BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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File Number: T 833/91 - 3.5.1

Application No.: 86 109 711.1

Publication No.: 0 213 347

Title of invention: Simulation of computer program external interfaces

Classification: G06F 9/44

D E C I S I O N
of 16 April 1993

Applicant: International Business Machines Corporation

Headword:

EPC Articles 52(1), (2)(c)(d), (3)

Keyword: "Exclusions from patentability (yes) - programmer's activity involving mental acts; programs for computers; presentations of information" - "The contribution made to the art by the only novel features is not technical"

Catchwords

The contribution made to the art by the only features which are novel against the citation cannot be regarded as technical. The dynamic modification of the external interfaces displayed by interactive communication of the user with the computer neither solves a technical problem nor changes the principal internal working of the computer nor has a technical effect. No contribution to the art outside the field of matters excluded from patentability can therefore be recognised.

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number : T 833/91 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 16 April 1993

Appellant : International Business Machines Corporation
Old Orchard Road
Armonk, N.Y. 10504 (US)

Representative : Tubiana, Max
Compagnie IBM France
Département de Propriété Industrielle
F - 06610 La Gaude (FR)

Decision under appeal : Decision of the Examining Division of the European Patent Office dated 21 May 1991 refusing European patent application No. 86 109 711.1 pursuant to Article 97(1) EPC.

Composition of the Board :

Chairman : P.K.J. van den Berg
Members : W.B. Oettinger
F. Benussi

Summary of Facts and Submissions

I. The appeal contests the decision, dated 21 May 1991, of the Examining Division to refuse the European patent application No. 86 109 711.1 filed on 15 July 1986 (publication number 0 213 347).

The reason given for the refusal was that the subject-matter of Claim 1 filed on 7 February 1991 is not patentable (Article 52(1) EPC). More particularly, the claimed interactive method for dynamically simulating a computer program would fall within the exclusions from patentability defined in Article 52(2) EPC. Still more specifically, it was considered that all features but one in that claim are disclosed in prior art document

D1: PROCEEDINGS of the 7TH INTERNATIONAL CONFERENCE ON SOFTWARE ENGINEERING, 26-29 March 1984, Orlando (Florida), pages 198-206

and that the only innovation distinguishing the claimed method from D1 would lie in a field excluded from patentability by Article 52(2)(c) and no technical effect could be seen resulting from this innovation which would make the claim allowable in the light of Article 52(3).

A similar conclusion was stated, referring to a preceding communication, for the dependent claims.

II. The appeal was lodged, and the respective fee paid, on 13 June 1991 with a request that the appealed decision be reversed.

On 20 September 1991, the Appellant filed a Statement of Grounds and requested that a patent be granted on the basis of the claims filed with that Statement.

III. These claims, filed under the heading "Claims for Appeal" consist of "I. Method Claims" 1 and 2 and "II. System Claims" 1 and 2. In the absence of any statement to the effect that these pairs of claims should be regarded as constituting the Appellant's main and auxiliary request respectively, the Board takes them as constituting together the Appellant's (only) request.

Renumbered, for this reason, consecutively in accordance with Rule 29(5), second sentence, EPC, and "dots" having been replaced by the Board with letters (a) to (p) denominating the "dotted" steps or features, these claims are worded as follows:

"1. An interactive method for dynamically designing a set of external interfaces for a simulated computer application program, on a display device of a programmed digital computer including preassigned memory locations to store predefined data tables, said method including:

(a) drawing on said display device, the appearance of interfaces for said simulated application program;

(b) processing said drawn interfaces to derive therefrom the information on the display, convert said information into said predefined data and store these into said tables;

(c) entering predefined data establishing logical relationships linking together drawn interfaces to provide said set of external interfaces;

(d) processing said entered logical relationships and deriving therefrom logical relationship data and storing these into said tables;

(e) processing said table data to generate an executable set of instructions for generating the set of external interfaces for the simulated application program;

(f) executing said set of instructions for displaying said set of interfaces, and, during said execution, enabling selectively and dynamically modifying any displayed interface upon entry of a command by a user while saving said execution process; and,

(g) deriving modified data and storing these into buffer memory locations for further dispatching into said data tables upon confirmation of said modifications;

whereby the complete set of data for generating the executable set of instructions for displaying and controlling the external interfaces, together with data relative to the simulated application program, are being generated and stored."

