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Aktenzeichen / Case Number / N° du recours : T 6/83 - 3.5.1

Anmeldenummer / Filing No / N° de la demande : 79 101 907.8

Veröffentlichungs-Nr. / Publication No / N° de la publication : 0 006 216

Bezeichnung der Erfindung: Improvements in digital data processing systems.

Title of invention:

Titre de l'invention :

Klassifikation / Classification / Classement : G06F 15/16

ENTSCHEIDUNG / DECISION

vom / of / du 6 October 1988

Anmelder / Applicant / Demandeur : IBM Corporation

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence : IBM/ Data processor network

EPU / EPC / CBE Art. 52(1), (2) and (3), Art. 56

Schlagwort / Keyword / Mot clé : "Technical problem (yes)"; Inventive step
(yes)"
"Computer-related invention"

Leitsatz / Headnote / Sommaire

An invention relating to the coordination and control of the internal communication between programs and data files held at different processors in a data processing system having a plurality of interconnected data processors in a telecommunication network, and the features of which are not concerned with the nature of the data and the way in which a particular application program operates on them, is to be regarded as solving a problem which is essentially technical. Such an invention therefore is to be regarded as an invention within the meaning of Article 52(1) EPC.

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Case Number : T 6/83 - 3.5.1



D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 6 October 1988

Appellant : International Business Machines Corporation
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USA

Representative : Appleton, John Edward
IBM United Kingdom Limited
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Decision under appeal : Decision of Examining Division 065 of the
European Patent Office dated 4 August 1982
refusing European patent application
No. 79 101 907.8 pursuant to Article 97(1) EPC

Composition of the Board :

Chairman : P.K.J. van den Berg
Members : J.A.H. van Voorthuizen
P. Ford

Summary of Facts and Submissions

- I. European patent application No. 79 101 907.8 filed on 12.06.79 (publication No. 0 006 216), claiming a priority of 15.06.78 (GB) was refused by a decision of Examining Division 065 dated 04.08.82. That decision was based on Claims 1-3 filed on 26.03.81.
- II. The reason given for the refusal was that the subject-matter of the claims lacked inventive step having regard to the book of Harold Lorin, "Parallelism in Hardware and Software", 1972, pages 25-27, 153-183.
- III. The Appellant lodged an appeal against this decision on 16.09.82 and the appeal fee was paid on the same date. A Statement of Grounds was submitted on 01.12.82.
- IV. In the course of the procedure several communications were issued by the Board and oral proceedings were held on 17.07.86, in which the main point of discussion was the question whether the present application provided the solution to a problem which could properly be qualified as being of a technical nature. Furthermore the Board stated that in its opinion the ACF/VTAM General Information Manual GC 38-0254.3 published by IBM (January 1978) disclosed the nearest prior art.
- V. In his written submissions and in the oral proceedings the Appellant substantially argued as follows:

A data processing system consisting of a plurality of data processors interconnected as nodes in a telecommunication network is known in itself, (cf. the VTAM brochure). When initiating a transaction on a local terminal in this system the user has the possibility of using programs and

data files (resources) which are kept in a remote processor. This requires, however, a fairly complicated local application program in particular when file integrity is involved, meaning that changes to certain (protected) data files are only allowed if corresponding changes are made to other files (e.g. debit and credit booking in a banking system). The VTAM system however, does not support concurrent connections between a terminal and more than one application program. The present application aims at an improved cooperation between the interconnected nodes by the use of a so-called "mirror-transaction" which provides a user with the possibility of using remote resources without the need to know and write into the local program the actual location of the resources, which locations are stored in tables at the nodes. Thereby an automatic function request shipping is effected.

Furthermore the mirror transaction transforms the request received at the remote node into a local transaction at that node which provides the possibility of repeating the same operation there so that a simultaneous cooperation between more than two nodes can be realised ("chained mirror"). At the same time by this transformation all nodes maintain their own control of operations and are not subject to outside interference over the integrity of their data files. A major advantage of the mirror-transaction is that it makes the "house-keeping" transparent to the user. The Appellant contended therefore, that the present application discloses the solution to a technical problem. The known system does not provide for simultaneous on-line processing using several data files located at remote processors. The system according to the application provides an essentially new function and a fundamentally new way in which the nodes forming the network cooperate automatically for all kinds

of application programs. The invention is not concerned with the organisation of the data to be operated upon nor with the programs controlling these operations. The Appellant finally argued that inventions can be made at various levels of sophistication and that even if at a basic level the technical working of the processors is not changed such cannot be in itself a ground for refusal.

