

**Internal distribution code:**

- (A)  Publication in OJ  
(B)  To Chairmen and Members  
(C)  To Chairmen  
(D)  No distribution

**Datasheet for the decision  
of 7 July 2011**

**Case Number:** T 0495/07 - 3.5.04

**Application Number:** 03255137.6

**Publication Number:** 1395035

**IPC:** H04N 1/21

**Language of the proceedings:** EN

**Title of invention:**

Memory management for compressed image data

**Applicant:**

Ricoh Company, Ltd.

**Opponent:**

-

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 123(2)

**Relevant legal provisions (EPC 1973):**

EPC Art. 56, 84, 97(1), 111(1)

**Keyword:**

"Inventive step (yes) after amendment"

"Decision re appeals - remittal (yes)"

**Decisions cited:**

G 0010/93

**Catchword:**

-



Case Number: T 0495/07 - 3.5.04

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.04  
of 7 July 2011

**Appellant:** Ricoh Company, Ltd.  
3-6, Nakamagome 1-chome  
Ohta-ku  
Tokyo 143-8555 (JP)

**Representative:** Leeming, John Gerard  
J.A. Kemp & Co.  
14 South Square  
Gray's Inn  
London WC1R 5JJ (GB)

**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 27 October 2006  
refusing European patent application  
No. 03255137.6 pursuant to Article 97(1) EPC  
1973.

**Composition of the Board:**

**Chairman:** F. Edlinger  
**Members:** C. Kunzelmann  
T. Karamanli

## Summary of Facts and Submissions

- I. The appeal is against the decision of the examining division to refuse European patent application No. 03 255 137.6 which was filed on 19 August 2003.
- II. The decision to refuse was only based on the ground of lack of inventive step (Article 56 EPC 1973) of the image processing apparatus according to claim 1 then on file, having regard to document

D5: EP 1 158 764 A2.

This objection had already been raised in a communication dated 25 September 2006 with regard to amended claims filed on 1 September 2006 by the applicant in response to the summons to oral proceedings before the examining division dated 31 May 2006. The communication dated 25 September 2006 also makes a reference to a communication attached to said summons to oral proceedings comprising further objections which, however, were not dealt with in the reasons for the appealed decision or in the obiter dictum concerning the dependent claims.

- III. The applicant appealed. With the statement of grounds of appeal, the appellant filed claims and description pages headed "Auxiliary Request" and a description page headed "Main Request". On page 2 of the statement of grounds of appeal, the appellant indicated the documents on the basis of which the grant of a patent was requested.

IV. The board issued a communication pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA), annexed to a summons to oral proceedings dated 25 March 2011. In this communication the board raised issues under Article 84 EPC 1973. It also indicated its intention to remit the case to the first instance for further prosecution if the ground given in the decision under appeal for refusing the application and the issues under Article 84 EPC 1973 raised by the board did not prejudice the grant of a patent.

V. With a letter dated 25 May 2011 the appellant filed claims headed "Revised Main Request" to replace the claims of the main request previously on file.

VI. Oral proceedings were held before the board on 7 July 2011. In the oral proceedings the appellant withdrew the "Revised Main Request" and filed claims 1 to 4 according to a new main request. The appellant requested that the decision under appeal be set aside and that a patent be granted in the following version: Claims 1 to 4 of the main request, submitted in the oral proceedings, or alternatively, claims 1 to 3 of the auxiliary request, filed with the statement of grounds of appeal. Description pages as indicated in the statement of grounds of appeal, page 2.

At the end of the oral proceedings the chairman announced the board's decision.

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

"An image processing apparatus (1) for processing image data *obtained by scanning a document and stored in a storage apparatus, the apparatus* comprising:  
a compression/decompression part (53, 54) for compressing said image data into code data having a plurality of kinds of formats comprising at least a reversible encoding method and an irreversible encoding method of JPEG 2000 format and decompressing said code data into said image data; and  
a conversion part (53, 54, 55) for performing a conversion of a format of said code data from said reversible encoding method into said irreversible encoding method or from said irreversible encoding method into said reversible encoding method of said JPEG 2000 format;  
a first code storage part (16) for storing said code data in said storage apparatus wherein said first code storage part causes said compression/decompression part to encode said image data stored in said storage apparatus with the reversible encoding method into said code data and stores said code data in said storage apparatus; characterised by:  
a rewrite part (16), *operative after said first code storage part has started storing and if unused memory space of said storage apparatus is less than a first predetermined threshold value, for stopping* said first code storage part and *converting* a format of said code data stored in said storage apparatus into a format of said code data corresponding to said irreversible encoding method using said conversion part; and  
a second code storage part (16), *operative after said rewrite part has started converting* and when said

