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Anmeldenummer / Filing No / N° de la demande : 80 300 896.0

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Bezeichnung der Erfindung:
Title of invention:
Titre de l'invention : Raster-scan display apparatus and method of classifying areas of the display field of such an apparatus

Klassifikation / Classification / Classement : G 06 F 3/153

ENTSCHEIDUNG / DECISION

vom / of / du 20 June 1987

Anmelder / Applicant / Demandeur : Sigma Electronic Systems Ltd./University of Surrey

Patentinhaber / Proprietor of the patent / Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence : Classifying areas/Sigma

EPÜ / EPC / CBE Articles 52, 56, 96(2), 112(1), 113(1) Rules 29(1), 67.

Kennwort / Keyword / Mot clé :
- Inventive step (yes) - One part claim (not allowed-
- Reimbursement of Appeal fee (no) -
- Reference to the Enlarged Board of Appeal of the question in how far Examining Divisions and Boards of Appeal are bound by the Guidelines (refused)

Leitsatz / Headnote / Sommaire

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Case Number : T 162/82

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 20 June 1987

Appellant : Sigma Electronics Systems Ltd.
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Decision under appeal : **Decision of Examining Division 065 of the European Patent Office dated 6 July 1982 refusing European patent application No. 80 300 896.0 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. 80 300 896.0 filed 21 March 1980 (publication No. 0 016 651) claiming a priority of 21 March 1979 (GB) was refused by a decision of the Examining Division 065 of the EPO of 6 July 1982. That decision was based on Claims 1-13 filed on 23 February 1982.

II. The reason given for the refusal was that the subject-matter of the independent Claims 1 and 9 lacked inventive step with regard to FR-A-2 393 496; K.S. Fu, "Digital Pattern Recognition", 1976, pp 162, 163; and GB-A-1 405 882.

III. The appellant lodged an appeal against this decision on 27 August 1982. The appeal fee was paid on 30 August 1982. The Statement of Grounds was filed on 25 October 1982.

IV. In communications of 25 March 1985 and 24 April 1986 the Rapporteur of the Board of Appeal set out objections against the then valid claims.

V. In his Statement of Grounds and in the replies to the aforesaid communications the appellant essentially argued that none of the documents cited against the application taken singly or in combination would lead the person skilled in the art to conceiving a raster-scan display apparatus as claimed, which is capable of determining which dot positions on the display are inside a given boundary and which possesses over the prior art at least the advantage that it does not give a wrong result in the case of a boundary which turns back on itself. The reasoning in the decision would partly seem to be based on an incorrect appreciation of the prior art by the Examining Division. It

was stressed in particular that the broad principle of the invention consisting in the determination whether any connected path exists to the seed point (or one of the seed points) is not disclosed by FR-A-2 393 406.

VI. The appellant requested the grant of a European patent on the basis of Claim 1, Version A, filed on 8 October 1985, which reads as follows:

1. A raster-scan apparatus comprising first store means having a plurality of memory locations for storing data representing respective dot positions of a rectangular display field, means operable to store in said store data representing boundary dot positions, second store means having a plurality of memory locations for storing data representing respective dot positions of the display field, the apparatus being characterised in that there are provided classifying means and means operable to define one or more notional dot positions in or adjacent the field as representing a seed point or points, said classifying means being arranged to operate on the basis that the dot positions comprise identical polygons which for establishing a connected path must be interconnected either along their sides or at their corners, said seed point-defining means and said classifying means being arranged to co-operate so as to check, either at right angles to each of the polygon sides or along lines through the polygon corners, whether there exists, from each dot position in the display field in turn to the or one of the seed points, any connected path (as defined herein) which does not include a dot position which is indicated by the corresponding location in said first store means as being a boundary dot position and, if such a path exists, to set the corresponding location in the second store means.

