BESCHWERDEKAMMERN
DES EUROPÄISCHEN
PATENTAMTS

BOARDS OF APPEAL OF
THE EUROPEAN PATENT
OFFICE

CHAMBRES DE RECOURS
DE L'OFFICE EUROPÉEN
DES BREVETS

Internal distribution code:
(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision
of 29 November 2021

Case Number: T 1209/20 - 3.5.05

Application Number: 15152978.1

Publication Number: 2998858

IPC: G06F3/14, G09G3/20

Language of the proceedings: EN

Title of invention:
Automatic installation method for video wall and related
system

Applicant:
ATEN International Co., Ltd.

Headword:
Automatic installation method for video wall / ATEN

Relevant legal provisions:
EPC Art. 84, 54, 83, 123(2)
RPBA 2020 Art. 12(6)

Keyword:
Claims - clarity (no)
Sufficiency of disclosure - (no)
Amendments - added subject-matter (yes)

EPA Form 3030
This datasheet is not part of the Decision
It can be changed at any time and without notice

Case Number: **T 1209/20 - 3.5.05**

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 29 November 2021

Appellant: (Applicant)	ATEN International Co., Ltd. 3F., No. 125, Sec. 2 Datong Road Xizhi District New Taipei City 221 (TW)
Representative:	Lang, Christian LangPatent Anwaltskanzlei IP Law Firm Ingolstädter Straße 5 80807 München (DE)
Decision under appeal:	Decision of the Examining Division of the European Patent Office posted on 7 November 2019 refusing European patent application No. 15152978.1 pursuant to Article 97(2) EPC.

Composition of the Board:

Chair	A. Ritzka
Members:	N. H. Uhlmann
	F. Blumer

Summary of Facts and Submissions

I.   The appellant appealed against the examining division's
        decision refusing European patent application
        No. 15152978.1, which was filed on 29 January 2015.

II.   The examining division decided that the subject-matter
        of the independent claims of the main request and of
        the first and second auxiliary requests did not meet
        the requirements of Articles 54 and 84 EPC.
        Furthermore, it decided that the third auxiliary
        request did not satisfy the requirements of Articles 83
        and 84 EPC. The fourth auxiliary request was not
        admitted pursuant to Rule 137(3) EPC.

III.   The examining division made reference to the following
        documents:

        D1   US 2008/100805
        D2   US 2010/328447
        D3   FERNANDO TEUBL ET AL: "FastFusion: A Scalable
        Multi-projector System", VIRTUAL AND AUGMENTED REALITY
        (SVR), 2012 14TH SYMPOSIUM ON, IEEE, 28 May 2012, pages
        26-35, DOI: 10.1109/SVR.2012.1, ISBN:
        978-1-4673-1929-4.
        D4   US 2012/013523
        D5   US 2014/193037

IV.   With the statement setting out the grounds of appeal
        the appellant maintained the main request and the first
        to fourth auxiliary requests underlying the contested
        decision. It submitted additionally fifth to eight
        auxiliary requests.

V.   The board summoned the appellant to oral proceedings.

In a communication pursuant to Article 15(1) RPBA 2020, the board set out its provisional view of the case.

VI.   With letter dated 26 November 2021 the appellant informed the board that it would not attend the oral proceedings.

VII.   The appellant requested in writing that the decision under appeal be set aside and that a patent be granted on the basis of one of the following requests:
- the main request as filed on 16 October 2017;
- the first and second auxiliary requests as filed on 14 August 2019;
- the third and fourth auxiliary requests as filed during oral proceedings before the examining division on 15 October 2019;
- the fifth to eighth auxiliary requests as filed with the statement setting out the grounds of appeal filed on 20 March 2020.

