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Datasheet for the decision of 2 July 2019

Case Number: T 2379/13 - 3.5.04

Application Number: 04757916.4

Publication Number: 1627524

IPC: H04N5/77, H04N7/12, H04N7/015

Language of the proceedings: EN

Title of invention:
SYSTEMS AND METHODS FOR MULTI-RESOLUTION IMAGE PROCESSING

Applicant:
UTC Fire & Security Americas Corporation, Inc.

Headword:

Relevant legal provisions:
EPC 1973 Art. 56, 111(1)
EPC 1973 R. 67

Keyword:
Substantial procedural violation - (yes)
Remittal to the department of first instance - (no, as requested by the appellant)
Inventive step - (no)
Reimbursement of appeal fee - (no)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 2379/13 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 2 July 2019

Appellant: (Applicant)	UTC Fire & Security Americas Corporation, Inc. 8985 Town Center Parkway Bradenton, FL 34202 (US)
Representative:	Dehns St. Bride's House 10 Salisbury Square London EC4Y 8JD (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 10 July 2013 refusing European patent application No. 04757916.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	R. Gerdes
Members:	M. Paci
	G. Decker

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division refusing European patent application No. 04757916.4, published as international patent application WO 2004/086748 A2.

II. The documents cited in the decision under appeal included the following:

D2: WO 01/69911 A2 and
D3: GB 2123646 A

III. The decision under appeal was based on the grounds that the subject-matter of claims 1 and 5 of the then main request and the subject-matter of claims 1 and 4 of the then first auxiliary request did not involve an inventive step (Article 56 EPC) in view of the combination of prior-art documents D2 and D3 and common general knowledge.

IV. With the statement of grounds of appeal, the appellant filed amended claims according to a main and auxiliary request, replacing all the previous claims on file.

In the statement of grounds of appeal, the appellant submitted that the examining division had committed a substantial procedural violation by introducing prior-art document D3 into the proceedings during the oral proceedings, which the appellant did not attend, and by deciding to refuse the patent application on the basis of an inventive step argument combining D2 and D3.

The appellant requested that
- the decision under appeal be set aside and that a patent be granted on the basis of the claims of the

main or auxiliary request filed with the statement of grounds of appeal; and

- the appeal fee be reimbursed in full pursuant to Rule 103(1)(a) EPC (Rule 67 EPC 1973) because of the substantial procedural violation committed by the examining division; and
- the case **not** be remitted to the examining division; and
- oral proceedings be held if the board were not minded to set aside the decision under appeal.

V. The appellant was summoned to oral proceedings to be held on 2 July 2019.

In a communication under Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA, OJ EPO 2007, 536) annexed to the summons to oral proceedings, the board gave a preliminary opinion which may be summarised as follows:

- the examining division committed a violation of the appellant's right to be heard under Article 113(1) EPC 1973 by introducing prior-art document D3 for the first time during the oral proceedings in the applicant's absence and refusing the application on the basis of the combination of D2 and D3;
- the reimbursement of the appeal fee under Rule 103(1)(a) EPC (Rule 67 EPC 1973) would therefore depend on whether the appeal was allowed and whether a reimbursement was equitable;
- as requested by the appellant, the board would **not** remit the case to the examining division, but instead review the substance of the reasons for the decision and consider the amended claims filed with the statement of grounds of appeal;
- the prior-art document D4 (US 2003/0048353 A1), which was cited as a document of particular relevance

in the international search report (ISR), was introduced by the board into the appeal proceedings; and

- the subject-matter of claim 1 according to the main request appeared not to involve an inventive step in view of D2 or D4 and the subject-matter of claim 1 according to the auxiliary request appeared not to involve an inventive step in view of D4.

VI. By letter dated 3 June 2019, the appellant filed amended claims according to a main and first and second auxiliary requests, replacing the previous claims on file.

VII. The board held oral proceedings on 2 July 2019.

The appellant's requests at the end of the oral proceedings were that the decision under appeal be set aside and that a European patent be granted on the basis of the claims of the main request or, in the alternative, the claims of one of the first or second auxiliary requests, all requests filed with the letter dated 3 June 2019. The appellant further requested that the appeal fee be reimbursed and that the case not be remitted to the department of first instance.

