

Internal distribution code:

- (A) [] Publication in OJ
(B) [] To Chairmen and Members
(C) [X] To Chairmen

D E C I S I O N
of 25 January 1995

Case Number: T 0151/92 - 3.4.1

Application Number: 85100689.0

Publication Number: 0157092

IPC: G09G 1/16

Language of the proceedings: EN

Title of invention:

Legibility enhancement for a data display

Applicant:

International Business Corporation

Opponent:

-

Headword:

Data display/IBM

Relevant legal provisions:

EPC Art. 56, 123(2)

Keyword:

"Amended subject-matter extending beyond the content of the application as filed - no"

"Inventive step - yes (after clarifying amendments)"

Decisions cited:

-

Catchword:

-

Case Number: T 0151/92 - 3.4.1

D E C I S I O N
of the Technical Board of Appeal 3.4.1
of 25 January 1995

Appellant: International Business Machines Corporation
Old Orchard Road
Armonk, N.Y. 10504 (US)

Representative: Lattard, Nicole
Compagnie IBM France, Département de Propriété
Intellectuelle
F-06610 La Gaude (FR)

Decision under appeal: Decision of the Examining Division of the European
Patent Office dated 4 October 1991 refusing
European patent application No. 85 100 689.0
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: G. D. Paterson
Members: R. Shukla
Y. van Henden

Summary of Facts and Submissions

I. European patent application No. 85 100 689.0 relating to an apparatus and method for enhancing the legibility of characters having different display attributes or modes was refused in a decision of the Examining Division on the grounds that Claim 1 as filed on 25 October 1990 did not comply with the requirements of Article 123(2) EPC and that Claims 1 and 5 lacked an inventive step with respect to the prior art as disclosed in document D1 - IBM Technical Disclosure Bulletin, Volume 18, No. 10, March 1976, pages 3390 to 3391.

II. The reasoning of the Examining Division can be summarised as follows:

(i) According to Claim 1 as filed, an attribute signal in a second mode enables a generator means to produce a video signal from a second font. Claim 1 as amended on the other hand, requires that a video signal is produced **from the first and second fonts** in response to an attribute signal in the second mode. Since there is no disclosure in the original application documents of such a combination of fonts in the second mode, the application contains subject-matter extending beyond the content of the application as filed.

(ii) The invention as claimed is distinguished over the prior art method and apparatus as described in document D1 in that it includes an attribute means for producing attribute signals which specify a display attribute having first and second modes.

In document D1 display characters are tilted to the left and to the right in response to "tilt-left" and "tilt-right" signals respectively, so that these signals are to be considered as display attribute signals and it would be obvious to a skilled person to provide means to produce these display attribute signals in the circuitry disclosed in document D1. The invention as claimed in Claims 1 and 7 therefore lacks an inventive step.

III. The Applicant lodged an appeal and requested that the decision of the Examining Division be set aside and that a patent be granted on the basis of new Claims 1 to 6 filed with the statement of the grounds of the appeal. The new claims differed from the ones forming the basis of the contested decision only in that they contained reference numerals.

The Applicant submitted essentially the following arguments in support of its request.

From the description on page 6, line 19 to page 7, line 12 and Figure 2 of the application as filed, it can be seen that in the reverse mode of operation, each bit directly to the right of a "1" bit in the normal mode is forced from zero to "1", thereby increasing the width of all character strokes by one dot. This results in the superimposition of a copy of the first font to the first font of the normal mode, the copy being shifted by one dot to the right of the first font. Amended Claim 1 specifying that in second mode, a video signal is produced from the first and second fonts,

therefore, does not contain subject-matter extending beyond the content of the application as filed.

Document D1 is concerned with highlighting of certain display characters, words or lines and achieves this merely by tilting characters displayed either to the right or to the left. The present invention, on the other hand, enhances the legibility of displayed characters by combining character shapes from two fonts depending upon the level of an attribute signal. It is therefore not possible to base an argument of obviousness against the claimed invention on document D1.