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

"A method for automatically installing a video wall (10) including a plurality of video devices, the method characterized by steps of:

(a) randomly connecting a plurality of output ports of a control system (200) to the plurality of video devices;

(b) the control system (200) outputting each of a plurality of different identifiable images to a corresponding one of the plurality of video devices through the plurality of output ports;
(c) an imaging module (102) of an image capturing device (100) capturing the plurality of different identifiable images displayed on the video wall (10);

(d) a video wall automatic-installation module (103) of the image capturing device (100) processing and calculating the plurality of different identifiable images so as to obtain a position data of an arrangement order for the plurality of video devices, wherein the arrangement order refers to a connecting relation between each of the plurality of output ports and each of the plurality of video devices; and

(e) based on the position data of the arrangement order for the video devices, the control system (200) automatically setting up image display of the video wall (10)."

IX.   Claim 1 of the first auxiliary request corresponds to claim 1 of the main request. The wording "wherein the identifiable image displayed in each video device is different from the others" has been added to feature (b) of claim 1.

X.   Claim 1 of the second auxiliary request corresponds to claim 1 of the first auxiliary request. The wording "without a predetermined correspondence of which output port being coupled to which video device" has been added to feature (a) and the wording "so that the output port that corresponds to each video device of the video wall (10) can be identified" has been added to feature (d) of claim 1.

XI.   Claim 1 of the third auxiliary request corresponds to claim 1 of the first auxiliary request. The wording "according to the position information" has been added to feature (e) and feature (f) has been added to claim 1:

"(f) based on the plurality of different identifiable images, the video wall automatic installation module (103) of the image capturing device (100) determining spacings between adjacent video devices and frame data

of the video devices, wherein the image capturing device (100) obtains a length or width of an image of the video wall (10), calculates a ratio between the length or width and an actual length or width of the video wall (10), recognizes image frames of the video devices and distances between the image frames using image recognition, and calculate [sic] physical distances, including horizontal spacing and vertical spacing, between the video devices based on the ratio and the recognized distances between the image frames."

XII.   The wording of the claims of the fourth auxiliary request is of no relevance for this decision.

XIII.   Claim 1 of the fifth auxiliary request corresponds to claim 1 of the third auxiliary request. Feature (f) was amended and reads as follows:

"(f) based on the plurality of different identifiable images, the video wall automatic-installation module (103) of the image capturing device (100) determining spacings between adjacent video devices, wherein the image capturing device (100) obtains a length or width of an image of the video wall (10), calculates a ratio between the length or width and an actual length or width of the video wall (10), recognizes image frames of the video devices by using image recognition so as to obtain distances between the image frames, and calculate [sic] physical distances, including horizontal spacing and vertical spacing, between the video devices based on the ratio and the recognized distances between the image frames."

XIV.   Claim 1 of the sixth auxiliary request corresponds to claim 1 of the fifth auxiliary request. The wordings set out in section X. above have been added to claim 1 and feature (f) reads as follows:

"(f) based on the plurality of different identifiable images, the video wall automatic installation module (103) of the image capturing device (100) determining spacings between adjacent video devices, wherein the image capturing device (100) obtains a length or width of an image of the video wall (10), calculates a ratio between the length or width and an actual length or width of the video wall (10), recognizes image frames of the video devices and distances between the image frames using image recognition, and calculate [sic] physical distances, including horizontal spacing and vertical spacing, between the video devices based on the ratio and the recognized distances between the image frames."

XV.   Claim 1 of the seventh auxiliary request corresponds to claim 1 of the third auxiliary request. *Inter alia*, feature (f) has been amended and reads:

"(f) based on the image of the video wall (10), the video wall automatic installation module (103) of the image capturing device (100) determining spacings between adjacent video devices and actual physical frame size of the each video device, wherein the image capturing device (100) obtains a length or width of the image of the video wall (10), calculates a ratio between the length or width and an actual length or width of the video wall (10), recognizes image frame representing an actual physical frame of the each video device and distances between the image frame representing the actual physical frame of the each video device by using image recognition, and calculate [sic] physical distances, including horizontal spacing and vertical spacing, between the video devices based on the ratio and the recognized distances between the image frame representing the actual physical frame of the each video device."

