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**Datasheet for the decision
of 11 August 2011**

Case Number: T 1169/08 - 3.4.01

Application Number: 01937094.9

Publication Number: 1303830

IPC: G06K 7/10

Language of the proceedings: EN

Title of invention:

Method and device for recording of information

Applicant:

C Technologies AB

Opponent:

-

Headword:

-

Relevant legal provisions:

-

Relevant legal provisions (EPC 1973):

EPC Art. 84, 83

Keyword:

"Clarity - support - (yes)"

"Sufficiency of disclosure (yes)"

Decisions cited:

T 0990/07

Catchword:

-



Case Number: T 1169/08 - 3.4.01

DECISION
of the Technical Board of Appeal 3.4.01
of 11 August 2011

Appellant: C Technologies AB
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Representative: E. Schenck zu Schweinsberg
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 11 February 2008
refusing European patent application
No. 01937094.9 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: B. Schachenmann
Members: P. Fontenay
G. Assi

Summary of Facts and Submissions

- I. The appeal lies from the decision of the examining division to refuse European patent application No. EP 01 937 094.9 because it did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by the person skilled in the art as required by Article 83 EPC 1973. The decision was remitted to the post on 11 February 2008.

The examining division held, more specifically, that feature (d) in then pending claim 1, which related to the step of "*determining the most probable sequence of displacements for the sequence of images*", was far from trivial. In the examining division's judgement, the additional limitations regarding feature (d) recited in dependent claim 8, as to the use of a criterion based on low acceleration, or in dependent claims 9 and 10, concerning the use of error functions, defined specific embodiments of the invention for which the condition of sufficiency was, similarly, not met. Concerning claim 8, the examining division observed that the expression "criterion based on low acceleration" had no well established meaning in the art and was also not defined in the description. With regard to claim 9 and claim 10 depending thereon, it was stressed that the recursive formula defining the error function in claim 10 did not permit to calculate the error value associated to each image capture because the initial values of the parameters intervening in said definition had not been defined, thus making an iterative calculation *de facto* impossible.

II. On 18 April 2008, the appellant (applicant) filed a notice of appeal against this decision. The prescribed appeal fee was paid on the same day and the statement setting out the grounds of appeal was filed on 13 June 2008. The appellant requested that the impugned decision be set aside and a patent be granted according to the claims on file, i.e. on the basis of the set of claims underlying the impugned decision.

III. At the appellant's request, a summons to attend oral proceedings was issued.

On 26 May 2011, in preparation of the oral proceedings, the Board issued a communication pursuant to Article 15(1) Rules of Procedure of the Boards of Appeal (RPBA), expressing its provisional opinion with regard to the request on file. Particular emphasis was put on the issue of sufficiency of disclosure.

In the Board's view, this issue actually encompassed two distinct aspects. The first one concerned the possibility of reproducing the embodiment of dependent claim 10. As had already been pointed out by the examining division, the selection of the initial values of the error function did not appear to be straightforward. The Board observed, in this respect, that neither the values proposed by the appellant in the statement of grounds nor those suggested earlier in the course of the examination proceedings appeared fully satisfactory in order to discriminate between various conceivable movements of the reading device. It was thus doubtful whether the application met the requirements of Article 83 EPC 1973 for the invention, as defined in dependent claim 10.

A second aspect regarding the question of sufficiency of disclosure resulted from the broad definition of feature (d) and related to the possibility of reproducing the method of claim 1 in the whole scope claimed. In the Board's opinion, this aspect was closely related to the questions of support and clarity of independent claim 1 considering that the description consistently associated the determination of conceivable displacements with the evaluation of "a criterion based on low acceleration". This limitation was, however, only reproduced in dependent claim 8. While the Board was inclined to consider that the description indeed appeared to contain sufficient information allowing the skilled person to carry out the method of dependent claim 8, it was unable to identify in the application any clear teaching justifying, in terms of support and sufficiency of disclosure, the broad definition of independent claim 1.

- IV. Under cover of a letter dated 11 July 2011, the appellant filed a new main request and an auxiliary request, taking into account some of the Board's comments with regard to the issues of clarity and support of the claims. The dependent claim directed to the definition of the error function had been deleted in both requests.

- V. Oral proceedings before the Board took place on 11 August 2011 in the presence of the appellant's representative. The appellant requested that the decision under appeal be set aside and a patent be

granted on the basis of claims 1 to 13 as filed during the oral proceedings as sole request.