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

VIII. Claim 1 according to the appellant's **main request** reads as follows:

"A method of providing multiple images for transmission across an analog interface in real time, comprising:

receiving a digital image data input stream from a video camera, said digital image data input stream

containing digital image information having a resolution and/or frame rate that requires a transmission capacity to transmit the digital image data input stream that exceeds a transmission capacity of the analog interface based upon a maximum bandwidth of video that the analog interface can transmit in real-time;

creating at least two digital image data streams from said digital data input stream that together do not exceed the transmission capacity of the analog interface, each of said at least two digital image data streams comprising a portion of said digital image information, wherein one of said at least two digital image data streams comprises a first image having a first resolution, and another of said at least two digital image data streams comprises a second image having a second, different resolution;

merging said at least two digital image data streams into a common digital image data output stream;

converting said common digital image data output stream into an analog image output stream; and

providing said analog output image stream for transmission across said analog interface in real time; wherein:

said digital image data input stream comprises a digital video signal received from a digital video source; wherein said method further comprises:

providing said analog output image stream as an analog video signal for transmission across said analog interface;

receiving said analog video signal from across said analog interface, said analog video signal comprising said first and second images; and

displaying said first image at said first resolution while simultaneously displaying said second image at said second resolution."

IX. Claim 1 according to the appellant's **first auxiliary request** reads as follows (additions to claim 1 of the **main request** are underlined and long identical text portions are replaced by "[...]"):

"A method of providing multiple images for transmission across an analog interface in real time, comprising:

[...]

receiving said analog video signal from across said analog interface, said analog video signal comprising said first and second images; and

displaying said first image on an analog display device at said first resolution while simultaneously displaying said second image at said second resolution."

X. Claim 1 according to the appellant's **second auxiliary request** reads as follows (additions to claim 1 of the **main request** are underlined, deletions are ~~struck-through~~ and long identical text portions are replaced by "[...]"):

"A method of providing multiple images for transmission across an analog interface in real time, comprising:

[...]

providing said analog output image stream for transmission across said analog interface in real time; wherein:

said digital image data input stream comprises a digital video signal received from a digital video source; ~~wherein said method further comprises:~~

said digital image information comprises an original image;

said step of creating said first image comprises extracting a window area from said original image

information and then upscaling said window area to create said first image as a zoomed image prior to said step of merging; and

said step of creating further comprises downscaling said original image information to create said second image; wherein said method further comprises:

providing said analog output image stream as an analog video signal for transmission across said analog interface;

receiving said analog video signal from across said analog interface, said analog video signal comprising said first and second images; and

displaying said zoomed first image ~~at said first resolution~~ on an analog display device while simultaneously displaying said downscaled second image ~~at said second resolution~~ on said same analog display device, said second image being downscaled such that it does not occupy the full analog display space of said analog display device, and said first image being displayed on at least a portion of said analog display device that is not occupied by said second image."

Reasons for the Decision

1. The appeal is admissible.

Procedural issues

2. In its communication under Article 15(1) RPBA annexed to the summons to oral proceedings, the board concurred with the appellant that the examining division had committed a substantial procedural violation by introducing prior-art document D3 for the first time during the oral proceedings in the applicant's absence

and refusing the application on the basis of the combination of D2 and D3.

However, since the appellant had explicitly requested that the case **not** be remitted to the examining division, the board decided, pursuant to Article 111(1) EPC 1973, to exercise the power within the competence of the examining division to review the substance of the reasons for the decision under appeal and to consider the amendments filed on appeal.

The invention

3. The invention concerns a method for transmitting images from a digital video camera over a legacy analog interface having a limited bandwidth. The core idea of the invention is to create several digital image data streams which together do not exceed the transmission capacity of the analog interface. The different image data streams comprise images of different resolutions, such as a first stream comprising low-resolution images of a whole scene and a second stream comprising high-resolution images of an area of interest in the scene. The digital image data streams are then merged and converted into an analog video signal before transmission over the analog interface.

Main request - amendments

4. Claim 1 of the present main request corresponds to claim 1 of the main request on which the decision under appeal is based, except that the terms "at least one digital image data input stream" and "at least a portion of said digital image information" have been replaced by "a digital image data input stream" and "a portion of said digital image information",

respectively. A few features have also been moved within claim 1, but without substantially changing the claimed subject-matter.

Main request - interpretation of claim 1

5. In the decision under appeal, the examining division argued that the features relating to the transmission across an analog interface were "so broad that it remains obscure which concrete technical features should supposedly differentiate an 'analog' from a 'digital' interface". Hence, the conversion into an analog image output stream was implicit in the prior art by modulating the digital video stream signal onto a suitable analog carrier (see decision under appeal, Reasons, points 2.1.1 and 2.1.5).

Even though this interpretation may be accepted on reading the claim in isolation, the board considers that it does not reflect the understanding of an analog transmission as supported by the application, i.e. such that a composite video signal (with the variants PAL or NTSC) is transmitted via a "standard coaxial cable" (see page 2, last paragraph, page 3, first paragraph, page 28, second paragraph or page 43, last two paragraphs).