- IV. In a communication to the Applicant, the Board took the view that the application does not contravene the requirements of Article 123(2) EPC, and that the invention as claimed involves an inventive step. The Applicant was also informed that the application nevertheless required amendments since (i) the term "second font" as used in Claim 1 had a different meaning to that in the description so that the claim was not supported by the description and (ii) the statement in Claim 1 that the second font has the same "overall size" was not clear and consistent with the disclosure of an embodiment of the invention (see page 9, lines 20 to 23) according to which the second font has twice the width of the first font in the first mode of display. Amendments to overcome the above objections and correct other minor mistakes were suggested in the above communication.
- V. With a letter dated 12 December 1994, the Applicant filed new Claims 1 to 6 and pages 2 and 3 of the

description (received on 19 December 1994), and requests the grant of a patent on the following application documents:

Description: pages 1,4 to 8 and 10
of EP-A-0 157 092;
page 9 filed with the
letter dated 16 May
1994 pages 2 and 3
filed with the letter
dated 12 December
1994;

Claims: 1 to 6 filed with the letter dated
12 December 1994; and

Drawings: Sheets 1/3 to 3/3 of EP-A-0 157 092

VI. Independent Claims 1 and 5 of the above request have the following wording:

Claim 1:

"Apparatus for enhancing the legibility of character images of a display for alphanumeric character images made up of a matrix of individual dots having character generating means (163) for producing a video signal (1631) having first and second levels, and having attribute means (164) for producing an attribute signal (1641) specifying a display attribute having first and second modes, characterized in that it comprises:

first generator means (21, 221) in said character generating means for producing a first font of character shapes;

second generator means (21, 222) in said character generating means for producing a complementary font of character shapes, said complementary font having substantially the same vertical height as said first font and being complementary thereto; and

logic means (24) responsive to said attribute signal for producing said video signal from said first font of character shapes when said attribute signal is in said first mode and for producing said video signal from said first and complementary fonts of character shapes when said attribute signal is in said second mode."

Claim 5:

"A method for enhancing the legibility of character images on a display means, comprising the steps of:

generating each of said images as a sequence of dots from a video signal having plural levels to enable display of character images at plural levels on plural backgrounds;

decoding the mode of an attribute signal having a plurality of modes specifying which of said levels represents said images and which of said levels represents said backgrounds;

modifying the number and location of said dots representing said images at one of said plural levels in response to decoding said attribute signal in one mode of said plural modes and leaving the number and location of said dots representing said images at another one of said plural levels unchanged in response

to decoding said attribute signal in another mode of said plural modes."

Reasons for the Decision

1. *Amendments*

1.1 Claim 1 contains following amendments in relation to Claim 1 as filed :

- (i) Whereas Claim 1 as filed related to a **display** for alphanumeric characters, the amended Claim 1 relates to an **apparatus** for enhancing the legibility of character images of a display.
- (ii) According to Claim 1 as filed, second generator means are for producing a **second font** of character shapes having substantially the same **overall** size as said first font. Amended Claim 1 now specifies that the second generator means are for producing a **complementary** font of character shapes having substantially the same **vertical height** as said first font and being **complementary thereto**.
- (iii) Claim 1 as filed specifies that a video signal from a second font is produced in response to an attribute signal in a second mode of display. According to the amended Claim 1, on the other hand, a video signal is produced from the **first font and complementary font** in response to an attribute signal in the second mode.

(iv) Whereas Claim 1 as filed specified that switching means (221) are responsive to attribute signal, according to the amended Claim 1, logic means (24) are responsive to the attribute signal.

1.2 In Claim 5, the original expression "a sequence of dots in a video signal" has been amended to read "a sequence of dots **from** a video signal".

The description has been amended (i) to replace a wrong reference number of a prior art document by a reference to EP-A-114 254, which is comprised in the state of the art pursuant to Article 54(3) EPC, (ii) for consistency with the wording of Claim 1, and (iii) to include a statement specifying that the term "complementary" as used in the application means that the character shapes of the complementary font complete the corresponding character shapes of the first font.