Claim 2 is a dependent method claim referring back to Claim 1.

"3. A system for interactively and dynamically generating external interfaces for a simulated application program to be used with a programmable digital computer including a display, memory means and input means for entering data into said computer, said system including:

(h) an application simulator for simulating application programs;

(i) memory locations connected to said application simulator, said memory locations being individually arranged to store predefined data tables;

(j) means for drawing interfaces on said display, for deriving therefrom predefined data and storing these into tables;

(k) means for inputting into said system, data establishing logical relationships among selected stored external interfaces and deriving therefrom a set of logically interconnected external interfaces for said application program;

(l) means for monitoring and dynamically processing said inputted data under said application simulator control, for deriving therefrom table data and dispatching and storing these data into said tables;

(m) means for processing table data to derive therefrom executable instructions;

(n) means for executing said executable instructions and displaying said set of external interfaces;

(o) means for selectively modifying displayed external interface(s) while dynamically saving said execution operations;

(p) means for deriving modified data, storing these until confirmation of the modifications and then updating said tables content accordingly;

whereby the complete set of data for deriving therefrom the set of program instructions executable to generate the

desired application program external interfaces are being generated."

Claim 4 is a dependent system claim referring back to Claim 3.

IV. In respect of these amendments, the Appellant only stated that the claim(s) have been redrafted. Subsequently, he referred to the claimed subject-matter as "a method (or a system)" and "a method (and system)".

In support of his submission that the claimed method and system relate to inventions within the meaning of Article 52(1) and not to matter excluded, as such, by Article 52(2)(c) and (3), he argued, in essence, as follows:

For the execution of application programs, there is a need for establishing a user/machine "dialog". This dialog is achieved through "external interfaces" controlling screens, displays and processing the inputted data to manage the application program operations. If required, the external interfaces re-display one of a set of predetermined messages. The invention is meant to solve the problem of designing and testing such external interfaces without having to go to the trouble of writing program instructions directly and without having to do the designing once the application program is developed. By such a timing, the process would not enable testing and redefining, if required, the application program functionalities and its user friendliness capabilities. As a solution to this problem, the invention provides a means which acts as a system or "tool" (including a program) for monitoring and controlling any interface design. The method for generating software based means required for generating external interfaces, while simulating the

application program, also gives visual indications about events occurring in the I/O device of a processor; this is recognized in decision T 115/85 (OJ EPO 1990, 30) as relating to a technical problem and being an invention, referring also to T 208/84 (OJ EPO 1987, 14).

In addition, the claimed method is interactive and dynamic in the sense that the user can stop it at any time, change the interfaces being designed, and then continue. Consequently, the user, which is a non-programmer, is enabled to generate the interfaces (screens and controls) dynamically without having to exit the process, compile data and come back to the interface design, i.e. without having to interrupt the interface generation per se. The invention is therefore not a program per se, but rather a method (or system) for generating files operating as a program without a programmer having to write down both the application program and the external interfaces program instructions, compiling those instructions, and executing these to see and test the interfaces as well as the application program functions, and start again the whole process whenever modifications to the interfaces or application have to be brought. This is also to be considered in the light of decision T 121/85 of 14 March 1989 (reason 5, third paragraph, first sentence).

Reasons for the Decision

1. Admissibility

The appeal (cf. item II) is admissible.

2. Amendments (Article 123(2) EPC) and basis of the decision (Article 113 EPC)

2.1 In accordance with Article 113(2) EPC, the Board has to consider and decide the appeal on the basis of the claims constituting the Appellant's request, i.e. those filed on 20 September 1991.