The appellant concurred with the board on the above interpretation and further argued that the method of claim 1 should be construed as implying that the "analog video signal" transmitted over the analog interface was a standard composite video signal (such as NTSC or PAL) which could be directly displayed on a standard analog display device.

6. The board agreed to proceed to assess inventive step using the above restricted interpretation of "analog interface" and "analog video signal".

Main request - inventive step

7. Closest prior art

The examining division held document D2 to be the closest prior art.

The board, however, considered that document D4, which had been cited as "X" in the international search report (ISR), was as good a starting point as document D2 for the assessment of inventive step for the subject-matter of claim 1 of the main request, and a better starting point for the subject-matter of the dependent claims of the main request and for all the claims of the auxiliary requests. Document D4 was introduced into the appeal proceedings by the board with the communication under Article 15(1) RPBA annexed to the summons to oral proceedings.

The appellant did not object to D4 being regarded as the closest prior art.

8. Disclosure of D4

8.1 D4 discloses a video conferencing system which makes it possible to capture and transmit multiple views of a videoconferencing site without requiring a complex mechanical structure for panning, tilting or zooming (see paragraphs [0005] to [0008]). The system comprises a high-definition digital video camera (110 in figure 1 or 212 in figure 2) which captures an input digital image data stream of the scene, i.e. of the video

conference participants, and a video processing engine (310 in figure 3, further detailed in figure 4) which creates at least two digital image data streams (A and B in figures 3 and 4) from the input stream. In one embodiment, stream A represents the entire videoconferencing scene at a downscaled resolution of 700x400 pixels and stream B is a smaller image at a resolution scaled down to 300x200 pixels showing the speaking participant (see paragraphs [0039] and [0040] and figure 5). The position of the speaking participant is identified by comparing the different magnitudes of the electric signals in a plurality of microphones (paragraph [0034]). The streams A and B are merged into a common digital image data output stream (see "communication signal" in paragraph [0036]) which is transmitted over an interface (communication channel 118 in figures 1 and 3). At the receiver, on the other side of the interface, streams A and B are decoded and displayed (see figures 5 and 7 and paragraphs [0039], [0040] and [0044]).

The appellant did not dispute the above disclosure of D4.

8.2 The board also considers it to be implicit in the disclosure of D4 that the input digital image data stream of the scene captured by the high-definition video camera exceeds the transmission capacity of the interface. This is derivable from the fact that the images of the whole scene captured by the high-definition video camera have a very high resolution of 3000x2000 pixels (see paragraph [0038]) which has to be scaled down to 700x400 pixels before transmission over the interface as stream A (paragraph [0039]).

8.3 The appellant disputed that this feature was implicitly disclosed on the grounds that the downscaling of the resolution could be due to the limited resolution of the display device at the receiver rather than the limited transmission capacity of the interface.

8.4 The board does not find this argument persuasive for the following reasons:

D4 was filed in 2002. In 2002, a resolution of 3000x2000 pixels was a very high resolution for a digital image and even more so for a stream of digital images (i.e. a digital video stream). Hence, the board maintains its view that the downscaling of the images in D4 from 3000x2000 pixels to 700x400 pixels before transmission as stream A was necessary because the transmission of a stream of images with 3000x2000 pixels in real time would certainly have exceeded the transmission capacity of the interface. The fact that the display device at the receiver might not have been able to display a resolution as high as 3000x2000 pixels does not change the fact that the transmission capacity of the interface was exceeded.

9. Distinguishing features

For the above reasons, the board considers that the method of claim 1 differs from that of D4 by the distinguishing features that the interface is analog and the signals are converted from digital to analog before transmission across the analog interface.

10. Objective technical problem

In the communication under Article 15(1) RPBA annexed to the summons to oral proceedings, the board

formulated the objective technical problem as "how to adapt the method of D4 to a legacy-type of interface".

During the oral proceedings, the appellant argued that the objective technical problem should be "how to adapt the method of D4 to a legacy-type interface while minimising modification of the system as a whole" in order to take into account the technical effect that the transmitted analog video signal could be directly displayed on an standard analog display device.

Even though claim 1 of the main request does not include features relating to the display at the receiver side, the board accepted the appellant's formulation of the objective technical problem.

11. Obviousness

11.1 In the board's view, the skilled person would have arrived at the method of claim 1 without an inventive step for the following reasons:

The videoconferencing system of D4 comprises two conferencing stations (102 or 104 in figure 1 and 200 in figure 2) which communicate with one another via a communication channel (118 in figures 1 and 3), wherein each conferencing station can act as a transmitter and as a receiver. The communication channel 118 can be the Internet, a LAN, a WAN, or any other type of network communication means (see paragraphs [0023], [0042] and [0044]).