Subsidiarily he requested the grant of a European patent on the basis of Claims 1-11 filed on 20 October 1986 the independent claims of which read as follows:

1. A raster-scan display apparatus comprising store means having a plurality of memory locations for storing data representing respective dot positions of a rectangular display field, means operable to store in said store data representing boundary dot positions, connected in a predetermined connectivity mode, classifying means for determining whether dot positions are inside or outside the boundary and means for storing the results of this determination, the apparatus being characterised in that there are provided means operable to define one or more notional dot positions in or adjacent the field as representing a seed point or points, said classifying means being arranged to operate on the basis that, for establishing a connected path, the dot positions must be interconnected in a fashion dependent in a predetermined manner on the connectivity mode of said boundary dot positions, said seed point-defining means and said classifying means being arranged to co-operate so as to check whether there exists, from each dot position in the display field in turn to the or one of the seed points, any connected path (as defined herein) which does not include a dot position which is indicated by the corresponding location in first store means as being a boundary dot position and, if such a path exists, to set the corresponding location in second store means, said check being carried out by means of one or more scan cycles each comprising a first raster scan of all the dot positions in turn from a first corner of the display field to a second corner diagonally opposite the first corner and then a second raster scan comprising a reversal of the first raster scan, said check for each dot position comprising a check that the dot position is not a boundary dot position and

whether each immediately adjacent dot position which has already been checked during the current scan is a seed point or is stored in said second store, said scan cycle being repeated until the occurrence of a scan cycle during which no further dot positions are set in the second store.

8. A method for classifying areas defined by a boundary in a rectangular display field of a raster-type display and comprising storing data representing respective dot positions of the rectangular display field, storing in said store data representing boundary dot positions, connected in a predetermined connectivity mode, classifying said dot positions as being inside or outside the boundary and storing the results of this determination, the method being characterised by defining one or more notional dot positions in or adjacent the field as representing a seed point or points, classifying said dot positions on the basis that, for establishing a connected path, the dot positions must be interconnected in a fashion dependent in a predetermined manner on the connectivity mode of said boundary dot positions, checking whether there exists, from each dot position in the display field in turn to the or one of the seed points, any connected path (as defined herein) which does not include a dot position which is indicated by the corresponding location in first store means as being a boundary dot position and, if such a path exists, setting the corresponding location in second store means, said check being carried out by means of one or more scan cycles each comprising a first raster scan of all the dot positions in turn from a first corner of the display field to a second corner diagonally opposite the first corner and then a second raster scan comprising a reversal of the first raster scan, said check for each dot position comprising a check that the dot position is not a boundary dot position and whether each immediately adjacent dot position which has

already been checked during the current scan is a seed point or is stored in said second store, said scan cycle being repeated until the occurrence of a scan cycle during which no further dot positions are set in the second store.

VII. The appellant has requested the reimbursement of the appeal fee. This request is mainly based on the allegation that the Examining Division in refusing the application immediately after the receipt of the appellant's reply to the first communication by the Division, has acted against Article 113(1) EPC and the applicable provisions in the Guidelines for Examination (Chapters C IV and VI), which would constitute a substantial procedural violation under Rule 67 EPC.

VIII. To support this request the appellant contends that he had made a serious attempt to meet the objections raised in the communication. Under such circumstance the Guidelines prescribe that if there were still objections required to be met the Examiner should seek further contact with the applicant. It should not be assumed that no serious attempt was made merely because the appellant disagreed with the views expressed in the communication.

IX. Furthermore, the appellant contends that the Examining Division in its decision has put forward arguments based on the citations which were not present in the first communication and were distinctly different from those advanced in the communication. These arguments would constitute new grounds for refusal of the application on which the appellant had not had an opportunity to present comments and thus Article 113(1) EPC would be contravened.

X. Finally, in the appellant's opinion, the Board of Appeal, when reviewing the actions of the Examining Division ought to pay regard to (while not being bound by) the Guidelines as being at least indicative of how the provisions of the EPC might be interpreted.

Reasons for the Decision

1. The appeal complies with Article 106-108 and Rule 64 EPC and is, therefore, admissible.

2. With his reply of 4 October 1985 to the Rapporteur's communication of 25 March 1985 the appellant filed four different versions of Claim 1, labelled A-D. In the second communication of 24 April 1986 it was observed **inter alia** that Version A appeared to be unallowable for lack of inventive step. It was added that Version C, however, would seem allowable subject to certain amendments.

3. A raster scan display apparatus as defined in the preamble of Claim 1 (Versions A and C) is known from FR-A-2 393 496. It is determined for each point of the display in three directions whether a point already whitened is found. Such point can be a point already whitened during a previous scan or a boundary point. If no such point is found, the searching operation is continued until an edge of the picture is detected. These edges, therefore, play the same role as the present appellants "notional seed points", while they act as reference points for the determination of the existence of a connected path not containing a boundary point between the dot considered and the edge.