2.2 Claim 1 has, as the Appellant put it, only been "redrafted". Its content, i.e. subject-matter, has not been changed, despite extensive changes in its wording, with respect to the claims rejected by the decision under appeal. More specifically, the Board understands the features of Claim 1 (cf. paragraph III) as derivable from the features of the former claims as follows:

- the introductory passage of Claim 1 from the introductory passages of Claim 1 filed on 7 February 1991;

- step (a) also from the introductory passages of former Claim 1;

- step (b) from former Claims 5 and 7;

- step (c) from the first method step of former Claim 1 and from former Claim 2;

- step (d) from the introductory passages and the second method step of former Claim 1;

- step (e) also from the second method step of former Claim 1;

- step (f) from the second, third and fourth method steps of former Claim 1;

- step (g) also from the third and fourth method steps of former Claim 1 and from former Claim 7;

- the additional explanatory phrase in Claim 1 was apparently implicit in the fourth method step of former Claim 1, in the second step of former Claim 5 and in the third step of former Claim 7.

Even though, in the details of its features, the impression prevails that there might be slightly more in Claim 1 than there was in the former claims, for the purposes of the issue to be decided, i.e. exclusion from patentability, it can be assumed that this discrepancy, if there is one, does not have an effect on the outcome.

2.3 Claim 3 (cf. paragraph III) defines a system in functional terms whereby the individual functions correspond, in substance, to individual steps of the method claimed in Claim 1. Seen the other way round, Claim 1 defines, in terms of method steps, the function, in operation, of means constituting the system claimed in Claim 3.

On this basis, the Board understands the features of Claim 3 as being derivable from the features of former claims as follows:

- the introductory passage from the introductory passages of former Claim 1;

- feature (h) as being only of a terminological nature and not adding anything of a technical nature to what is derivable from the introductory passage;

- feature (i) from the second method step in former Claim 5 in conjunction with Claim 1;

- feature (j) also from former Claim 5;

- feature (k) from the first method step in former Claim 1;

- feature (l) from former Claims 5 and 7 in conjunction with the second to fourth method steps of Claim 1;

- feature (m) from former Claim 6;

- feature (n) from former Claim 7, in particular its last feature;

- feature (o) from former Claim 1, particularly from its last two features;

- feature (p) in particular from former Claim 7 in conjunction with Claim 1;

- the additional explanatory phrase as derivable from Claims 1, 5 and 7 as in the case of Claim 1 (cf. above)

As to a possible discrepancy, in the details, between the features of Claim 3 and the former claims, the same applies as has been stated above with respect of Claim 1.

2.4 The decision under appeal dealt with Claim 1 filed on 7 February 1991 in detail and with dependent Claims 2 to 7 filed on that day by referring to the Communication of 9 October 1990. In that Communication, the Examiner considered Claims 2 to 9 as originally filed, stating that the dependent Claims 2 to 7 did not appear to contribute any technical effect to the art, their subject-matters being either known in the prior art (Claims 2, 3, 6), obvious alternatives (Claims 4, 5), or (where there is apparently innovation) excluded from patentability (Claim 7).

Claims 2 to 7 filed on 7 February 1991 correspond, in substance, to the original Claims 2 to 7.

In effect, therefore, Claims 1 and 3 now on file are based on claims (filed on 7 February 1991) which the Examining Division considered in the decision under appeal.

Thus, the condition for the issue of a decision on the appeal in the sense of Article 113(1) EPC is met.

2.5 Claims 1 and 3 being thus based on claims (filed on 7 February 1991) which were clearly based on the original claims, it follows furthermore that the amendments resulting in these claims are admissible in the sense of Article 123(2) EPC.

3. The issue of "non-invention" (Article 52(1), (2), (3) EPC)

3.1 Subject-matter is not an "invention" for which in accordance with Article 52(1) a patent can be granted, inter alia, if it is a computer program as such, following Article 52(2)(c), last alternative, in conjunction with 52(3). Other matters excluded in this way from patentability are, inter alia, schemes, rules and methods for performing mental acts as such, following Article 52(2)(c), first alternative, in conjunction with 52(3), and presentations of information as such, following Article 52(2)(d) in conjunction with 52(3). (For the present case, it is not relevant that Article 52(2) lists further exclusions and that this list may not be exhaustive.)

However, whether subject-matter claimed falls within the exclusions of Article 52(2) and (3) or not is not always a straightforward case to determine (as was the case with the original Claims 8 and 9, meanwhile abandoned, of the application in suit).

