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Case Number: T 0477/23 - 3.2.05

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Language of the proceedings: EN

Title of invention:
Security device for projecting a collection of synthetic images

Patent Proprietor:
Visual Physics, LLC

Opponents:
De La Rue International Limited
Lumenco, LLC
Giesecke+Devrient Currency Technology GmbH

Relevant legal provisions:
EPC Art. 54, 111(1)
EPC R. 103(1)(a)
RPBA 2020 Art. 11, 12(4)

Keyword:
Novelty - main request (no)
Amendment to case - request - admissibly raised and maintained (yes)
Remittal (yes)
Reimbursement of appeal fee (no) - substantial procedural violation (no)

Decisions cited:
T 0120/96

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Case Number: T 0477/23 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 22 October 2025

Appellant I: (Opponent 1)	De La Rue International Limited De La Rue House Jays Close Viables Basingstoke Hampshire RG22 4BS (GB)
Representative:	Gill Jennings & Every LLP The Broadgate Tower 20 Primrose Street London EC2A 2ES (GB)
Appellant II: (Opponent 3)	Giesecke+Devrient Currency Technology GmbH Prinzregentenstraße 159 81677 München (DE)
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Respondent: (Patent Proprietor)	Visual Physics, LLC 1245 Old Alpharetta Road Alpharetta, GA 30005 (US)
Representative:	Grünecker Patent- und Rechtsanwälte PartG mbB Leopoldstraße 4 80802 München (DE)
Party as of right: (Opponent 2)	Lumenco, LLC 3600 South Huron Street Englewood, CA 80110 (US)
Representative:	Murgitroyd & Company 165-169 Scotland Street Glasgow G5 8PL (GB)

Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted on 12 January 2023 concerning maintenance of the European Patent No. 2 841 284 in amended form (Articles 101(3)(a) and 106(2) EPC).**

Composition of the Board:

Chairman P. Lanz
Members: M. Holz
M. Blasi

Summary of Facts and Submissions

I. Opponent 1 (appellant I) and opponent 3 (appellant II) each filed an appeal against the interlocutory decision of the opposition division finding that, account being taken of the amendments made by the patent proprietor during the opposition proceedings in the form of auxiliary request 2, European patent No. 2 841 284 (the patent) and the invention to which it related met the requirements of the EPC.

II. The patent proprietor (respondent) filed a reply to the appellants' statements of grounds of appeal including sets of claims of auxiliary requests I, II, IIa, III, IIIa, IV, IVa, V, Va, VI, VIa, VII and VIIa.

Appellant I filed further submissions by letter dated 22 November 2023.

Appellant II filed further substantive submissions by letter dated 15 April 2024.

The respondent filed further submissions by letters dated 19 April 2024 and 8 July 2024.

By letter dated 24 May 2024, appellant II requested that it be given until 31 July 2024 to respond to the respondent's letter dated 19 April 2024 before the board issued a communication under Article 15(1) RPBA. In a communication issued on 14 June 2024, the board informed the parties that it did not intend to set deadlines for submissions. However, a party was free to respond to submissions from one or more other parties. A decision on the admission of party submissions would

be made in accordance with the RPBA in the version applicable since 1 January 2024. No submissions were received from appellant II after the communication had been issued.

On 2 May 2025, the board issued a communication under Article 15(1) RPBA providing its preliminary opinion on the case.

By letter dated 19 September 2025, appellant I filed further submissions.

Opponent 2 is a party to the appeal proceedings as of right pursuant to Article 107 EPC. It has not filed any substantive submissions or requests in the appeal proceedings.

Oral proceedings before the board were held as requested and took place on 22 October 2025. Appellant II and opponent 2 did not attend the oral proceedings, as previously indicated in their letters dated 26 September 2025 and 10 October 2025 respectively. The board decided, in accordance with Rule 115(2) EPC and Article 15(3) RPBA, to continue the proceedings in the absence of the non-attending parties and to treat them as relying on their written cases.

