Internal distribution code:

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

Datasheet for the decision of 15 December 2023

Case Number: T 2072/19 - 3.5.04

Application Number: 15186718.1

Publication Number: 3148186

IPC: H04N7/18, B64D11/00

Language of the proceedings: EN

Title of invention:
VIRTUAL WINDOWS FOR AIRBORNE VEHICLES

Applicant:
Airbus Operations GmbH

Headword:

Relevant legal provisions:
EPC Art. 84

Keyword:
Claims - clarity - main request and auxiliary request (no)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 2072/19 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 15 December 2023

Appellant: (Applicant)	Airbus Operations GmbH Kreetslag 10 21129 Hamburg (DE)
Representative:	Isarpatent Patent- und Rechtsanwälte Barth Charles Hassa Peckmann & Partner mbB Friedrichstrasse 31 80801 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 14 March 2019 refusing European patent application No. 15186718.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair	G. Decker
Members:	F. Sanahuja
	A. Seeger

Summary of Facts and Submissions

I. The appeal is against the examining division's decision to refuse European patent application No. 15 186 718.1.

II. The following document was cited in the decision under appeal:

D1 US 2004/0217976 A1

III. The application was refused on the following grounds.

(a) Neither the main request nor the auxiliary request was allowable because the subject-matter of claims 1, 7 and 11 of both requests lacked inventive step over the disclosure of document D1 combined with the common general knowledge of the person skilled in the art (Article 56 EPC).

(b) Claims 1, 7 and 11 of the main request and the auxiliary request were not clear (Article 84 EPC).

IV. The applicant (appellant) filed notice of appeal. With its statement of grounds of appeal, the appellant maintained the requests that had formed the basis of the decision under appeal. It also provided arguments to support its opinion that the examining division's findings were incorrect.

V. The appellant was summoned to oral proceedings. In a communication under Article 15(1) RPBA 2020, the board set out, *inter alia*, its preliminary opinion that claim 1 of both requests was not clear (Article 84

EPC).

VI. In a letter of reply, the appellant submitted arguments to support its opinion that the independent claims of the main request and of the auxiliary request did fulfil the requirements of Article 84 EPC.

VII. On 15 December 2023, the board held oral proceedings.

The appellant's final requests 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 alternatively, of the claims of the auxiliary request, both requests having formed the basis for the decision under appeal.

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

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

"Virtual window assembly for an airborne vehicle, comprising:

at least one camera (C) configured to capture a panoramic and time-resolved image data stream from the view to the outside of the airborne vehicle;

at least one image data processor (P) coupled to the at least one camera (C) and configured to receive the captured image data stream and to split the image data stream into a plurality of partial image data streams corresponding to different viewing angles of the panoramic image data stream; and

a plurality of electronic displays (S) mounted to an

inside of a hull (H) of the airborne vehicle, coupled to the image data processor (P) and configured to receive the plurality of partial image data streams,

wherein each of the plurality of electronic displays (S) is configured to display one of the plurality of partial image data streams so that the physical mounting location of the electronic displays in the airborne vehicle corresponds to the associated camera viewing angle of the displayed one of the plurality of partial image data streams,

wherein the image data processor (P) is configured to generate the plurality of partial image data streams with an overlap in viewing angles of the panoramic image data stream, and wherein the plurality of electronic displays (S) is configured to display stitched partial image data streams."

IX. Claim 1 of the **auxiliary request** differs from claim 1 of the main request in that the at least one camera and the plurality of electronic displays are additionally configured as follows (with additions being underlined):

"at least one camera (C), wherein the one camera or each camera is configured to capture a panoramic and time-resolved image data stream from the view to the outside of the airborne vehicle;"

"a plurality of electronic displays (S) mounted to an inside of a hull (H) of the airborne vehicle and mounted side-by-side in a horizontal line along an extension of a fuselage (H) of the airborne vehicle, coupled to the image data processor (P) and configured to receive the plurality of partial image data streams"

"and wherein the plurality of electronic displays (S) is configured to display a seamless transition between neighbouring displays (S1; ...; S6) and to display stitched partial image data streams which are stitched in the regions of overlaps of neighbouring view angles, wherein the partial image data streams to be stitched are registered, calibrated according to the overlapping common features therein and blended at the overlap."