VI. Claim 1 of the main request reads:

"1. A method for recording a bar code which consists of a plurality of parallel lines of varying thickness, characterized by the steps of

a) capturing, by means of a reading device, a sequence of two-dimensional images of at least portions of the bar code during moving of the reading device across the same;

b) detecting transitions from one color to another of the lines of the bar code in at least a subset of the images;

c) determining, for the transitions of at least a subset of the captured images, coincidences between transitions of an image in relation to the transitions of a preceding image for obtaining conceivable displacements between these images,

d) determining the most probable sequence of displacements for the sequence of images with a criterion based on low acceleration of the reading device; and

e) reconstructing the bar code by means of said sequence of images and said most probable sequence of displacements."

Independent claim 10 reads:

"10. A reading device for recording a bar code, which consists of a plurality of parallel lines of varying thickness, characterized in that the reading device

comprises means for carrying out the method steps of claim 1."

Independent claim 13 reads:

"13. A digital storage medium comprising a computer program for recording a bar code, which consists of a plurality of parallel lines of varying thickness, characterized in that the program comprises instructions for carrying out the steps of the method of claim 1."

Claims 2 to 9, and 11, 12 depend, respectively, on independent claims 1 and 10.

VII. This decision is issued after the entry into force of the EPC 2000 on 13 December 2007. Reference is thus made to the relevant transitional provisions for the amended and new provisions of the EPC, from which it may be derived which Articles of the EPC 1973 are still applicable to the present application and which Articles of the EPC 2000 are to apply. When Articles or Rules of the former version of the EPC are cited, their citations are followed by the indication "1973".

Reasons for the Decision

1. The notice of appeal and the corresponding statement of grounds comply with the requirements of Articles 106 to 108 EPC and Rule 99 EPC. The appeal is, thus, admissible.

2. *Added subject-matter*

2.1 Independent claim 1 results, primarily, from a combination of original claim 1 with the further limitation regarding step (d) of original claim 1 according to which the most probable displacements are determined with a criterion based on low acceleration of the reading device, as recited in original claim 8. The reference to "edges of the bar code" has been deleted and replaced by a reference to "transitions from one colour to another of the lines of the bar code" as resulting from the passage on page 12, lines 17-20, of the published application. Step (c) in claim 1 has been specified, in line with the teaching of the description on page 4, lines 29-35 and, for the expression "coincidenses" (correctly spelled "coincidences"), on page 13, line 26. In this respect, the Board was satisfied that the intermediate generalisation resulting from the selection in feature (c) of the aspect relating to the detection of coincidences of the transitions, while omitting the process steps relating to the acquisition of the corresponding coordinates, was allowable. In the Board's view, the skilled person would have indeed recognised that alternative algorithms for this purpose could have been envisaged without the necessity to determine the actual transitions coordinates.

Similarly, independent claims 10 and 13 derive primarily from original claims 13 and 16, respectively, with the additional amendments discussed above, resulting from the explicit reference in current claims 10 and 13 to the method of claim 1.

2.2 Dependent claims 2 to 7 are based on original claims 2 to 7, respectively. New claim 8 results from a combination of original claims 9 and 11. New claim 9 derives from original claim 12. Original claims 14 and 15 constitute the basis for new dependent claims 11 and 12, respectively; the formulation of the claims having been rearranged for reasons of clarity.

3. *Clarity - Support*

3.1 In the Board's judgement the reference to "a criterion based on low acceleration of the reading device" in feature (d) of claim 1 meets the requirements of Article 84 EPC 1973 as to clarity. It was observed, in this respect, that the use of the relative term "low acceleration" indeed reflects the actual teaching of the present disclosure according to which movements associated with relatively high accelerations are discarded, thus, *de facto* privileging sequences of images associated with lower accelerations. The Board holds therefore that the skilled person would have indeed been able to understand, in the context of the present invention, the meaning of this term which use in independent claim 1 was thus fully supported by the present disclosure and acceptable (cf. Case law of the Boards of Appeal, 6th. edition; II.B, § 1.2.3, last two paragraphs).

The definition of error functions for the determination of the most probable sequence of displacements being explicitly presented as optional (cf. published application, page 5, line 3), the incorporation of this feature in step (d) of independent claim 1 was hence not required.

3.2 Moreover, by specifying in feature (d) of original claim 1 the nature of the criterion which, according to the description, actually permits to identify the most probable sequence of displacement, the claim has been amended so as to incorporate all essential features of the invention. The Board is hence convinced that the extent of protection conferred by the independent claims is adequately supported by the current description.