III. The following documents were filed during the opposition proceedings.

D1: WO 2012/027779 A1
D2: US 2005/0109850 A1
D3: WO 2004/034313 A4
D18: WO 2012/010286 A1
D19: WO 2010/099571 A1
D20: WO 2005/058610 A2

D21: WO 2011/122943 A1
D22: US 2005/0152040 A1
D23: US 2001/0048507 A1
D24: US 5,712,731
D25: EP 1 826 708 A1

IV. Final requests

Appellant I requested that the decision under appeal be set aside and that the patent be revoked. Appellant I also requested that

- the respondent's auxiliary requests I, II, IIa, III, IIIa, IV, IVa, V, Va, VI, VIa, VII and VIIa filed with its reply to the statements of grounds of appeal not be admitted in the appeal proceedings
- all the objections contained in its statement of grounds of appeal be admitted in the appeal proceedings

Appellant II requested that the decision under appeal be set aside and the patent be revoked. Appellant II also requested reimbursement of the appeal fee due to at least one substantial procedural violation having occurred.

The respondent requested that the appeals be dismissed, implying that the patent be maintained as amended in the form held allowable by the opposition division (main request). As an auxiliary measure, in the event that the decision under appeal was set aside, the respondent requested remittal of the case to the opposition division for further prosecution. As a further auxiliary measure, the respondent requested that the decision under appeal be set aside and that the patent be maintained in amended form based on one

of the sets of claims of auxiliary requests I, II, IIa, III, IIIa, IV, IVa, V, Va, VI, VIa, VII and VIIa.

The respondent also requested that

- none of the new objections raised by appellant I and appellant II during the appeal proceedings be admitted in the appeal proceedings
- the case be remitted to the opposition division for further prosecution if any objection of lack of novelty or lack of inventive step against the main request other than those considered by the opposition division was admitted in the proceedings.

V. Claim 1 of the main request (auxiliary request 2 underlying the decision under appeal) reads as follows (with the feature identification used by the board indicated in square brackets).

"**[M1]** A security device for projecting a collection of synthetic images, which comprises: a collection of focusing elements, with each focusing element having an optical footprint; **[M2]** and at least one image layer, **[M3]** the collection of focusing elements and the at least one image layer together projecting a different viewpoint image as the device is viewed at different angles,
characterized in that **[M4]** the at least one image layer includes a binary grid of distributed digital images, **[M5]** where each pixel in the binary grid is either on or off,
[M6] wherein, the at least one image layer is made up of an array of discrete digitized domains, **[M6.1]** each domain constituting an identical or substantially identical subset of each focusing element's optical footprint, **[M6.2]** the domains being discrete in that no

two subsets overlap and every point in each subset is closest to its respective focusing element, **[M6.3]** each domain being divided into a number of discrete pixels equal to the number of viewpoint images, **[M6.4]** wherein each pixel represents a portion of a different viewpoint image, **[M6.5]** and wherein the domains form a raster grid,
[M7] wherein, each viewpoint image has been processed digitally, **[M8]** the number of pixels in each digitally processed viewpoint image being equal or proportionate to the total number of focusing elements, **[M9]** the pixels in each digitally processed viewpoint image being distributed to the same location within each digitized domain, such that each location within one digitized domain is marked with the color of a pixel from a different digitally processed viewpoint image, allowing for the device to project a different viewpoint image as the device is viewed at different angles, **[M10]** wherein each digitally processed viewpoint image is obtained by digitally processing raw viewpoint images to form binary images and wherein each raw viewpoint image prescribes what an observer should see when viewing the security device from a given angle;
[M11] wherein the security device projects a collection of synthetic images that have no snap, **[M11.1]** wherein each distributed image is a composite image prepared by using one or more continuous mathematical scalar functions to define or alter a quantifiable parameter in the image."

Claim 1 of auxiliary requests I, II and IIa are identical to claim 1 of the main request.

Claim 1 of auxiliary request III differs from claim 1 of the main request in that the following feature is included at the end of the claim.

"**[M12]** wherein the domain is a six-sided polygon or hexagon."