XVI.   Claim 1 of the eight auxiliary request corresponds to
        claim 1 of the third auxiliary request. *Inter alia*,
        feature (f) has been amended and reads:

        "(f) based on the image of the video wall (10), the
        video wall automatic-installation module (103) of the
        image capturing device (100) determining spacings
        between adjacent video devices and actual physical
        frame size of the each video device, wherein the image
        capturing device (100) obtains a length or width of the
        image of the video wall (10), calculates a ratio
        between the length or width and an actual length or
        width of the video wall (10), recognizes image frame
        representing the actual physical frame size of the each
        video device and distances between the image frame
        representing the actual physical frame size of the each
        video device by using image recognition, and calculate
        [sic] physical distances, including horizontal spacing
        and vertical spacing, between the video devices based
        on the ratio and the recognized distances between the
        image frame representing the actual physical frame size
        of the each video device."

Reasons for the Decision

1.   The present application pertains to a method and system
        for automatically installing a video wall comprising a
        plurality of video devices. The video devices are
        connected to ports of a control system in a random, or
        unspecified, manner. Different images are displayed on
        the video devices and captured by an imaging module.
        Based thereon, it is established which port is
        connected to which video device. Further, distances
        between the images are determined.

2.   Document D4 discloses a system which senses, using a
         camera, the geometric layout of a multi-display
         arrangement and automatically configures a graphics
         adaptor to drive the proper port to each display.

Main request

3.   Article 84 EPC

3.1   Feature (d) in claim 1 refers to "a video wall
         automatic-installation module (103) of the image
         capturing device (100) processing and calculating the
         plurality of different identifiable images". I.e. the
         video wall automatic-installation module processes the
         images output by the control system (feature (b)). At
         the same time, according to feature (c), images
         displayed on the video wall are captured, but the video
         wall automatic-installation module does not process the
         captured images. This inconsistency introduces lack of
         clarity.

3.2   Independent claim 7 pertains to an "image capture
         device". The video devices and the control system do
         not form part of the claimed device. It is not clear if
         and to what extent they have any limiting effect on the
         claimed device.

         Additionally, the capturing, by the imaging module, of
         the images displayed on the video wall is an essential
         feature, but is missing in claim 7.

3.3   For these reasons independent claims 1 and 7 do not
         meet the requirements of Article 84 EPC.

4.   Article 54 EPC

4.1   The examining division came to the conclusion the
         subject-matter of claim 1 was anticipated by the
         teaching of document D4.

4.2   The appellant argued that D4 did not disclose feature
        (a)
        "randomly connecting a plurality of output ports of a
        control system to the plurality of video devices".

4.3   The board holds that document D4 discloses feature (a).

4.4   The crucial aspect of feature (a) is the technical
        meaning of "randomly connecting".

        The appellant submitted (first full paragraph on page 3
        of the statement of grounds) that due to the
        possibility for randomly connecting ports to video
        devices "the user does not have to bother about which
        output port is to be connected to which monitor when
        installing a video wall consisting of a plurality of
        monitors".

        In other words, in the board's understanding, the
        claimed method does not impose any specific rules on
        the user like "connect the upper left video device to
        port 1". Overall, "randomly" does not refer to any
        random numbers or random events (like rolling a dice)
        but rather to "in an unspecified manner".

        Page 7, lines 20, 21, 16 and 17 of the description of
        the application in suit confirm this understanding:
        "with no predetermined correspondence of which output
        port being coupled to which TV"
        "First, in step 501, the control system is connected to
        the TVs, in an unspecified or random manner, to form a
        TV wall".

4.5   According to paragraph 5, D4 addresses a similar
        problem "The present method automates the mapping of
        output ports on a graphics adaptor in a host PC to an
        image displayed by a corresponding set of display
        devices".