With regard to the issue of inventive step the Appellant submitted that none of the cited documents could suggest to the person skilled in the art the data processing system forming the subject-matter of the claims.

VI. The Appellant requested the grant of a European patent on the basis of Claims 1-3 filed on 10.08.88, the first claim of which reads as follows:

1. A data processing system having a plurality of data processors interconnected as nodes in a telecommunication network, at least one of said nodes including an input/output device, means at each node to process a transaction request originating at a local input/output device using data stored at the node by setting up and executing a transaction process associated with each particular request, each processor having an independent control system, characterised in that each of the control systems includes:

means to determine when a transaction process requires the use of a resource held at another node, to generate, in such a case, a further transaction request and to transmit this further transaction request to said another node preceded by an identifier indicating to the remote node that the further transaction has to be treated as if it had been generated locally;

means to receive such a further transaction request from a requesting node, to transform such a received request into a form suitable for local processing and to operate on a received and transformed transaction request as if it were a local request by setting up and executing a transaction process associated with the received and transformed request and then to transmit the results of the transaction process using the local resource to the requesting node.

Reasons for the Decision

1. The appeal complies with Art. 106-108 and Rule 64 EPC and is, therefore, admissible.
2. A data processing system as stated in the preamble of Claim 1 is known from ACF/VTAM General Information Manual GC 38-0254.3. In this prior art system each application program using interconnected data processors had to have special control code if it was going to communicate with a processor remote from the one on which the application is run. The VTAM document states that once a terminal is connected to an application program, the terminal can communicate with only that application program until released by the program and that concurrent connection between a terminal and two application programs is not supported. This means also that data entered at a terminal cannot readily be used to perform concurrent updates on several files, each managed by a different application program.
3. The present invention aims at removing the said limitations and provides a data processing system in which the processors and their intercommunication facilities are so controlled and coordinated that a transaction request

in an application program involving the use of several programs and data files held at remote processors can be automatically run as one operation from a terminal of any one of the processors.

4. The proposed improved communication facilities between programs and files held at different processors within the known network do not involve any changes in the physical structure of the processors or the transmission network. The necessary control functions for this purpose, referred to as "mirror transaction" in the description of the present application, are effected by appropriate software. This software forms in fact an extension to the services provided by the Customer Information Control System (CICS) known from the CICS System/Application Design Guide SC33-0068.0, published by IBM (February 1977). This system is essentially a transaction oriented data base management concept effected by a set of programs providing the general facilities required for a great number of application programs in the area of commercial and other administrative activities.
5. It can be concluded from the foregoing that the invention is concerned with the internal workings of the processors and the transmission equipment irrespective of the nature of the data and the way in which a particular application program operates on the data files. In so far the proposed control program is comparable to the conventional operating programs which are required for any computer to control and coordinate its internal basic functions and thereby permit the running of a number of programs for specific applications.
6. The Board holds the view that an invention relating to the coordination and control of the internal communication between programs and data files held at different

processors in a data processing system having a plurality of interconnected data processors in a telecommunication network, and the features of which are not concerned with the nature of the data and the way in which a particular application program operates on them, is to be regarded as solving a problem which is essentially technical. Such an invention therefore is to be regarded as an invention within the meaning of Article 52(1) EPC.

Even if the control function in the system according to Claim 1 would have to be considered as situated at a higher organisational level, namely that of an on-line Database/Datacommunication environment, the Board is satisfied that the problem to be solved can properly be regarded as being of a technical nature.

Claim 1 is neither directed to a computer program nor to any other subject-matter excluded as such from patentability under Article 52(2). Its subject-matter is therefore not barred from protection by Article 52(2) and (3) EPC.