The apparatus according to this FR patent application contains a store for the boundary points and must of necessity also have means for storing the white points.

4. The disadvantage of the known apparatus is that dot positions lying within a part of the boundary bent back on itself will nevertheless incorrectly be classified as being inside the boundary. According to the characterising part of the Claim Version A this problem is solved by checking whether any connected path exists between each dot position and a notational seed point (or points) which does not include a dot position forming part of the boundary. If the seed point is chosen inside the boundary this checking process results in storing directly all the dot positions lying inside the boundary. If the seed point is chosen outside the boundary it is possible to determine the dot positions lying inside the boundary by a simple detraction procedure. Once the dot positions inside the boundary have been determined, the result can be used for filling in the boundary i.e. to produce on the display a zone limited by the boundary which can be distinguished from its surroundings by virtue of its colour or contrast. This is also the aim of the arrangement described in FR-A-2 395 496.

5. The checking described in the characterising portion of claim Version A in the opinion of the Board constitutes a straightforward application of the general principle disclosed in Fu, Digital Pattern Recognition, page 165, that "(a point) S is inside (a boundary) T if any path from S to the edge of the picture must pass through T," either by determining all dot positions having no such path so that all remaining dot positions must necessarily be inside the boundary or by using the simple reversal that S is inside T if a path exists to a predetermined point inside T which does not pass through T. For these reasons the Board considers that Claim 1 Version A does not involve inventive step and is, therefore, unallowable.

6. The article "A parallel Picture Processing Machine" in IEEE Transactions on Computers, Vol. C-22, No. 12, December 1973, pp. 1075-1087 compares the merits of several types of connectivity with a view to parallel operation in picture processing. It is observed on page 1077, left-column, third paragraph that sequential operations (as used in the present application) are sometimes superior to parallel. To be superior the sequential operations must often use both forward and reverse scanning of the array. This very generally worded passage, however, does not suggest in any way that combined forward and reverse scanning could contribute to solving the problem of incorrect classification of points lying within a part of a boundary bent back upon itself. The Board considers, therefore, that the manner in which the checking is carried out as defined by the further characteristics of Claim 1 filed on 20 October 1986, which relate to the way of scanning, in combination with the characteristics already present in Claim 1, Version A, cannot be regarded as obvious to a person skilled in the art with respect to the cited documents. The same applies to the independent Claim 8.

7. Dependent Claims 2-7 and 9-11 describe particular embodiments of the invention and are not open to objections.

8. The amendments to the description submitted on 23 February 1982 and 20 October 1986 take account of the prior art and of the scope of the claims in their present form. They are not open to objection.

9. Concerning the appellant's request for reimbursement of the appeal fee, the Board first of all has to state that its position with regard to the Guidelines for Examination is governed by Article 23(3) EPC. In application of that Article, the Guidelines do not bind any Board of Appeal.

Article 15(2) of the Rules of Procedure of the Boards of Appeal prescribes only that if in its decision, a Board gives a different interpretation of the Convention to that provided for in the Guidelines, it shall state the grounds for its action if it considers that this decision would be more readily understood in the light of such grounds. A knowledge of the Guidelines is therefore presupposed but they are not binding upon any Board of Appeal. The question whether an Examining Division has applied the Guidelines correctly or not in a particular case is, however, quite different. As is stated in the introduction to them, the Guidelines should be considered only as general instructions, intended to cover normal occurrences. The Examining Division therefore has a certain discretion to depart from the general directives in a particular case. It must, however, in its actions remain within the bounds defined by the EPC. In view also of the provisions of Article 23(3) EPC that the Boards in their decisions shall comply only with the provisions of the Convention, the Board considers that its function is to judge on the facts of the case whether the Examining Division has acted in accordance with the provisions of the EPC.

10. In the present case, in his first communication the primary examiner took a reasoned stand concerning the patentability of the application and suggested a possibility for amending the application so that it would be in a form ready for grant. The applicant in his reply endeavoured to persuade the Examiner to reconsider his stand, but did not indicate any readiness to amend the application on essential points, either in the way suggested by the Examiner or in any other way which he might have preferred, in case the Examiner was not persuaded by the applicant's counter-arguments. It is to be noted, in particular in this context, that the appellant refused to acknowledge the cited documents as state of the

art in the description because he considered that such amendment would be extremely hazardous as carrying the inherent risk that it would create a ground of opposition under Article 100 or for revocation under Article 138 EPC.