Before the application's priority date (20 March 2003), it was common for digital electronic systems to be equipped not only with a digital output, but also with an analog output for compatibility with legacy analog

equipment. For instance, personal computers (PC), including laptops, were often provided with both a digital video output (e.g. DVI) and an analog video output (e.g. VGA or SVGA).

It would therefore have been straightforward for the skilled person to equip the conferencing station of D4 with an analog video output in order to allow it to communicate with another similarly equipped conferencing station over a legacy analog interface and/or in order to provide an analog video signal which could be directly input to a legacy external analog television screen for the public to watch the videoconference.

The generation of such an analog video signal by the conferencing station of D4 would have been straightforward to implement because the digital signals generated by the conferencing station can easily be converted to a standard analog television signal. Indeed, the conferencing station of D4 generates video streams A and B (see figure 3) corresponding to images A and B in figure 5, an audio signal (see figure 3) and a position signal (see figure 3) indicating the position of the speaking participant (see paragraphs [0036], [0039] and [0042]). It would have been straightforward to convey all this information via a standard analog video signal (e.g. NTSC, PAL or SECAM) by merging the images of video streams A and B before converting them to analog and by adding the position signal in the vertical blanking interval (VBI) of the analog TV signal.

For the above reasons the skilled person would have arrived at the method of claim 1 without an inventive step.

11.2 The appellant argued that the skilled person would not have wanted to modify the method of D4 in the above manner for the following reasons:

(a) There was no suggestion in D4 to transmit analog video signals instead of or in addition to digital video signals.
(b) Video streams A and B were encoded and compressed by the transmitter. They would thus have had to be decoded and decompressed before being converted to analog video signals, which would not have made technical sense.
(c) The two video streams A and B would have been converted into two analog video signals, one for each stream, rather than into a single analog video signal.
(d) The conferencing stations of D4 also addressed an "out of phase" problem due to the transmission delay (see paragraphs [0030] to [0032] and [0045] and figure 8). This problem would not have been addressed in the case of an analog video signal.

11.3 The board does not find these arguments persuasive for the following reasons:

Re argument (a)

For the reasons given under point 11.1 above, it would have been obvious to add an analog video output to the videoconferencing stations of D4, even in the absence of any suggestion to do so in D4. Moreover, D4 states that the communication channel 118 is not limited to the examples given and may be "any other type of network communication means" (see paragraphs [0023] and [0042]) or "other networks known in the art" (see paragraph [0044]), which may be construed as a

suggestion that the communication channel is not limited to digital communication but also includes analog communication.

Re argument (b)

As shown in figure 3 and explained in paragraph [0036] of D4, video streams A and B generated in video processing unit 206 by video processing engine 310 are passed to a digital interface unit (communication interface 304) in which a communication processing engine 318 encodes and compresses video streams A and B. The skilled person wanting to add an analog interface unit would place it in parallel with the digital interface unit, not in series after the digital interface unit. In other words, like the digital interface unit, the analog interface unit would receive video streams A and B (and the audio and position signals) directly from the output of video processing unit 206, i.e. at a stage where these streams have not yet been encoded or compressed.

Re argument (c)

As explained under point 11.1 above, the skilled person would have wanted to add an analog video output to the videoconferencing station of D4 in order to provide an analog video signal which could be directly input to a legacy external analog television screen for the public to watch the videoconference. An analog video signal output for such a purpose would have had to be a single standard analog video signal (e.g. NTSC, PAL or SECAM) which can displayed on a standard analog television screen without requiring any pre-processing, which excludes the possibility of converting video streams A

and B to two analog video signals transmitted separately.

Re argument (d)

The small transmission delay is a non-issue, at least in the case of an analog video signal output for direct display on a standard analog television screen. Hence, it would not deter the skilled person from providing such an analog video signal.

12. Conclusion on inventive step

For the above reasons, the method of claim 1 of the main request does not involve an inventive step (Article 56 EPC 1973) in view of document D4 and common general knowledge.

13. Conclusion on the main request

Since claim 1 does not meet the requirements of Article 56 EPC 1973, the appellant's main request is not allowable.

First auxiliary request - amendments

14. Claim 1 of the first auxiliary request differs from claim 1 of the main request by the additional feature that at the receiver the first image is displayed on an analog display device.

First auxiliary request - inventive step

15. The use of an analog display at the receiver side has already been considered in the reasoning regarding claim 1 of the main request. Consequently, the reasons

given above for the main request apply equally to claim 1 of the first auxiliary request.