4. *Sufficiency of disclosure - Content of the description*

4.1 The Board concurs with the examining division in their finding that the sole example actually disclosed in the application is incomplete and that common general knowledge does not suffice to allow its full implementation by the skilled person (cf. point 4.2 below). The objection according to which an embodiment of the invention, as defined in a dependent claim, could not be carried out was, however, withdrawn as a consequence of the deletion of corresponding dependent claim 10. Moreover, since the application documents, considered as a whole, provide sufficient information allowing the reproduction of the claimed invention in its whole ambit, the Board holds that the requirements of sufficiency of disclosure are actually met (cf. point 4.3 below). Finally, the Board concludes that the absence of an example embodying the claimed invention does not constitute *per se* a reason for refusing the application, insofar as the requirements of sufficiency are met (cf. point 4.4 below).

4.2 The recursive formula:

$$e_k = \max[e_{k-1}, (v_k - v_{k-1})(a_k - a_{k-1})],$$

which describes an example of an error function required to determine the most probable sequence of displacements, is not fully defined since the initial values of the parameters e_k , v_k and a_k corresponding, respectively, to the values of the error function, velocity and acceleration for each image capture and intervening in said definition, have not been provided, thus making an iterative calculation impossible.

The board is not convinced that the skilled person would have been able, on the basis of common general knowledge, to complete said teaching and to select the initial values of the error function, as put forward by the appellant.

By setting the parameters e_1 , v_1 , a_1 to zero as suggested in the statement of grounds of appeal, the iterative formula will lead to the result:

$$e_2 = v_2 \cdot a_2, \text{ which is also equivalent to}$$

$$e_2 = (v_2)^2 * 1/\Delta t$$

since, according to the appellant: $a_2 = (v_2 - v_1) * 1/\Delta t$ (cf. applicant's letter dated 4 April 2007), wherein Δt describes the period between two successive image captures.

In the Board's judgement, this selection of values for the initial parameters is, however, not appropriate since this choice would lead to a value of e_2 which will generally exceed the value of the expression

$(v_k - v_{k-1})(a_k - a_{k-1})$ and will thus propagate as the maximum value in all recursions of the error function, which corresponds precisely to the situation that the

error function is deemed to prevent. As a matter of fact, this selection of the initial parameters would make the determination of the most probable movement actually impossible.

In a letter dated 4 April 2007, filed during the examination proceedings, the applicant referred to a further alternative as to the initial values of the variables intervening in the definition of the iterative error function. Assuming, in this case, that the first two image captures are identified by the indexes 0 and 1, the applicant was of the opinion that the skilled person would have, for instance, selected the following values or conditions for the parameters e , v and a :

$$e_0 = e_1 = 0;$$

$$v_0 = v_1;$$

$$a_0 = a_1 = 0.$$

The Board notes that this selection of initial values would, however, lead to the same result of the error function for all the conceivable displacements resulting from the second image capture (corresponding to index 1) since the value of e_1 is predetermined. Furthermore, this selection would lead to the following expression of e_2 :

$$e_2 = (v_2 - v_1)^2 * 1/\Delta t,$$

thus, possibly overestimating the error value for movements with low variation of the acceleration, with the damaging consequence that the value e_2 , then obtained, propagates in all recursions of the error function.

The previous analysis illustrates the fact that the selection of the initial values for the definition of the error function is not trivial and directly affects the behaviour of the error function and thus the reliability of the process of determining the most probable sequence of displacements. Although the selection of the initial values does not require being optimal, it should nevertheless permit to fulfil the claimed purpose.

During the oral proceedings before the Board, the appellant acknowledged that the values proposed so far for the initial parameters were not satisfactory. A third line of argumentation was then put forward. In the appellant's view, the skilled person would have solved this difficulty by simply starting the iterative process with the third image capture. In the appellant's view, even if this approach led to a plurality of conceivable displacements for the three first image captures, the requirement that the following captures fit to the previous ones associated with the fact that sequences associated to relatively high accelerations were discarded, would nevertheless make this solution clearly viable. It was underlined that this approach corresponded to the solution actually implemented in the systems proposed for sale.

However, nothing in the description hints at this solution which can also not be considered straightforward for the skilled person. The Board is also not convinced that the error function so defined would provide fully reliable results. In this context, it was stressed that, depending on the movement of the reading device when capturing the first images, a high

value of the error function propagating to the successive measurements could also not be excluded. The appellant did not dispute this finding but objected that the existence of possible isolated failures did not prevent the method from giving general satisfaction. In case of an impossibility to discriminate between multiple conceivable displacements, the recording process simply needed to be repeated.