VI. The parties submitted the following.

(a) Main request

(i) Appellants

The subject-matter of claim 1 of the main request was not new in view of the embodiment disclosed in Figures 6 to 8 and on page 13, line 4, to page 14, line 23, of document D1. The meaning of the term "snap" was evident from paragraph [0059] of the patent and was also well known in the art. The skilled person would have understood the "no snap" feature to mean that the device did not exhibit a noticeable jump when the viewer reached the end of the sequence of images and returned to the first. However, if the set of images within the sequence already included sizeable changes from one to the next, then a similarly sizeable change at the end of the sequence, i.e. returning from the last image in the sequence to the first, would not appear discontinuous and so there would be no snap. For this to be the case, the transition from the last image of the sequence directly back to the first image only had to be continuous to the same extent that the images within the sequence were continuous from one to the next. The speed of the transition and any possible cross-talk was not relevant in this regard. Whether there was snap was only determined by the content of the images, as was apparent from paragraphs [0071] to

[0075] of the patent. The definition of feature M11 was met where the set of images incorporated into a device was such that there was no significant difference in image content between the first and the last image in the sequence. How the device itself performed the transitions between the images was not relevant. A possible cross-talk only affected the transition from one image to the next but not the image content. This interpretation was consistent with paragraphs [0059] to [0086] of the patent, which described an embodiment in which the "no snap" feature was achieved through the design of the image content, i.e. the artwork, and not through a particular construction of the lenses.

In the embodiment illustrated in Figures 6 to 8 of document D1, to create the colour-inverted portrait, the regions of the original bitmap which were white were mapped to the right half of each lens, but printed in the same way as the black regions in the left half, i.e. the white regions were represented in black under the right half of each lens. The skilled person would have understood Figure 7 of document D1 to show digitised domains within the meaning of claim 1, as illustrated in the annotated version of that figure reproduced below.

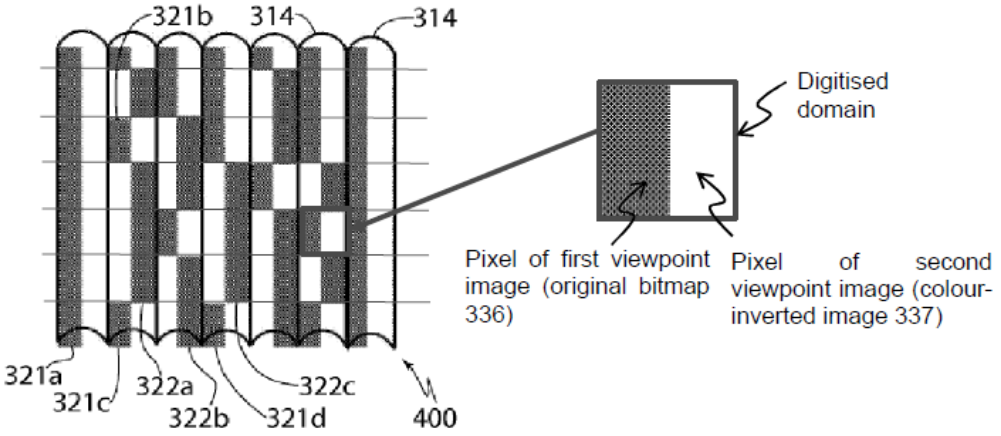
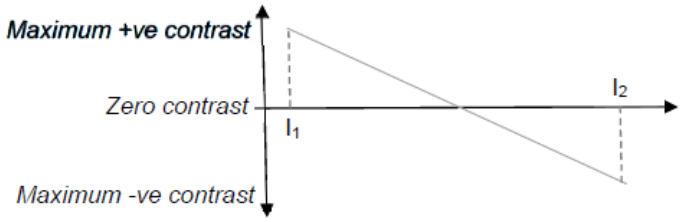


FIG 7

Each domain included two pixels, corresponding to the number of images displayed by the device. Each pixel was one of only two levels, so the image layer was a binary grid. The pixels from the first image (original bitmap 336) had the same position in each digitised domain (i.e. the left half of each domain), as did those of the second image (colour-inverted bitmap 337) (i.e. the right half of each domain). Feature M7 was disclosed on page 13, lines 6 to 12, of document D1. It was implicit from document D1 that there was no discernible jump when the viewer exceeded the intended viewing-angle range as there were only two images. It was inevitable that the device, upon continued tilting beyond the viewing-angle range at which the second image was displayed, would revert to displaying the first image. As the tilt angle increased, the focal position on the image layer moved away from the optical axis and eventually crossed over from the part of the image layer immediately under the lens in question to its neighbouring part. This meant that the focal position moved from a slice of the second image to a slice of the first image. The same occurred under every lens. Hence the difference perceived when moving within the intended angle range from the first image to the second image was inherently identical to the difference perceived when moving beyond that angle range. There was no discernible discontinuity or jump when the viewer reached the end of the intended viewing-angle range. The details of the transition between the two projected images were irrelevant. This also held true for any possible cross-talk. In contrast to Figure 5 of document D1, there was no cross-talk region 220 in the embodiment of Figure 7 of document D1. The cross-talk described in document D1 with respect to Figure 7 was not due to a cross-talk region 220 as in Figure 5 but to a finite area being projected to the viewer, i.e. a