1.3 In the following discussion of the application documents as filed, references are made to the text locations of the application as published.

With regard to the amendment mentioned in paragraph 1.1(i) above, the opening statement on page 1 of the application makes it clear that the present invention concerns, inter alia, **an apparatus** for increasing the legibility of characters, so that the amendment concerned has a basis in the original application.

In an embodiment of the invention as described on page 6, last paragraph to page 9, first paragraph and

Figures 2 and 3, when an attribute signal on a line 1641 is at a "0" level corresponding to a Normal-mode of display, a first character font is obtained by passing the ROM output dot signals unchanged to a serialiser. Also, **in response to the "0" level attribute signal, a logic gate (exclusive -OR gate) 24 passes the video signal 232 from the serialiser unchanged for display on a CRT.** In the Normal- mode the character is displayed as a bright image 311 eight dot high and eight dot wide on a dark background (see Figure 3). In the Reverse-mode, when the attribute signal is at a level "1", the AND gates 222 produce font characters by forcing to level "1" each bit directly to the right of a "1" bit in the Normal font. These font characters are therefore **complementary to the characters of the first font** in the sense that they complete the latter and have **substantially the same vertical height**, i.e. eight dot height (see Figure 3), as the first font characters. Also, **in response to the attribute signal at a level "1", the logic gate 24 inverts signal 232, so that the Reverse font character appears on the CRT as a dark image on a bright background.** The Reverse font character image is thus **derived by superimposing the complementary font character image on the first font character image 311**, the former being shifted by one dot to the right of the latter, and then reversing the image from bright to dark and the background from dark to bright. The amendments mentioned in paragraphs 1.1(ii) to 1.1(iv) are thus based on the original disclosure in the application.

The amendments mentioned in paragraph 1.2 are for clarity and consistency and do not contain subject-matter contravening Article 123(2) EPC.

1.4 For the foregoing reasons, in the Board's view, the application as amended does not contain subject-matter extending beyond the content of the application as filed and therefore complies with the requirement of Article 123(2) EPC.

2.0 The only issue which remains to be considered is, therefore, the question of inventive step.

In the invention as claimed in Claims 1 and 5 of the application in suit, different fonts of characters are generated for different modes or attributes of display in order to enhance the legibility of the displayed characters. In the apparatus of Claim 1, this is achieved when an attribute signal is in a second mode by producing a video signal from a first font of character shapes and a complementary font of character shapes. In the method for enhancing the legibility of characters according to Claim 5, when the attribute signal is in "one" mode, the number and locations of the dots representing the character image are modified in relation to the number and locations of dots of a character image when the attribute signal is in "another" mode.

Document D1 discloses a circuitry for highlighting alphanumeric characters which consist of a matrix of dots. Normally, the characters are displayed straight as shown in Figure 1. For highlighting the characters, a TILT signal causes the characters to tilt to the

right or to the left (see Figure 2). The circuitry shown in Figure 3 thus generates a normal font, and a "tilted" font of characters in response to a TILT signal. However, the mode or attribute of the display remains the same. Also, the second font characters do not complete the first font characters as set out in Claim 1 under consideration.

Document US-A-3 678 497 cited in the European search report describes a character generation system wherein a bold font is generated by causing the last dot of each horizontal line of dots from which a standard character is formed to be repeated (see column 1, lines 60 to 65). The mode or attribute of display remains the same for the standard and the bold fonts, as in document D1.

Thus, the cited prior art does not address the problem of enhancing the legibility of characters in a mode of display other than the normal or standard mode, and also does not suggest the claimed solution.

For the foregoing reasons, in the Board's judgment, Claims 1 and 5 involve an inventive step within the meaning of Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision of the first instance is set aside.
2. The case is remitted to the first instance with the order to grant a patent with the text as set out in paragraph V above.

The Registrar:

The Chairman:

M. Beer

G. D. Paterson