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D E C I S I O N
of 21 September 1995

Case Number: T 0239/93 - 3.5.1

Application Number: 89305320.7

Publication Number: 0344976

IPC: H04N 1/387

Language of the proceedings: EN

Title of invention:
Image generating apparatus

Applicant:
CROSFIELD ELECTRONICS LIMITED

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step - (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0239/93 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 21 September 1995

Appellant: CROSFIELD ELECTRONICS LIMITED
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Decision under appeal: **Decision of the Examining Division of the European Patent Office dated 30 October 1992 refusing European patent application No. 89 305 320.7 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: P. K. J. van den Berg
Members: R. Randes
G. Davies

Summary of Facts and Submissions

I. European patent application No. 89 305 320.7 (publication No. 0 344 976), filed on 25 May 1989 and claiming priority date 31 May 1988, was refused by a decision of the Examining Division dated 30 October 1992.

II. The reason given for the refusal was that the subject-matter of the independent claim lacked an inventive step in consideration of the normal competence of the skilled person applied to the disclosure of

D1: GB-A-2 113 950.

III. Notice of Appeal was filed on 21 December 1992, the appropriate fee being paid on 24 December 1992. The Statement of Grounds of Appeal was received on 24 February 1993 with two new sets of claims as the basis of auxiliary requests, the appellant's main request being grant of the patent in the form rejected by the Examining Division. A conditional request was made for oral proceedings.

IV. In a communication annexed to the summons to attend oral proceedings, issued on 13 July 1995, the Rapporteur supported the Examining Division's objections concerning lack of inventive step, extending the same objections to the independent claims of the auxiliary requests. In addition, it was argued that none of the independent claims of the various requests satisfied Article 84 EPC, and that Claim 1 of the first auxiliary request violated Article 123(2) EPC.

In support of the objections relating to lack of inventive step of the independent claims, the Rapporteur cited, in addition to D1, the document

D3: EP-A-0 240 417,

which had been mentioned in the Search Report.

The Rapporteur also requested the appellant to submit details of an apparently prior art system (the "Studio 800") mentioned in the introduction to the description.

V. In response the appellant submitted amendments to both description and claims corresponding to a new main and three auxiliary requests aimed at overcoming the objections which had been raised. The appellant's request for the scheduled oral proceedings was withdrawn. A brochure

D4: "Studio 835 875 885 895"

which according to the appellant referred "to the Studio 800 system as it existed in about February 1988" was also submitted.

VI. The independent claim of the new main request reads:

"A graphic arts workstation for generating a composite image from a plurality of subsidiary images, the workstation comprising first storage means (7,21) for storing signals representing at least two subsidiary images; second storage means (15) for storing at least two arrays of mask data, each array having a mask pixel corresponding to each pixel of the composite image; and control means (10) responsive to each array of mask data to generate for the pixels of the composite image signals comprising a weighted sum of the subsidiary

images, wherein the control means (10) includes a number of image mixing stages (27-29) connected in cascade, each of which is associated with a mask data array, and a first multiplexer (20) connected to the first storage means (7,21) and having one input port for each subsidiary image and one output port for each mixing stage (27-29) plus one additional output port connected to the first mixing stage (27), each stage downstream of the first combining two input pixel signals, one from the output of the previous stage and the other from a subsidiary image in the first storage means (7,21), whereby each mixing stage can be supplied with any of the subsidiary images via the first multiplexer."

The claims of the auxiliary requests are not relevant to the current decision.

VII. The appellant argued essentially as follows:

The independent claim of each request had been redirected to a "graphic arts workstation". Graphic arts applications must be distinguished from the field of moving video and TV, especially in view of the priority date of the patent application. The previous citations of prior art relating to video and TV had come about due to the original broad nature of the claims, but such prior art would not in practice have been considered by the skilled person in the graphic arts systems (GAS) field. The fields differed in significant ways (these ways being enumerated in the appellant's submission). Included among the differences was the important GAS requirement to provide an operator with a high degree of interactivity, allowing him to experiment with relative positioning of images, in both location (X,Y) and stacking (Z). The claimed invention allowed the operator to experiment with and visualise the results of such image composition in near real-time in a non-destructive

manner (i.e. the stored images were not themselves modified). It was also pointed out that the GAS field employed exclusively digital techniques, whereas video and TV systems were essentially analogue in nature. As a result of these differences, it was submitted that the skilled person would not even have considered the disclosures of documents D1 or D3. Even if he had done so, it would not have been obvious from D1 alone to set up a number of stages in cascade, while the cascade arrangement of D3 was described in the context of a TV system only.