finite focal area. Even assuming that cross-talk occurred in this embodiment of document D1, there was no reason to assume that it would be any different for the transition between the two image slices under one focusing element and the transition between two adjacent image slices under two neighbouring focusing elements. Document D1 did not disclose any gaps between the focusing elements or the image elements. In view of the level of detail given in document D1, it would have been expected that such gaps would have been described if they were present. Such gaps would lead to stripes being observable from positions within the first and second viewing-angle ranges. Figure 8 of document D1 showed what the device displayed. However, this figure did not show any stripes. Nor were such stripes derivable from the detailed description of what the viewer could see in the paragraph bridging pages 13 and 14 of document D1. A background colour, even if present, would not be important.

Feature M11.1 was a product-by-process feature. There was no way to tell from the finished device how the images had been obtained or prepared. For the device disclosed in document D1, the quantifiable parameter which was altered between the first and second image was the contrast. A continuous mathematical scalar function of contrast could exist, having for instance a linear form as illustrated in the figure reproduced below.



According to this function, the first image I_1 and the second image I_2 had contrast values taken from opposite

ends of a continuous scalar function. It was not possible to tell from the device of document D1 whether such a continuous scalar function had been used in the preparation of the images. However, claim 1 was not limited in this regard for exactly the same reason. The horizontal axis of the above figure did not represent the viewing angle, nor did the gradient of the function represent the speed at which the change in contrast value was visualised on tilting the device. The claimed continuous mathematical scalar function was also realised when the images had a quantifiable parameter that was constant. In document D1, the image size and the resolution were constant, thereby implementing two continuous mathematical scalar functions. Claim 1 made it clear that the expression "viewpoint images" referred to the images projected by the security device at different viewing angles, without limitation on the content of that image. This interpretation was supported by paragraphs [0010], [0013], [0018], [0032], [0077] to [0086] and Figures 34 to 36 of the patent and dependent claims 4 and 7 of the main request. The opposition division had decided that claim 1 of the patent as granted lacked novelty in view of document D1 since that document disclosed features M1 to M10. This aspect of the decision was outside the scope of the current appeal proceedings since the respondent had not filed an appeal. Any arguments that document D1 did not disclose features M1 to M10 should thus not be admitted. Regarding feature M8, in document D1 the number of pixels in each viewpoint image was six times greater than the number of focusing elements.

(ii) Respondent

The subject-matter of claim 1 of the main request was new in view of document D1. In accordance with

paragraph [0059] of the patent, snap occurred if there was a large discontinuity in what the viewer saw when they moved outside the original range, i.e. when the camera moved all the way to the other extreme of the viewing angles. The large discontinuity was understood by the skilled person in contrast to the "normal" discontinuities occurring when the viewer moved within the range. Feature M11 required that no sizeable or recognisable jump be visible once the original range of viewing angles was exceeded. This view was consistent with paragraphs [0007] and [0059] of the patent. The feature referred to the projected synthetic images. The interaction of the image content and the focusing elements was thus relevant. The question was what the viewer perceived when the focal point moved outside the optical footprint of the respective focusing element. It was true that if the set of images already included sizeable changes from one image to the next a similarly sizeable change at the end of the sequence would not appear discontinuous, so that the view that there would be no snap was correct. However, claim 1 required the viewpoint images to be arranged in such a manner that there was no snap. Viewpoint images were understood by the skilled person to be images of a particular object taken from different positions or viewpoints. Each viewpoint image defined a different viewpoint from which a particular object was seen. This interpretation was a direct consequence of the definition given for the "no snap" feature in paragraph [0059] of the patent and was furthermore consistent with paragraphs [0076] to [0086] and dependent claims 4 and 7 of the main request. This interpretation excluded artificial flipping images of different objects or moving images of an object. Document D1 did not provide any information whatsoever regarding any further tilting of the device beyond the second range of viewing angles.

