that the constraint

solver of another 3D modeller is "too slow for interactive use". Pages 54 to 62 describe the newly developed system, interactive moving updating of dependent parts (page 54, last paragraph), and the constraint solver including two phases (page 57), and explain that only the second phase of the solver is run for modifications of parameters and in an animation shown in Figure 7.5 on page 62 (see also page 60).

The Board follows the contested decision in finding that the skilled person would know, based only on common knowledge, that it could be necessary to run the constraint solver multiple times during the interactive operation in order to update dependent objects in the context of the method of document D1.

15.2 From the above reasoning the Board concludes that the subject-matter of claim 1 of the auxiliary request does not involve an inventive step (Articles 52(1) and 56 EPC).

Written statements

16. In advance of the oral proceedings the appellant provided information regarding the qualifications and professional experience of the author of the written statements Mr. Delmas. It follows from those submissions that Mr. Delmas is a skilled person in the field and can be expected to be able to assess what would routinely come to the mind of the skilled person when considering documents D1 and D3.

The first statement reviews documents D1 and D3. Regarding document D1 the expert concludes "I can[not] see no clear problem suggested by this document". If he

were to develop the taught system further, he would develop the geometric constraint solver.
In the second statement Mr. Delmas comments on whether he thinks the invention of the present application would routinely come to mind when considering documents D1 and D3. The invention was distinct from the disclosures of documents D1 and D3 in that it was directed to a history-based CAD system and interactively displayed the features during an edit. It appeared that the display in those prior-art systems was updated after the edit. Documents D1 and D3 did not disclose downstream features. The claimed invention was an alternative method of CAD modelling. This alternative solution had not been obvious for him when he had read documents D1 and D3.

In the opinion of the Board, the statements do not provide sufficient evidence to counter the arguments given above; they simply repeat or complement the argumentation of the representative. The written statements confirm the analysis of the prior art by the appellant and give a similar reasoning. The relevant arguments have been dealt with in the discussion of inventive step in points 13 to 15 above.

Concluding remarks

17. The appellant did not request reimbursement of the appeal fee (see section XIII). The Board nevertheless notes that it is clear from the explanation in points 2 to 5 above that no procedural violation occurred and that the conditions for reimbursement of the appeal fee are not met already for this reason (Rule 103(1)(a) EPC).

18. Since none of the requests is allowable, 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