VIII. The appellant requests that the decision to refuse the present application be set aside and the application be granted on the basis of the main request or one of auxiliary requests 1 to 3, all filed on 18 August 1995.

The application according to the main request consists of the following documents:

claims:	1 to 7 submitted 18 August 1995;
description:	pages 1, 4 and 5 submitted 18 August 1995;
page:	15 submitted 16 July 1992;
pages:	2, 3, 6 to 14, 16 and 17 as originally filed;
drawing:	sheets 1 to 4 as originally filed.

Reasons for the Decision

1. The appeal is admissible.

2. *Article 123(2)*

The Board is satisfied that the amendments submitted for the main request are directly and unambiguously derivable from the application documents as filed. In particular, the independent claim is derived from original claims 1, 3 and 4, with clarifying details disclosed in figure 2 and description page 11 lines 9 to 11.

3. *Article 84*

The Board is further satisfied that by the amendments made to the claims of the main request the appellant has overcome the objections raised under Article 84 EPC in the communication accompanying the summons to oral proceedings.

4. *Novelty*

Neither D1 nor D4 discloses a device comprising cascaded mixing stages. Document D3 clearly does not describe a "graphic arts workstation". Hence the material of the independent claim of the main request is novel with respect to the disclosure of each of these documents. It is also clearly novel with respect to the further documents mentioned in examination and the Search Report.

5. *Inventive step*

5.1 From the application documents as a whole it is clear that the context of the invention is what the appellant calls "graphic arts systems", i.e. systems allowing users to compose and modify still images, whether originally captured by a camera or computer created, to produce final still images suitable for reproduction in magazines, for example. The appellant having now restricted the claimed material to "graphic arts workstations", this context must be taken into account. Hence it would appear that the appropriate starting point for the claimed invention, when considering the question of inventive step, should be such a graphic arts workstation, for example the "Studio 800" described in document D4 and the application. Such a workstation was capable of combining or merging two images (e.g. D4, page 4, "Montage" and "Image Merge") and it is plausible that it operated as described in the application (page 2 line 22 to page 3 line 12), using two separate storage areas for the two images, with a mask store, in particular allowing a modification of the original image to be reversed until the user has decided to "fix" it (see also D4 page 6 column 1, last paragraph).

In the light of this starting point for the invention, the inventor's goal would be to extend the capabilities of such a graphic arts workstation. Among other possible directions of development, it would be desirable to make it easier for the user to experiment with compositions so that their effects could be judged before they were fixed by storing the result.

In the prior art system, it would appear that, if the user wished to combine three images, for example with one as background, a smaller second image in the foreground and a third overlaying partly the second

image and partly the background, this would have had to be done in stages. In a first stage, the user would have placed the second image on the background and stored the result, without having been able to judge the final effect. The stored image would then have been recalled and the second overlay placed upon it. If the result were unsatisfactory the first overlay could not be repositioned without going through the same stages again.

The inventor has proposed to add at least one additional mixing stage and mask store cascaded with the original mixing stage, and a multiplexer to determine which image is fed to which mixing stage. The minimum system therefore encompassed in the claim, comprising two image stores and two mask stores, can in particular be used for the visual effect disclosed in the application at page 13, paragraph 2. Thus this minimal alternative allows part of a first image to be defined as foreground and part as background, so that the user can place a second image between the background and foreground. The relative positioning of the layers can also be changed, by changing the setting of the multiplexer. With the additional image stores also encompassed as further alternatives by claim 1, multiple layers can be positioned and experimented with before being fixed in place, and with the additional features specified in the dependent claims further complex effects, as explained in the application, can be achieved.