*unused memory space of said storage apparatus is greater than a second predetermined threshold value that is greater than said first predetermined threshold value, for restarting said compression/decompression part to encode a remaining part of said image data with the irreversible encoding method into said code data and storing said code data in said storage apparatus."*

Amendments with respect to claim 1 on which the decision under appeal was based are set out in *italics*.

VIII. The reasons given in the decision under appeal may be summarised as follows:

Document D5 disclosed an image processing apparatus, namely a digital camera, having a compression/decompression part, a conversion part, a first code storage part and a rewrite part as specified in claim 1 then on file. The image processing apparatus disclosed in D5 also had a second code storage part. The difference between the apparatus of claim 1 then on file and the apparatus disclosed in D5 was that the second code storage part of the claimed apparatus restarted to encode a remaining part of the image data with the irreversible encoding method whereas the apparatus of D5 encoded such remaining part at a quality level within a range from a minimum acceptable quality level to the highest quality level. Only the highest quality level of JPEG 2000 was according to the reversible encoding method. The choice of another quality level was equivalent to the selection of the irreversible encoding method. This selection was not connected to a particular effect.

IX. The appellant's arguments may be summarised as follows:

The invention related to an image processing apparatus, for instance a digital copier, a scanner, or a multifunction peripheral which may include functions of scanning, copying, printing and faxing documents. The memory of such apparatus was of limited capacity and usage of that capacity needed to be managed bearing in mind that the total amount of data to be stored was not known. When a document was scanned, the required memory capacity was influenced for instance by the number of pages and by the content of the images (for instance bi-level images such as text documents or multilevel images such as photographs) put, for instance, in the scanner's document feeder. Different types of images had different possible compression ratios. Thus the required memory capacity could not be predicted. The invention aimed at optimising the use of the image processing apparatus' limited memory capacity. It did this by initially encoding the image data using a reversible (lossless) compression technique to provide maximum image quality. When the remaining space in the memory dropped below a predetermined first threshold during the current encoding process, the encoding process was interrupted and data already encoded and stored in the memory were re-encoded (recompressed) using an irreversible (lossy) compression technique and the data stored in the memory overwritten by the irreversibly compressed data. When the memory capacity freed by the re-encoding reached a second threshold, the remaining image data were encoded using the irreversible (lossy) compression technique so that the quality of the image was consistent despite the interruption of the encoding process.

D5 on the other hand described a digital camera. In a digital camera the required memory capacity was essentially known before the still image was taken because it was mainly determined by the camera's imaging sensor. The compression ratio also played a role but the span of required memory capacity was much smaller than in a scanner or copier. In a camera the still images were stored as independent files. Thus, even though in broad terms both a digital still image camera and a scanner had a need for managing limited memory capacity, the additional constraints to be considered in the two cases were different. In D5 an additional constraint was the desired image quality range of each image as set by the user before taking the image. In D5 the goal was to maximise the quality of the individual images within the desired image quality range. In D5 the first threshold was determined so that the next image to be taken could be stored and the second threshold was determined so that the number of required defragmentations of the Flash EPROM of the camera was minimised.

The scanning of documents in the invention could rather be compared to taking a video of unpredictable length than to taking an individual still image of predictable size. In D5 the encoding process for an image was not interrupted as in the claimed invention. The thresholds in D5 were selected to solve problems specific to a digital still camera which did not occur in a scanner. According to D5 image data corresponding to higher quality than required were overwritten, but the kept image data were not decoded and then re-encoded as in the invention.



Thus D5 concerned a different technical field from the invention. A person skilled in the art confronted with a specific problem in the context of a scanner or copier would not have borrowed the solution to a different specific problem occurring in digital still cameras even though a general problem encompassing both specific problems could have been formulated.