4.6   With regard to feature (a), D4 clearly discloses that a
        plurality of output ports of a control system are
        connected to the plurality of video devices, see e.g.
        Figures 1 and 3. It remains to be analysed if D4
        discloses the limitation "randomly" in the sense of "in
        an unspecified manner".

4.7   D4 teaches that, based on images taken by a camera, a
        display configuration is automatically derived, which
        includes "the correspondence between graphics adaptor
        output ports 107(B)/107(A) and each physical display
        105" (paragraph 22). Hence, there is no need to specify
        certain manner of connecting ports to display devices,
        because this correspondence is derived automatically by
        the described method. Furthermore, if the manner of
        connecting ports to display devices was pre-specified,
        then the automatic deriving would not make any sense.

        From these observations follows that the manner of
        connecting ports to display devices is not pre-
        specified in D4. Thus, the ports are connected to the
        display devices in an unspecified manner.

4.8   As an aside, the board notes that claim 1 pertains to a
        "method for automatically installing a video wall".
        Feature (a) is an instruction to the user to carry out
        certain actions (along the lines of "connect ports to
        video devices using a bunch of cables"). Such action to
        be performed by the user does not have any limiting
        effect on the claimed method for automatically
        installing a video wall.

4.9   For these reasons, the board holds that the subject-
        matter of claim 1 is anticipated by the disclosure of
        document D4.

5.   The main request is thus not allowable.

First auxiliary request

6.   Article 84 EPC

        The objections set out in sections 3.1 to 3.3 above
        apply similarly to the claims of the first auxiliary
        request.

7.   Article 54 EPC

7.1   The wording
        "wherein the identifiable image displayed in each video
        device is different from the others"
        has been added to feature (b) of claim 1.

7.2   According to the decision under appeal (section 2 on
        page 11), this additional limitation is disclosed in
        document D4. The board agrees. The appellant did not
        provide any specific arguments on this issue.

7.3   For these reasons, the board holds that the subject-
        matter of claim 1 of the first auxiliary request is
        anticipated by the disclosure of document D4.

8.   Consequently, the first auxiliary request is not
        allowable.

Second auxiliary request

9.   Article 84 EPC

        The objections set out in sections 3.1 to 3.3 above
        apply similarly to the claims of the second auxiliary
        request.

10.   Article 54 EPC

10.1   The wording
        "without a predetermined correspondence of which output
        port being coupled to which video device" and
        "so that the output port that corresponds to each video
        device of the video wall can be identified"

has been added to claim 1 of the first auxiliary request.

10.2   This wording merely confirms the understanding of the term "randomly connecting" as set out in section 4. above. Furthermore, D4 discloses that the correspondence between the video devices and the output ports is identified.

10.3   For these reasons, the board holds that the subject-matter of claim 1 of the second auxiliary request is anticipated by the disclosure of document D4.

11.   Hence, the second auxiliary request is not allowable.

Third auxiliary request

12.   Amendments

        This auxiliary request was submitted in the course of the first-instance oral proceedings.

        Claim 1 is based on claim 1 of the first auxiliary request. The features of dependent claims 2 and 3 have been added to claim 1 as feature (f) which reads:

        "based on the plurality of different identifiable images, the video wall automatic installation module (103) of the image capturing device (100) determining spacings between adjacent video devices and frame data of the video devices,
        wherein the image capturing device (100) obtains a length or width of an image of the video wall (10), calculates a ratio between the length or width and an actual length or width of the video wall (10), recognizes image frames of the video devices and distances between the image frames using image recognition, and calculate physical distances, including horizontal spacing and vertical spacing,

between the video devices based on the ratio and the recognized distances between the image frames".

13.   Article 84 EPC

13.1   The objections set out in section 3. above apply analogously to the independent claims of the third auxiliary request.

13.2   The examining division decided that claim 1 did not meet the requirements of Article 84 EPC. It was argued that the terms "frame data of video device" and "distances between image frames" did not have any meaning in the art.