The exact arrangement of slices under adjacent focusing elements was not disclosed in document D1. It was therefore not derivable, for example, whether there was a background colour or a gap as illustrated in the figure reproduced below. A gap between the image slices could, for example, have a blue colour. A gap between the focusing elements could be opaque.

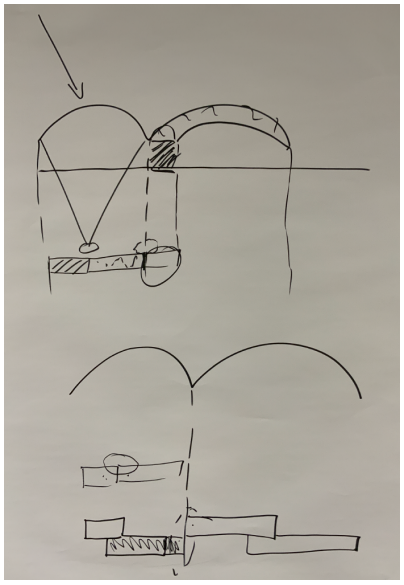


Figure 7 of document D1 was a schematic depiction, as was apparent from page 10, line 6, of that document. It could not be unambiguously derived from document D1 whether there was cross-talk, a background colour or a gap between the image slices 321, 322. In Figure 5 of document D1, a cross-talk region was present between the images, resulting in a gradual change. It could not be unambiguously and directly derived from Figure 7 of document D1 that there was no cross-talk region or how large the cross-talk would be within or outside the normal viewing range. Cross-talk was relevant to feature M11 since it affected the projected images. Even on the assumption that the first image came into display again when moving outside the second range of angles, it was possible within the disclosure of document D1 that the contrast changed according to the

graph submitted by appellant I (see above), which would result in a substantial snap.

According to feature M11.1, the continuous mathematical scalar functions had to be such as to achieve the "no snap" feature, together with the image information. The continuous mathematical scalar functions thus had to be selected, in view of the image information of the viewpoint images, so that no snap occurred.
Feature M11.1 required each distributed image to be a composite image prepared using one or more continuous mathematical scalar functions to define or alter a quantifiable parameter in the image. For an image having a particular resolution, the quantifiable parameter was the resolution.

Although the respondent had not filed an appeal, it had the opportunity to defend itself against the objections raised in the statements of grounds of appeal. This included arguing that claim 1 of the main request included further differentiating features over document D1 than those considered by the opposition division. In view of features M6.4, M7 and M8 as well as M9, claim 1 of the main request also required the number of pixels in each digitally processed viewpoint image to be at least equal to the number of focusing elements. This feature was not disclosed in document D1. The annotated version of Figure 7 of document D1 submitted by appellant I (see above) did not form part of the disclosure of document D1. It could thus not form the basis for examining novelty. If the claim was to be interpreted as allowing for several digitised domains below each focusing element, the domains in document D1 would not be filled with pixels from all the viewpoint images, or there would be more viewpoint images in the form of horizontal slices so

that there was not a pixel from each viewpoint image in each digitised domain.

(b) Auxiliary requests I, II, IIa and III

(i) Appellants

None of the respondent's auxiliary requests should be admitted in the proceedings. The auxiliary requests had been filed at a very late stage of the opposition proceedings, i.e. on the date fixed in accordance with Rule 116 EPC. There were a disproportionately large number of auxiliary requests, and they were not convergent. Auxiliary requests II and IIa violated the principle of prohibition of *reformatio in peius* since they included an amendment to the independent method claim deleting a feature of claim 2 of auxiliary request 2 (now main request). Claim 1 of auxiliary requests I, II and IIa were identical to claim 1 of the main request, so these auxiliary requests did not meet the requirements of the EPC for the same reasons as the main request. Auxiliary request III violated Articles 83, 84, 123(2) and 56 EPC.

(ii) Respondent

The sets of claims of auxiliary requests I, II, IIa and III (then auxiliary requests IIa, III, IIIa and IV) had been filed in the opposition proceedings by letter dated 9 September 2022, i.e. on the date fixed in accordance with Rule 116 EPC. The opposition division would have admitted these auxiliary requests in the opposition proceedings. The auxiliary requests had thus been admissibly raised in the opposition proceedings and maintained throughout the proceedings. They did not violate the principle of prohibition of *reformatio in*

peius. Claim 1 of auxiliary requests I, II and IIa were identical to claim 1 of the main request. Auxiliary requests I, II, IIa and III met the requirements of the EPC.