A remittal to the first instance for further examination would merely result in a substantial further delay in the processing of the present application which had been pending for almost 8 years. The objections raised in the communication of 31 May 2006 were in effect moot by the time of the communication of 25 September 2006 because there had been a substantial limitation to the claim in the meantime. Whilst it was true that it was sufficient only to cite a single ground for refusing the application, the Guidelines for Examination (E-X, 5) stated: *"For reasons of economy it is, however, appropriate to base a rejection on a number of separate reasons, in order to come as early as possible to a final decision in a case. Therefore an Examining or Opposition Division should deal with those questions which may be expected to become relevant at second instance insofar as this is possible without substantial additional effort, so that, in the event of a successful appeal, the matter does not have to be remitted to the deciding authority by the Board of Appeal."* In the present case, in the reasons or obiter dictum of its decision, the examining division had not repeated any objections raised in the communication of 31 May 2006. Furthermore, the summary of facts and

submissions of the appealed decision (point III.3) noted the amendments and arguments submitted in response to the objections raised in the communication of 31 May 2006. Therefore, even though the decision under appeal did not include an explicit withdrawal of the objections raised in said communication it was clear from the review of the full circumstances that there was no live issue in relation to these objections. Therefore, the case should be remitted to the first instance with an order to grant a patent.

### **Reasons for the Decision**

1. The appeal is admissible.
2. *Claim 1 of the main request: amendments (Article 123(2) EPC)*
  - 2.1 Present claim 1 is essentially based on claims 1 and 4 as originally filed. The feature that the image data are obtained by scanning a document and are stored in a storage apparatus is disclosed on page 13, lines 8 to 20 in conjunction with page 12, lines 2 to 7 as originally filed. The features of the first code storage part are disclosed in claim 4, on page 28, lines 10 to 18 and in figure 7 (steps S11 and S12). The features of the rewrite part are disclosed in claim 4, on page 28, line 18 to page 29, line 3, and in figure 7 (steps S13 and S14) as originally filed. The features of the second code storage part are disclosed in claim 4, on page 29, lines 3 to 12, and in figure 7 (steps S15 and S16) as originally filed.

2.2 Hence claim 1 has not been amended in such a way that it contains subject-matter which extends beyond the content of the application as filed.

3. *Claim 1 of the main request: clarity and support by the description (Article 84 EPC 1973) - construction of the claim*

3.1 The board had expressed doubts in points 2.1 to 2.4 of the communication accompanying the summons to oral proceedings as to whether claim 1 then on file complied with Article 84 EPC 1973 and whether the appellant's arguments were justified in view of the wording of the claim. The board is now satisfied that these objections have been overcome with the amendments made in the oral proceedings which have led the board to the following construction of claim 1.

3.2 According to the wording of the claim, in particular the designation of the subject-matter of the invention (see lines 1 and 2 of claim 1), present claim 1 specifies an image processing apparatus for processing image data obtained by scanning a document. Thus the claimed image processing apparatus, in particular the first and second code storage parts and the rewrite part, have to be suitable for performing their specified functions when scanning data of a document (consisting of a single or several pages) are (or have been) obtained and have to be processed by the claimed apparatus, and the processed data have to be stored in a storage apparatus.

3.3 Also the invention as disclosed in the application as a whole is an image processing apparatus for processing

image data obtained by scanning a document. In the preferred embodiment illustrated in figure 1, a copying apparatus is disclosed (see, for instance, page 11, line 24 to page 12, line 2) which may also have a fax transmission function (see page 15, lines 24 and 25) and output code data to an external PC (see page 15, lines 5 to 11 and page 22, lines 7 to 9). The feature of the conversion part for performing a conversion from the irreversible encoding method into the reversible encoding method takes account of this fact in that a reconversion into a suitable format for an external device may be necessary.

3.4 Claim 1 consistently relates "said image data" to "said code data". Both the image data and the code data represent the same content, namely that of the scanned document to be ultimately printed/copied or otherwise output (such as by fax transmission or to an external PC). It is inherent in this type of apparatus which obtains the image data by scanning a document that an unknown number of pages of varying information content may be input during the scanning of the document. If the remaining storage capacity is insufficient the coding of the image data and storing of the code data may have to be stopped during the process of obtaining the image data. This interpretation of "said image data" and "said code data" is also consistent with the description (see, for instance, page 28, line 18, to page 29, line 3 and figure 7).