Reasons for the Decision

1. The appeal is admissible.

2. *The invention*

2.1 The invention relates to displaying a panoramic view of the outside of an aircraft to passengers within the aircraft.

A camera captures a panoramic data stream of the outside of the aircraft which is subsequently split into a plurality of partial image data streams corresponding to different viewing angles. Each of a plurality of electronic displays inside the aircraft displays the partial image data stream whose viewing angle corresponds to the display's physical mounting position.

3. *Both requests – clarity (Article 84 EPC)*

3.1 According to Article 84 EPC, the claims must be clear.

3.2 A claim lacks clarity if, among other things, the exact distinctions which delimit the scope of protection cannot be learnt from it, or if it comprises an unclear

technical feature for which no unequivocal generally accepted meaning exists in the relevant art (see Case Law of the Boards of Appeal of the European Patent Office, 10th edition, 2022, "Case Law", II.A.3.1).

In addition, to be considered clear, the claims per se must be free of contradiction (see Case Law, II.A.3.1).

3.3 The board is of the view that neither claim 1 of the main request nor claim 1 of the auxiliary request is free of contradiction.

3.3.1 The subject-matter of claim 1 of both requests defines a virtual window assembly comprising at least one image data processor configured to split an image data stream into a plurality of partial image data streams corresponding to different viewing angles of a panoramic image data stream with an overlap in the viewing angles.

The virtual window assembly of claim 1 further comprises a plurality of electronic displays. Each of these displays is configured to display one of the plurality of partial image data streams. In addition, the plurality of displays is also configured to display stitched partial image data streams.

3.3.2 Stitching commonly involves aligning and blending different images, among other things (see, for example, page 5, lines 1 to 6, of the description). In stitching, blending is commonly understood as mixing images together and adjusting the seam line to minimise its visibility between images. According to the description, the stitching combines different partial image data streams (see page 10, lines 7 to 10). Therefore, a stitched partial data stream comprises

image data from at least two different partial image data streams.

3.3.3 The board is of the view that specifying electronic displays configured to display both one of the plurality of partial image data streams and a stitched partial image data stream comprising image data from different partial image data streams introduces a contradiction into claim 1 of both requests.

3.3.4 During the oral proceedings, the appellant argued that displaying stitched partial image data streams did not involve combining image data of two partial image data streams and thus there was no contradiction in claim 1 of either request. Rather, the image content of stitched partial image data streams was the same as that of the partial image data streams. The stitching was achieved by displaying the partial image data streams on the electronic displays. More specifically, the combined display of neighbouring partial image data streams - with overlapping imagery at the edges - at neighbouring electronic displays would give the impression of a stitched panorama image to a viewer.

3.3.5 The board is not convinced by the appellant's arguments.

The appellant's interpretation of the term "stitching" appears to differ from its generally accepted meaning of combining several images with overlapping fields of view to produce, for example, a panoramic image. However, the appellant did not point to any passage of the application as filed that would confirm its interpretation, nor did it provide evidence that its interpretation was generally accepted in the art.

3.3.6 Under these circumstances, the board concludes that specifying electronic displays configured to display both one of the plurality of partial image data streams and a stitched partial image data stream introduces a contradiction into claim 1 of both requests.

3.4 Furthermore, neither claim 1 of the main request nor claim 1 of the auxiliary request defines, either explicitly or implicitly, the image content of stitched partial image data streams. While the image content of a partial image data stream is linked to a physical mounting location of the display, this relationship is not defined for stitched partial image data streams. Thus, it not clear which image content is displayed in each of the electronic displays when these display stitched partial image data streams.

3.4.1 During the oral proceedings, the appellant argued that the stitched partial image data streams had the same image content as the partial image data streams (see also point 3.3.4 above).

3.4.2 However, the board does not find this argument convincing for the same reasons as those set out in point 3.3.5 above.

3.5 In addition, neither claim 1 of the main request nor claim 1 of the auxiliary request specifies which entity of the virtual window assembly is configured to perform the stitching. This is necessary in order for the technical features of each of the claimed assembly's entities to be defined and thus also for the scope of the claim to be defined.