But the Board's case law has developed some criteria for allowing such an issue to be decided with the necessary certainty. The consideration on the basis of these criteria is, first, that all the different matters or activities listed in Article 52(2) would seem to have in common that they imply something non-technical and, secondly, that from Article 52(3) it would appear to be the intention of the Convention to permit patenting (only) in those cases in which the invention involves some contribution to the art in a field not excluded from patentability; cf. e.g. decision T 38/86 (OJ EPO 1990, 384, in particular headnote II and reason 12). In the particular case of that decision, the claimed method of automatically detecting and replacing linguistic expressions exceeding a predetermined understandability level and a respective text processing system were found not to make an inventive technical contribution to the art (cf. reason 13). In T 208/84 (cf. paragraph IV above) the claimed method of digitally processing images and a respective apparatus, and in T 115/85 (cf. again IV) the claimed method for displaying a message indicating an event in a text processing system, were found to make a technical contribution to the art. In T 121/85 (cf. IV), the claimed automatic spelling checking and correction system and method were found not to make a technical contribution to the art (cf. reasons 5 and 6).

In accordance with the consistent case law, it can be said that the technical contribution to the art rendering a claimed invention an invention in the sense of Article 52(1) and thus patentable, may lie either in the problem underlying, and solved by, the claimed invention, or in the means constituting the solution of the

underlying problem, or in the effects achieved in the solution of the underlying problem.

3.2 The claimed invention in the present case is concerned with the designing of, or developing of, application (or user) programs for computers, i.e. it addresses a program designer, or programmer. It makes use of so-called "external interfaces" displayed on a display device, these interfaces simulating the application program. The external interfaces are intended to allow the application program to be tested during designing.

Programs for computers as such are expressly excluded from patentability and a programmer's activity would involve performing mental acts and therefore also fall within the exclusions according to Article 52(2)(c). Furthermore, displaying data is presentation of information excluded as such from patentability by Article 52(2)(d). It follows from Claims 1 and 3, that the "external interfaces" displayed represent "data" stored in tables.

It is therefore considered that in the generic part of the independent claims (cf. paragraph III) defining the general environment in which the claimed invention is to be applied, no feature making a contribution in a field not excluded from patentability can be identified.

3.3 In the decision under appeal, all features of Claim 1 then on file with the exception of dynamic modification of the interfaces during the simulation process were stated to be disclosed in D1. The Appellant in his Statement of Grounds of Appeal, when referring to said exception, does not seem to dispute that the other features were indeed known from D1.

On the basis of said statement, the Examining Division considered what kind of contribution it is that the said exception, i.e. the dynamic modification of the interfaces during the simulation process, makes to the art. It arrived at the conclusion that the distinguishing feature lies in a field excluded from patentability and that there is no overall technical effect to be seen resulting from the innovation which would make the claim allowable in the light of Article 52(3).

Considering now re-drafted Claim 1 (cf. III) in this respect, a similar statement can apparently be made:

Features (a), (b), (c), (d) and (e) do not seem to include, apart from features known from D1 and apart from matters falling under the exclusions of Article 52(2), any feature which is both new and technical, thus making a contribution to the art in a field not excluded from patentability. As far as there is anything in these features, for instance in (b), (d) or (e), which gives the impression of being technical, this must be regarded as conventional computer functioning.

Feature (f) does include a new element, this element being the one stated in the decision under appeal not to be known from D1.

The contribution to the art made by feature (g) is directly related with the novel element in feature (f).

However, the contribution made by features (f) and (g) cannot be regarded as technical. The dynamic modification of the external interfaces displayed by interactive communication of the user with the computer neither solves a technical problem nor changes the principal internal working of the computer nor has a technical effect. The

problem it solves concerns the manner in which the programmer develops an application program. The internal working of the computer implies conventional functions; even if what is displayed during a programming session may be different from what is displayed in a conventional programming process, the claimed method makes use of conventional tools such as menus. And the effect is again only that the programmer's mode of working is changed.

Similarly, no contribution to the art outside excluded fields can be detected in the additional explanatory phrase terminating Claim 1.

3.4 Considering now Claim 3 re-drafted as a system claim (cf. III), again a similar conclusion as for Claim 1 can be drawn:

Feature (h) appears only to be terminological and feature (i) corresponds to a feature in the introductory passage of Claim 1.