3.5 In the feature specifying the second code storage part, claim 1 also makes reference to a "remaining part of said image data". In the context of claim 1 as a whole, the "remaining part of said image data" represents the

content of that part of the scanned document whose image data have not been compressed by means of the compression/decompression part as a result of the operations of the first code storage part and the rewrite part. This interpretation is also consistent with the description of the process illustrated in figure 7 (see page 28, line 8 to page 30, line 5). The board is satisfied that claim 1 now makes clear that the rewrite part and the second code storage part work together in that the second code storage part becomes operative when sufficient memory space has been created by rewriting previously stored code data. The first and second predetermined threshold values have to be chosen in accordance with the expected information content of the scanned document such that the code data representing the scanned image data can be stored with an optimal quality (see e.g. page 35, lines 6 to 10). A consistent quality of the code data of the document may be achieved in this way, at least for the rewritten code data and the remaining part of the image data since the latter is encoded with the (same) irreversible encoding method.

4. *Document D5*

4.1 D5 discloses a digital camera which allows the user to select a resolution level or a quality level for an image prior to image capture. In addition, it allows the user to selectively reduce the file size of stored images after they have been captured, by reducing the image's resolution level or quality level. This frees memory space so that additional images can be captured and stored (see paragraph [0007]). The additional images are stored at a quality level within a range

from a minimum acceptable quality level to the highest quality level, as acknowledged in the decision under appeal.

- 4.2 D5 does not disclose that the camera may be connected to a document scanner or that image data not obtained by the camera may be processed by the camera.

Hence D5 does not disclose an image processing apparatus for processing image data obtained by scanning a document as set out in points 3.2 and 3.4 above.

- 4.3 Furthermore, the feature of the digital camera of D5 which according to the decision under appeal is a "rewrite part" is disclosed in paragraph [0027] and figure 3 of D5. However, D5 does not disclose that the rewrite part is operative for stopping the first code storage part when (at least) the two conditions specified in present claim 1 are met, namely that the first code storage part has started storing said code data in said storage apparatus and the unused memory space is less than a first predetermined threshold value. According to D5 the previous image has been captured and stored before it is determined whether the unused memory space is less than the first predetermined threshold value T (or T1) (see figure 3, step 180, and paragraphs [0017] and [0027]). Thus the first code storage part has already stopped and cannot be stopped again by the rewrite part when it is determined that the unused memory space is less than the first predetermined threshold value. Furthermore, according to D5 it is determined whether the unused memory space is less than the first predetermined

threshold value before the next image is captured (see figure 3, step 150 and paragraph [0027]). Since the next image is not yet captured, the first code storage part cannot have started storing the corresponding code data and cannot be stopped by the rewrite part, either.

4.3.1 In this context the decision under appeal possibly reflects the argument that, according to D5, some time in the past the first code storage part had stored the code data of previously captured and encoded images in a storage apparatus and that the first predetermined threshold was reached while storing the code data of the last captured image. Invoking the pruning algorithm (see paragraph [0018]) would then be equated to the function of "stopping said first code storage part" (see the feature specifying the rewrite part in present claim 1).

4.3.2 This argument does not convince the board in view of the amended wording of present claim 1. According to present claim 1 "the first code storage part causes said compression/decompression part to encode said image data ... with the reversible encoding method ...". The rewrite part *inter alia* has the function of "stopping said first code storage part ...". Thus claim 1 specifies an image processing apparatus having a functionality of interrupting an encoding process. The interruption of the processing of image data obtained by scanning is caused by the rewrite part and the encoding process is carried out by the compression/decompression part. Consistent with that, the second code storage part specified in claim 1 has the functionality of "restarting said compression/decompression part to encode a remaining

part of said image data with the irreversible encoding method ...".

5. *Inventive step (Article 56 EPC 1973)*

5.1 In the decision under appeal, D5 is the only prior-art document considered. As set out above, D5 discloses a digital camera which is arranged for capturing only individual images which are stored as independent files and for processing only these captured images.