16. Hence, the method of claim 1 of the first auxiliary request does not involve an inventive step (Article 56 EPC 1973) in view of document D4 and common general knowledge.

17. Conclusion on the first auxiliary request

Since claim 1 does not meet the requirements of Article 56 EPC 1973, the appellant's first auxiliary request is not allowable.

Second auxiliary request - amendments

18. Claim 1 of the second auxiliary request differs from claim 1 of the main request in that

(a) said digital image information comprises an original image;

(b) said step of creating said first image comprises extracting a window area from said original image information and then upscaling said window area to create said first image as a zoomed image prior to said step of merging;

(c) said step of creating further comprises downscaling said original image information to create said second image; and

(d) displaying said zoomed first image on an analog display device while simultaneously displaying said downscaled second image on said same analog display device, said second image being downscaled such that it does not occupy the full analog display space of said analog display device, and said first image being displayed on at least a portion of said analog display device that is not occupied by said second image.

Second auxiliary request - inventive step

19. The board considers that features (a) to (d) do not add anything inventive to the method of claim 1 for the following reasons:

Re feature (a)

In D4, the digital image information from the digital HD video camera comprises an original image with a resolution of 3000x2000 pixels (see paragraph [0038]).

Re feature (b)

The first image 504 in figure 5 of D4 is created by extracting a window area (the speaking participant) from said original image (the whole scene) (see paragraph [0039]). This window area is zoomed (see paragraph [0040]). The board regards it as implicit, or in any case obvious, that the window area is zoomed from the high-resolution original image. As a result, the first image 504 shows finer details of the speaking participant than without the zooming. In other words, the first image is upscaled.

Re feature (c)

The second image 502 in figure 5 of D4 is a version of the original image which has been downscaled from 3000x2000 pixels to 700x400 pixels (see paragraphs [0038] and [0039]).

Re feature (d)

In D4, the first and second images are displayed simultaneously on the same display device (see

figure 5) which, for the reasons given above regarding the main request, may be a standard analog television screen, without this implying an inventive step. Regarding the specific layout of the first and second images in feature (d), displaying image 504 next to image 502 would have been an obvious alternative to displaying it overlaid on image 502 as shown in figure 5 of D4.

20. The appellant essentially argued that
(1) there was no upscaling of the image of window 504 in D4 because the pixel densities of the images in windows 502 and 504 were the same; and
(2) D4 only taught overlaying window 504 on window 502, which did not make it possible to see the whole scene. The arrangement of the first and second images of feature (d) was not suggested by D4.

21. The board does not find these arguments persuasive for the following reasons:

Re argument (1)

The zoomed image in window 504 is upscaled because it is implicit, or in any case obvious, that the window area is zoomed from the high-resolution original image (see figure 5 and paragraph [0040]). As a result, the first image 504 shows finer details of the speaking participant than without the zooming. In other words, the first image is upscaled. The pixel density, i.e. the number of pixels per inch, on the analog display device does not have to be higher in window 504 than in window 502 for the zoomed image of window 504 to be upscaled. There is no basis in the present application for interpreting "upscaling" as meaning more pixels per inch on the analog display device.

Re argument (2)

Arranging the first and second images to not fully overlap is an obvious alternative to the fully overlapping arrangement for images 502 and 504 in figure 5 of D4, based on usual design considerations. The pros and cons of both arrangements were known, or would in any case have been obvious to the skilled person.

22. Conclusion on inventive step

23. For the above reasons, the method of claim 1 of the second auxiliary request does not involve an inventive step (Article 56 EPC 1973) in view of document D4 and common general knowledge.

24. Conclusion on the second auxiliary request

Since claim 1 does not meet the requirements of Article 56 EPC 1973, the appellant's second auxiliary request is not allowable.

Request for reimbursement of appeal fee

25. According to Rule 67 EPC 1973 (Rule 103(1)(a) EPC) the appeal fee is to be reimbursed in full in the event of interlocutory revision or where the Board of Appeal deems an appeal to be allowable, if such reimbursement is equitable by reason of a substantial procedural violation.

26. In the present case, the board did not grant any of the appellant's requests, so the necessary condition for

reimbursement of the appeal fee is not met because the appeal is not deemed to be allowable.

27. Hence the appellant's request for reimbursement of the appeal fee must be refused.

Order

For these reasons it is decided that:

1. The appeal is dismissed.
2. The request for reimbursement of the appeal fee is refused.

The Registrar: The Chairman:

K. Boelicke R. Gerdes

Decision electronically authenticated