The board agrees with the decision under appeal that the meaning of "frame data of video device" in claim 1 is not clear. Moreover, the description does not provide any support for a "frame data". The claims and the description of the application refer to the different notions of e.g. "frame distance", "distances between the image frames", "frame size", "frame dimension", "image frames" and "frame information of each TV". The appellant did not provide any specific arguments regarding "frame data".

13.3   Differently, the term "distances between image frames" is clear. "Image frame" is considered to be the area on a video device which depicts the identifiable image.

13.4   According to the decision under appeal, the term of "calculate physical distances" amounted to a result to be achieved.

The board deems it expedient to address this objection in the section on Article 83 EPC below.

14.   Article 83 EPC

14.1   The examining division held that the feature of
         determining spacing, or physical distances, between the
         video devices was not sufficiently disclosed.

14.2   The appellant, referring to feature (f), argued that
         first "length or width of an image of the video wall"
         is obtained, then "a ratio between the image length or
         width and the actual length or width of the TV wall is
         determined", then the image frames and the distances
         between them are recognised and, using the ratio and
         these distances, the physical distances between the
         video devices are calculated.

14.3   The board observes that obtaining the length of the
         image of the video wall (e.g. in pixels) appears in
         general to be within the reach of a skilled person who
         is aware of image recognition techniques. The
         determination of the ratio seems to be only possible
         when the actual length of the video wall (e.g. in
         meters) is provided by a user of the method. The claim
         will be interpreted accordingly.

14.4   The recognition of the **image frames and the distances
         between them** (in pixels) appears to be within the
         competence of the skilled person.

14.5   However, the last step, i.e. the calculation of the
         physical distances between the video devices is not
         sufficiently disclosed. The board notes that in general
         a video device has a front surface which is bigger than
         the image frame. In other words, the front surface of a
         video device is between a few millimeters and a few
         centimeters wider than the image frame. Additionally,
         the optical properties of the surface surrounding the
         image frame might widely vary. At the same time, it is
         not disclosed nor is it apparent how this difference in
         width could be determined. Figure 3 of the application

in suit illustrates the distances between the image
frames, while Figure 1, as adapted in the statement of
grounds (page 6), depicts the different distances
between the video devices. The figure on page 9 of the
statement of grounds illustrates precisely the
difference between "frame spacing" and "video device
spacing".

14.6   Consequently, the invention according to claim 1 is not
sufficiently disclosed.

15.   Thus, the third auxiliary request is not allowable.

Fourth auxiliary request

16.   Admission

This request was not admitted by the examining division
(Rule 137(3) EPC). On appeal, the appellant merely
submitted on page 10 of the statement of grounds that
it "should be admitted".

The board takes the view that the examining division
exercised its discretion in a proper way and does not
admit the fourth auxiliary request (Article 12(6) RPBA
2020).

Fifth and sixth auxiliary requests

17.   Article 83 EPC

The amendments to the claims do not address the
objections in section 14. above. Therefore, these
auxiliary requests are not allowable.

Seventh and eight auxiliary requests

18.   Amendments

18.1   Claim 1 of both requests refers in feature (f) to
"actual physical frame size of the each video device".
Furthermore, feature (f) states that the image frame is

"representing an actual physical frame of the each video device". The appellant submitted that these amendments were based on page 9, lines 7 to 13 of the description.

18.2   It appears that the appellant referred to a passage in the description as amended on 2 May 2016, while Article 123(2) EPC requires a basis in the application as filed. It seems that the appellant might have intended to refer to page 8, line 27 to page 9, line 2 of the description as originally filed.

18.3   The board considers that there is no basis in the original application documents for any "actual physical frame" or for its size.

18.4   Additionally, there is no basis for "distances between the image frame", "frame" being amended to a singular form.

18.5   Hence, these auxiliary requests are not allowable.

19.   Conclusion

There being no allowable request on file the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

K. Götz-Wein   A. Ritzka

Decision electronically authenticated