5.2 D1 does not describe a graphic arts workstation, since it relates to mixing television pictures - see e.g. D1 page 2 lines 3 to 7. Nonetheless, it is clearly concerned with the production of variable effects in the composition of images (e.g. Abstract or page 3 lines 4 to 7), and does so by converting the initially analogue camera signals into digital values for processing. Hence

in the judgement of the Board the skilled person would not discard D1 as prima facie irrelevant to his general problem. This document does indeed propose a system capable of said visual effect mentioned above, i.e. defining part of a first image as foreground and part as background, with a movable second image between the foreground and the background (page 3 lines 39 and 40). The arrangement proposed in this document (page 3 line 40 to 46 and figure 6) includes two image stores and two mask stores but does not hint at cascaded image mixing stages or the use of a multiplexer. Instead it proposes a specific circuit for combining the outputs of the mask stores. Hence although this document might encourage the skilled person to modify the conventional apparatus described in D4 to provide this specific effect, it would lead him to do so in a way markedly different to that put forward in the current application. Thus D1 does not make the combination of features specified in the independent claim of the main request obvious.

It is irrelevant for the assessment of inventive step that one way to produce an effect may be obvious or already known. A new way to achieve said effect may very well not be obvious in the light of the prior art. In the present case although D1 discloses one way to achieve said effect, it does not disclose or make obvious the means currently claimed, as argued above, and hence the subject matter of the current independent claim is considered to show an inventive step over the combination of D4 and D1.

5.3 It is true that D3 in its introductory part (see also figures 1 and 2) discloses how to mix many TV signals by using a cascade of mixing stages. It is however to be noted that the real teaching of D3 is aimed at avoiding multiple mixing stages, because of the phase problems

which arise due to propagation delays, given the analogue modulated nature of TV signals. D3 is concerned only with mixing a plurality of analogue TV images. No conversion to digital values takes place. In D3 there is no suggestion of image stores or mask stores. Thus there is no teaching in the sense of the invention how to weight the individual pixels of subsidiary still images to form a composite still image. On the contrary, the teaching of D3 by its nature is concerned primarily with the combination of moving images (each point in an image changing continuously) and does not concern itself with e.g. the problem of how to move a still image over another in order to preview the exact result (the relative position, blending, colour, etc.) before fixing the final still image. While the superposition of images in planes is discussed, there is no indication of the technical means used to specify which image is displayed at any given point on the screen. Neither is there any consideration of any special compositional effects which may be achieved by mixing two or more images using multiple masks simultaneously, or of varying such effects by moving one image over another or suchlike. There is therefore no indication for the skilled person that D3 might contain any teaching which would be applicable to the problem of extending the facilities of a graphic arts workstation. The Board therefore considers that even if the skilled person were familiar with this document he would not consider it relevant to the problem he wished to solve.

5.4 It could be argued that even without any teaching from D1 or D3 it would be obvious (1) to add a facility to the known graphic arts workstation to handle e.g. three images simultaneously, instead of the known two images, and (2) to mix these three images by adding a cascaded mixer and an associated mask store. However even if this argument were accepted and a system having three image

stores, two mixers in cascade and two mask stores were hypothesised, the skilled person would still apparently have no indication that he should include the multiplexer which is now included as a feature in the independent claim. It is clear that the multiplexer contributes to the invention as claimed, since without it the effect mentioned above in which part of an image is defined as foreground and part as background, with a second image sliding between these two layers, there only being two image stores involved, would not be available.

Hence the Board considers that such a line of argument also fails to demonstrate a lack of inventive step in the subject matter as now claimed.

5.5 Hence, beginning from the appropriate prior art as represented by D4 and its description in the application documents, neither D1 nor D3 renders the claimed invention obvious. Nor does any other document known to the Board. Therefore it is to be concluded that the subject matter of claim 1 of the main request satisfies the requirements of Articles 52(1) and 56 EPC for an inventive step.

6. The appellant's main request being therefore allowable it is unnecessary for the Board to consider the auxiliary requests.

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 patent according to the main request.

The Registrar: The Chairman:

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