11. The arguments concerning the absence of inventive step were based, both in the communication and in the decision on the same documents and differ only in that the reasoning in the decision has been adapted and amplified in order to take fully into account the arguments provided by the appellant in his reply to the communication. The Board is unable, however, to perceive an essential difference between the two reasonings. Consequently, the Board cannot accept the appellant's arguments that the decision is based on grounds on which he had not had an opportunity to comment.

12. In the Board's opinion, the expression "as often as necessary" in Article 96(2) EPC indicates that the Examining Division has a discretion which has to be exercised objectively in the light of the circumstances of each case. In particular, it has to be interpreted as meaning that further invitations to file observations after the first one are required if there is a reasonable prospect that further discussion with the applicant could lead to reconciling conflicting opinions of the applicant and the Examining Division as to the allowability of the application or to the submission of amendments which might meet the objections raised. Of course, this Article does not exclude communication with the applicant in other circumstances but it relieves the Examining Division of any obligation to send communications which on a reasonable, objective, basis could be considered superfluous. The interests of orderly and economic examining procedures may preclude the sending of more than one communication where this would not appear to be likely to lead to a positive result.

13. The Board has previously held that neither Article 113(1) nor Article 96(2) EPC requires that the applicant be given a repeated opportunity to comment on the argumentation of the Examining Division so long as the decisive objection against the grant of a patent remains the same (Case T 161/82, OJ EPO 1984, 551).

14. In view of the general tenor of the applicant's reply, the Board considers that in the present case the Examining Division in deciding to issue a refusal immediately did not abuse its discretion which would have constituted a substantial procedural violation in the sense of Rule 67 EPC.

15. Even if, as the appellant alleges, the reasoning in the communication and the decision would have been at least partially based on an incorrect interpretation of the prior art by the Examining Division, this would not change the situation as an error in interpreting a document could not possibly be regarded as a procedural violation. Technical Board of Appeal 3.4.1 has recently decided that misinterpretation of a letter written by an applicant to the Examining Division concerned constituted an error of judgement and not a procedural violation and this did not provide a basis for ordering reimbursement of the appeal fee (Case T 19/87 Oral Proceedings/FUJITSU, decision of 16 April 1987, to be published).

16. The appellant has suggested reference to the Enlarged Board of Appeal of a question of law concerning the extent to which the Examining Division and Board of Appeal should have regard to the Guidelines in interpreting the provisions of the EPC, such in order to ensure uniform application of the law.

The Board sees no reason for taking up this suggestion since, as is explained in paragraph 9 above, the said general question already appears to be clearly answered by the General Introduction to the Guidelines, paragraph 1.2 as far as the Examining Division is concerned and by Article 23(3) EPC so far as the Board of Appeal is concerned.

Any further questions in this respect can only relate to specific cases which cannot be examined isolated from the facts. They can, therefore, not be submitted to the Enlarged Board (Article 112(1) EPC).

17. The appellant has finally requested to be allowed to present Claims 1 and 8 in one-part form in view of the comprehensive references to the prior art which have been incorporated into the introductory part of the description and referred in this respect to the Guidelines, Part C, III, 2.3b.

18. The Board considers this request unallowable for the following reasons. Rule 29(1) EPC requires the two-part form of a claim wherever appropriate. This Board has already decided in an earlier case (T 13/84, OJ 8/1986, 253-260) that a claim in two-part form is appropriate if there exists a clearly defined state of the art from which the claimed subject-matter distinguishes itself by further technical features. Such is the case in the present application. The extent to which prior art is cited in the description is a matter governed by Rule 27 EPC and in the view of the Board this extent cannot be a determinative factor in deciding the question whether the one-part or the two-part form of a claim is appropriate in a given case.

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 1-11 as filed on 20 October 1986
   (b) Description as amended on 23 February 1982 and 20 October 1986
   (c) Drawings as originally filed.

3. The request for reimbursement of the appeal fee is rejected.

The Registrar: The Chairman:

B.A. Norman P.K.J. van den Berg