Feature (j) appears to correspond to features (a) and (b), feature (k) to feature (c), feature (l) to feature (d), feature (m) to feature (e), features (n) and (o) to feature (f), feature (p) to feature (g), and the "whereby" sentence to the one in Claim 1.

Thus, the novel contribution to the art would be contained in feature (o) and this contribution would be the same as in the case of Claim 1. However, it is considered not to be technical and thus not to be a contribution in a field not excluded from patentability.

3.5 In the Statement of Grounds, the Appellant contended that the problem solved by the claimed invention is technical.

In support of this submission, he referred to the need for establishing a two-way man/machine dialogue achieved through "external interfaces" and to the particular interest in a method (or system) for conveniently designing and testing the external interfaces in respect of their user friendliness.

However, as explained in paragraph 3.3 (and 3.4), the problem of making the program designing and testing method more convenient for the programmer does not seem to be of a technical nature.

3.6 The Appellant furthermore referred to the effect, achieved by the claimed method enabling testing and redefining, of ensuring the application program functionalities as well as its user-friendliness capabilities.

However, although it may be true that an application program developed by a method as claimed is "better" in respect of functioning and user-friendliness than conventionally developed programs, this is not necessarily a technical effect.

More particularly, the Appellant referred to the claimed method being, first, interactive and, secondly, dynamic. But these properties of the claimed method (and system) are both related to the program developer's new way of programming and not to any new internal working of the computer. That, while the system is interactive, the inputted items are processed and the data derived therefrom are stored would seem to be normal computer functioning. And that, while the system is executing the simulated interfaces, the user can stop at any time, change the interfaces being designed, and then continue, would seem to be a novel feature of the program

developer's activity but normal in computer systems employing menus.

3.7 The Appellant's argument that the claimed method is to be considered in the light of decision T 115/85 (cf. IV), is unconvincing. The subject-matter at the basis of that decision was a method for displaying a message indicating a specific event which may occur in the input/output device of a text processing system. From the Board's statement, in that decision, that giving visual indications automatically about conditions prevailing in an apparatus or system would be basically a technical problem (reason 7) it would appear that the said "event" or "condition" was itself considered to be technical. That the system was a text processing system apparently played no role, i.e. linguistic or other non-technical aspects were not involved. Even though the decision does not specify said "event" or "condition" by way of examples, it is therefore to be concluded that they were basically of a technical nature such as, for instance, an event calling for an error message.

The present case may also imply the necessity of displaying a message, and the use of a special routine triggered by an event for calling up said message. But this is not the claimed invention. According to Claims 1 and 3, and as confirmed by the other application documents, the claimed method (and system) concern the interactive and dynamic generation of external interfaces for a simulated application program which is basically non-technical as explained above (paragraphs 3.2 to 3.4). If anything like an "event" or "condition" is displayed,

this is only a single one of all the method steps or system functions making up the claimed invention, and this single step or function is not further specified by technical features, i.e. can be performed in conventional manner (for instance, by features like those disclosed in the application to which decision T 115/85 pertains).

3.8 As to the term "Application Simulator", used in feature (h), it may be added that no new hardware is to be recognized in the "system" so termed. It is clear from the description (e.g. page 4, lines 5-7) that the AS is itself implemented by a program.

3.9 The Board is, in these circumstances, unable to accept the Appellant's arguments but rather concludes that the subject-matter of Claims 1 and 3 does not make any contribution to the art in a field not excluded from patentability and is not, therefore (Article 52(2) and (3) EPC), to be regarded as an "invention" within the meaning of Article 52(1) EPC.

4. Conclusion

For these reasons, Claims 1 and 3 are not allowable.

The dependent method and system Claims 2 and 4 respectively fall with the respective claims upon which they are dependent, since a request can only be considered as a whole.

Moreover, there is no indication that these claims would go beyond matter which is also either conventional or excluded from patentability. No purpose would therefore be served if the Appellant were given a further opportunity to restrict his claims or file an auxiliary request.

In effect, therefore, the decision under appeal must be confirmed.

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Kiehl P.K.J. van den Berg