3.5.1 The examining division was of the view that the subject-matter of claim 1 of both requests implied

transmitting multiple partial data streams to each of the electronic displays and adapting the electronic displays for performing the stitching (see points 3.2.6, 3.2.7 and 4.2.2 of the decision under appeal).

3.5.2 In contrast, the appellant argued that it was the image data processor that performed the stitching and that the electronic displays only had to be "*able to receive the particular partial [image] data stream per display*" (see the second full paragraph on page 3 of the statement of grounds of appeal).

During the oral proceedings, the appellant additionally submitted that the electronic displays could not perform the stitching because it involved aligning neighbouring partial image data streams. However, the electronic displays had no knowledge of neighbouring partial image data streams because they were each configured to receive only the partial image data stream that it had to display. The image data processor was implicitly performing the stitching because it was the only other entity in the claimed assembly that could do so.

3.5.3 The board is not convinced by these arguments for the following reasons.

Firstly, claim 1 of both requests specifies "*a plurality of electronic displays ... configured to receive the plurality of partial image data streams*". This wording does not exclude the possibility that each of the plurality of electronic displays is configured to receive all of the plurality of partial image data streams. In that case, the electronic displays would have knowledge of neighbouring partial image data

streams and it cannot be concluded that the image data processor has to be the entity performing the stitching.

Secondly, the application contemplates carrying out the stitching at the electronic displays (see page 12, lines 5 to 8, of the description). Thus, even when the claims are interpreted in view of the description, it is not clear what the technical features of each of the entities are.

3.5.4 Therefore, the scope of claim 1 of both requests is not clear.

3.6 Lastly, claim 1 of both requests also specifies that "*each of the plurality of electronic displays (S) is configured to display one of the plurality of partial image data streams so that the physical mounting location of the electronic displays in the airborne vehicle corresponds to the associated camera viewing angle of the displayed one of the plurality of partial image data streams*".

In the board's view, the scope of claim 1 of both requests is also rendered unclear by this feature. This is because the person skilled in the art would not be able to unequivocally determine whether a "physical mounting location" of an electronic display **corresponded** to a viewing angle of a captured panoramic image.

3.6.1 The correspondence method is not defined in claim 1 of either request. In particular, it is left to the person skilled in the art to determine how and which of the parameters fully describing the physical mounting location of an electronic display in space should be

taken into account for determining the correspondence to a viewing angle of the panoramic image.

The position of the viewer does not appear to be taken into account in determining the claimed correspondence either. However, this position does seem to play a crucial role in creating a panoramic impression. For instance, the closer a viewer is to the display, the wider the viewing angle should be for a realistic effect.

Thus, claim 1 of neither request defines input parameters for determining the claimed correspondence. In these circumstances, the person skilled in the art would not be able to unambiguously derive a correspondence method.

3.6.2 Moreover, the board is not aware of any unique or standard method for determining the claimed correspondence that would have been part of the common general knowledge of the person skilled in the art. Nor is the board convinced that all possible methods for such a purpose would lead to the same result. Thus, the person skilled in the art is not in a position to establish the demarcation of the scope of the claim.

3.6.3 The appellant further argued in its letter of reply and during the oral proceedings that using a fixed installation of the camera or cameras and the electronic displays in a common frame of reference unambiguously determined the relationship of the electronic displays to the viewing angle (see, for instance, the last paragraph on page 2 of its letter of reply).

3.6.4 The board is not convinced that using a common frame of reference would have allowed the person skilled in the art to clearly delimit the scope of the claim since it does not solve the issues raised in points 3.6.1 and 3.6.2 above. As there does not appear to be a method for determining the claimed correspondence in the description, or a standard method known to the person skilled in the art, neither claim 1 of the main request nor claim 1 of the auxiliary request fulfils the requirement of Article 84 EPC.

3.7 In view of the above, claim 1 of the main request and claim 1 of the auxiliary request are not clear (Article 84 EPC).

4. *Conclusion*

4.1 Since neither the main request nor the auxiliary request are allowable, the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

K. Boelicke G. Decker

Decision electronically authenticated