7. It appears to the Board that the multi processor system described in the VTAM-Brochure constitutes the prior art closest to the invention. This known system does not provide for automatic shipping of transaction requests to remote nodes nor for the handling of a request at a remote node as if it were a request initiated locally at that node. Having also considered the other prior art documents which have been cited in the course of the proceedings, the Board has come to the conclusion that none of them would suggest to the person skilled in the art to apply to the known system the combination of means described in the characterising portion of the claim.

8. More specifically, the book by Lorin "Parallelism in Hardware and Software" (1972), which was mainly relied upon by the Examining Division in its decision to reject the application, discusses in Chapter 11 the development and projection of several possible multicomputer system configurations including such systems in which geographically dispersed processors are associated through communication lines. The main problems considered in general terms are those of task and data storage sharing between the processors in the network both for the case where the processors have equal capabilities for data processing and storing and for the case where they differ in these respects. The attention is focussed on the ASP (Attached Support Processor) system in which a main processor supervises overall installation scheduling, and the processors are interconnected by a channel-to-channel adaptor, the basic function of which is the synchronisation of data transfer over the channels. The primary objective of this system is a division of labour with the smaller less powerful processor performing I/O and other support roles. Cooperation between the processors involves essentially interrupt procedures and all action for data transfer is initiated by the main processor. In the opinion of the Board, however, no suggestion can be found in the description of the ASP system which would lead the person skilled in the art to a data processing system as defined in Claim 1. In particular, there is not the slightest suggestion of the feature that the further transaction request transmitted to a remote node is preceded by an identifier indicating to the remote processor that this transaction has to be treated as if it had been generated locally.

9. In its communication of 11.08.80 the Examining Division raised the objection that the computer programs necessary to carry out the invention were not sufficiently

disclosed, without, however, stating any specific reasons for this belief. In letters of 3.12.80 and 26.03.81 the Applicant maintained the view that such programs could be written by programmers using normal programming skill so that the invention could be put into practice without the need for further inventive activity. The Board is prepared to accept these submissions.

10. In view of the foregoing considerations the Board is of the opinion that Claim 1 in its present form is not open to objections and the same applies to the dependent Claims 2 and 3 which concern further embodiments of the invention.

11. In view of the fact that the description of the present application frequently refers to the CICS and VTAM control systems and makes extensive use of terminology borrowed from these systems, the Board is of the opinion that the invention could only be understood and carried out by a person skilled in the art having at his disposal the two IBM publications referred to on page 4 of the description. This means that these documents relate directly to the disclosure of the invention and therefore must have been available to the public before the priority date of the application.

The Board noted the Appellant's statement in his reply of 10.08.88 to the effect that this prior art had been available before the priority date of the present application at least to IBM customers on a non confidential basis.

12. The amendments to the description filed on 10.08.88 serve to place the present invention in the proper perspective with respect to the prior art. They are not open to objection.

13. Additionally the Board considers it necessary to complete the references in the description to the IBM documents as follows:

P. 4, line 4, after "(GH20-1028-4)" add: "(Fifth edition September 1973)";

P. 4, line 10, replace "(GC38-0254)" by:
"(GC38-0254-3) (Fourth edition, January 1978)"

P. 16, line 29, after "No. SC33-0068-0" add: "(first edition, February 1977)".

and to correct the following typing errors:

Claim 1 line 10 replace "resourse" by "resource" and "generated" by "generate"

Claim 2 line 3 replace "organised" by "organises"

Description: page 2, line 26 insert "of" between "processing" and "data"
page 4, line 29 replace "resourse" by "resource" and "generated" by "generate"
page 5 delete lines 1-3
page 5 line 18 replace "dta" by "data"
page 6 line 2 replace "be" by "by"
page 7 line 8 "set" should read "sent"
line 9 "complete" should read "completes"
line 19 "follow" should read "follows"
page 10 line 18 "comand" should read "command"
page 12 line 6 "tow" should read "two"
page 15 line 17 "unitl" should read "until"

page 16 line 9 insert between "receiving" and
"without" the word "mode"

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant a European patent on the basis of the following documents:
 - (a) Claims 1-3 filed on 10.08.88
 - (b) Description as amended on 10.08.88 with the proviso that the amendments and corrections indicated in paragraph 13 above are made
 - (c) Drawings as originally filed.

The Registrar:

The Chairman:

S. Fabiani

P.K.J. van den Berg