Furthermore, D5 does not disclose encoding a remaining part of said image data with the irreversible encoding method and a rewrite part as specified in present claim 1 (see points 4.1 and 4.3 above). Contrary to the examining division's opinion, the board considers that the format conversion caused by the rewrite part and the encoding restarted by the second code storage part with the irreversible encoding method may achieve a particular effect, namely that of a consistent quality of the rewritten data and of those of the remaining part (see point 3.5 above). This may be important for the coded data of a scanned document, but not for the individual images captured by a digital camera. Thus, starting from the digital camera disclosed in D5 and without the use of hindsight, a person skilled in the art would not have arrived at an image processing apparatus for processing image data obtained by scanning a document as specified in present claim 1.

5.2 Thus the subject-matter of present claim 1 is not obvious having regard to document D5 alone. Hence the subject-matter of present claim 1 involves an inventive step within the meaning of Article 56 EPC 1973, having regard to D5 alone. Therefore, the claims of the



present main request have been amended so that the only reason given in the decision under appeal for refusing the application no longer applies. Furthermore, the amendments to claim 1 made in appeal proceedings were not present in a dependent claim submitted to the first instance and thus have not been dealt with in the obiter dictum of the decision under appeal.

6. *Remittal (Article 111(1) EPC 1973)*

- 6.1 In its decision G 10/93 (OJ EPO 1995, 172) the Enlarged Board of Appeal held that proceedings before the boards of appeal in ex parte cases are primarily concerned with examining the contested decision and that the board's power to include new grounds in ex parte proceedings does not mean that boards of appeal carry out a full examination of the application as to patentability requirements (see point 4 of the Reasons). It was further stated under point 5 of the Reasons that the board must decide after due assessment of the particular circumstances of the case whether it will rule on the case itself or whether it will remit the matter for further prosecution to the examining division (Article 111(1), second sentence, EPC 1973). The Enlarged Board of Appeal further ruled that the relevant circumstances of the case must be taken into account and consideration must be given in particular as to whether further investigations should be carried out, whether a procedural violation has taken place which would preclude a decision on the merits, whether there has been any significant change in the facts with respect to the contested decision, what stance the applicant is taking with regard to the "loss of instance", whether a decision by the board would speed

up the proceedings significantly and whether there are any other grounds for or against remittal (see point 5 of the Reasons).

6.2 In the present case the board examined the contested decision and concluded that the sole ground for refusal which was reasoned in the decision under appeal no longer applies (see Sections 4 and 5 above). This objection had been raised for the first time by the examining division in its communication dated 25 September 2006. However, in its earlier communication attached to the summons to oral proceedings dated 31 May 2006, the examining division also raised objections in addition to the one which is given in the communication dated 25 September 2006 and the decision under appeal. The board agrees with the appellant that it is not objectionable to give a single ground for refusing an application under Article 97(1) EPC 1973. However, the board does not conclude from the fact that the objections raised in the communication of 31 May 2006 were not dealt with in the decision under appeal that these objections had become moot. It is the board's view that, taking into account the history of the file, the reasons of the decision under appeal do not reflect a full examination of the application since not all objections possibly relevant in view of the state of the art on file have been dealt with. However, it is not the board's task to carry out a full examination of the application as to patentability requirements but rather the task of the examining division (see also G 10/93. loc. cit., point 4 of the Reasons).

- 6.3 The board is aware that the appellant considers it desirable to avoid any further delay of the processing of the present application. However, this alone is not a reason for the board to carry out a full examination of the present application, in particular in view of the possibility of accelerated prosecution of European patent applications. Applicants requiring faster examination can ask to have their applications processed under the programme for accelerated prosecution of European patent applications (PACE) (see the notice from the EPO, special edition No. 3, OJ EPO 2007, F.1). Hence, by filing a request for accelerated prosecution, the appellant has the possibility to limit any further delay of the processing of the present application. Therefore, a remittal to the examining division for further prosecution is justified in the present case even if it gives rise to a further delay in processing.
- 6.4 Taking into account the particular circumstances of the present case and exercising its discretion under Article 111(1), second sentence, EPC 1973, the board considers it appropriate to remit the case to the first instance for further prosecution.
- 6.5 In view of the above, there is no need for the board to consider the appellant's auxiliary request.

**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 for further prosecution.

The Registrar:

The Chairman:

K. Boelicke

F. Edlinger