In the Board's view, the absence of information as to the actual implementation of the error function would have led the skilled person to consider various possibilities, whether in terms of possible initial values, as initially put forward by the appellant, or by starting calculation of the error function with the third image capture, as finally submitted during the oral proceedings before the Board. All these solutions share a common drawback: the behaviour of the error function is difficult to evaluate depending on the circumstances. It would indeed be strongly influenced by either the initial values of the parameters intervening in the elaboration of the error function or the movement of the reading device when capturing the first images. This sole finding would make a comparison extremely awkward: the reliability of a method being not only dependent on the actual movement of the reading device (i.e. of the hand of the operator), but also on the bar code itself (i.e. the sequence of lines) which is to be read. For these reasons, the Board holds that the implementation of the claimed method on the basis of the error function as defined in the original disclosure required a contribution from

the skilled person which exceeded mere routine work and amounted thus to undue burden.

Confirmation for this position is seen in the fact that the appellant itself apparently had difficulties in reacting to this objection regarding the question of sufficiency of disclosure since three different solutions had been successively proposed as to what was considered to derive in a straightforward manner from the current description for the skilled person when implementing the error function.

- 4.3 Since the dependent claim which explicitly included the definition of the error function has been deleted, the issue to be decided under Article 83 EPC 1973 amounts to determine whether the application documents contained, despite the absence of a complete example actually embodying the invention, sufficient information in order for the skilled person to carry out the invention as defined in independent claims 1, 10 and 13.

The Board concurs with the examining division in their finding that the skilled person would have had no particular difficulties in reproducing steps (a), (b) and (c) of independent claim 1 underlying the decision in suit. The amendments which had been made to claim 1 do not affect the substance of these steps so that the same conclusion applies to steps (a) to (c) of amended claim 1. Similarly, the Board does not identify any reason preventing the skilled person from reproducing feature (e) of current claim 1 on the basis of the present application documents, assuming that he would have indeed been able to determine the most probable

sequence of displacements for the sequence of images as recited in feature (d).

The question of sufficiency of description of the method of claim 1 hinges thus solely on the question whether the skilled person would have been able to carry out step (d) of claim 1. By specifying in this step that the determination of the most probable sequence of displacements is carried out with a criterion based on low acceleration of the reading device, the appellant restricted the claim to the actual teaching of the present disclosure. In this respect, the Board is convinced that the mere evocation of this criterion is, as such, sufficient and that the skilled person would have no difficulties to work out solutions relying on the determination of relatively low accelerations. In its simplest form, the skilled person would have possibly determined conceivable displacements by comparing measured accelerations with threshold values, previously obtained from empirical values or on the basis of experimentation he would have set up himself. In a more sophisticated variation of this basic process, the skilled person would have certainly considered comparing the various measured accelerations with each other so as to retain movements associated with the lowest accelerations. Although incomplete in itself, the example of the error function in the current description would have nevertheless constituted an incentive for the skilled person to develop alternative error functions which would have somehow reflected the acceleration of the reading device and thus constituted a basis for discriminating between various movements of the reading device.

For these reasons, the Board is convinced that the application contained sufficient information allowing the invention, as defined in independent claims 1, 10 and 13, to be performed over its whole scope.

- 4.4 According to Rule 27(1)(e) EPC 1973, the description shall "describe in detail at least one way of carrying out the invention claimed using examples where appropriate and referring to the drawings, if any". The present Board (in a different composition) already decided in a previous case that the purpose of the "examples" evoked in Rule 27(1)(e) EPC 1973 appears primarily to be to complete an otherwise incomplete teaching. As a consequence, the application cannot be refused under this provision if the description is considered to describe, despite the presence of erroneous drawings and the resulting lack of examples actually embodying the invention, "one way of carrying out the invention" (cf. point 3 in decision T 990/07, not published).

Applied to the present circumstances and to independent claims 1, 10 and 13, this principle implies that the incomplete example regarding the definition of the error function and the absence of any other example actually embodying the present invention do not constitute, as such, a bar to the grant of a patent on the basis of the current application. Since, moreover, the Board holds that the requirements of Article 83 EPC 1973 are met (cf. point 4.3 above) the condition that the description describes in detail one way of carrying out the invention, recited in Rule 27(1)(e) EPC 1973, is therefore met. To avoid any misleading later interpretation of the claims, the applicant shall,

however, in the course of the ensuing examination proceedings, ensure that the description is adapted so as to establish without ambiguity that the example of the error function is incomplete and, therefore, does not as such embody the claimed invention.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division for further prosecution.

The Registrar:

The Chairman:

R. Schumacher

B. Schachenmann