(c) Appellant II's request for reimbursement of the appeal fee

(i) Appellant II

Claim 1 of auxiliary request 2 (now main request) was based on a combination of claim 1 and the third alternative of claim 2 of the patent as granted. The decision under appeal was incomplete since it did not consider

- objections of insufficiency of disclosure raised against claims 5 to 9 of the patent as granted under the ground for opposition under Article 100(b) EPC and contained in appellant I and II's notices of opposition
- objections of lack of novelty in view of any of documents D2, D3, D18, D19, D20 and D21 raised in appellant I and II's notices of opposition
- objections of lack of inventive step in view of documents D22 to D25 raised in appellant II's notice of opposition

The reasoning in the decision under appeal was furthermore incomplete as regards why novelty was acknowledged for the main request in view of documents D2 and D18 to D21. The decision under appeal was also based on the incorrect factual assumption that none of the opponents present at the oral proceedings before the opposition division had disputed that the subject-matter of the independent claims of auxiliary request 2 was novel (see point 15.3 of the Reasons for the decision under appeal). There had been no statement

relating to novelty that the opponents could have tacitly acknowledged by not disputing it. Point 7.6 of the minutes of the oral proceedings showed that, with regard to auxiliary request 2, the opposition division had proceeded directly from the question of Article 123(2) EPC to the question of inventive step without addressing the question of novelty in relation to auxiliary request 2. There had been time pressure due to the availability of the interpreters. The opportunity to comment was significant in view of the right to fair proceedings (see decision T 120/96). In order for a party to be able to comment, it must first be asked explicitly whether it wishes to comment or whether it considers the written submissions to be final. No such question had been asked during the oral proceedings before the opposition division with respect to the objections in relation to auxiliary request 2 that had not been considered in the decision under appeal.

(ii) Appellant I

The opposition division had been aware that the opponents wished the objections raised against the third alternative of claim 2 of the patent as granted also to be examined against the claims of auxiliary request 2 (now main request). In point 15.3 of the Reasons for the decision under appeal, the opposition division considered objections of lack of novelty that had not been raised in the oral proceedings, but had been raised in appellant I's notice of opposition. In this respect, reference was made to arguments submitted by appellant I.

(iii) Respondent

Appellants I and II had not raised any novelty objections against auxiliary request 2 in the opposition proceedings. These objections could and should have been raised at the latest in the oral proceedings before the opposition division. It would have been the task of the appellants to raise objections against auxiliary request 2. Appellant II, at the oral proceedings, had had the chance to present its case. It was not the task of the opposition division in its decision to consider the above objections, or any previous objections raised against the claims of the patent as granted in relation to auxiliary request 2, on behalf of appellant I, who had not attended the oral proceedings. As followed from point 7.4 of the minutes of the oral proceedings before the opposition division, no objections of lack of novelty had been raised. With respect to appellant I's notice of opposition, a novelty objection had been raised against the claims as granted, but not against the claims of auxiliary request 2. No objections of lack of novelty in view of any of documents D3, D18, D19, D20 and D21 had been raised in the opposition proceedings. Objections of lack of inventive step in view of documents D22 to D25 had been raised in the opposition proceedings against a dependent claim of the patent as granted, but not against the claims of auxiliary request 2 considered in the decision under appeal. The decision under appeal was thus not incomplete with respect to objections of lack of novelty or inventive step, as the objections indicated by appellant II had not been raised against the claims of auxiliary request 2. Point 15.3 of the Reasons for the decision under appeal was consistent with the minutes of the oral proceedings before the opposition

division, as no objections of lack of novelty had been raised against the claims of auxiliary request 2. The decision under appeal was thus neither incomplete nor based on incorrect facts. In contrast to the assertions by appellant II, it had been given the opportunity to comment on novelty in the oral proceedings before the opposition division. This was demonstrated by the fact that although the opposition division had not raised any objection under Article 123(2) EPC, this issue had nevertheless been discussed at the instigation of appellant II, as apparent from points 7.5 and 7.6 of the minutes of the oral proceedings. However, appellant II had not in the slightest attempted to raise objections of lack of novelty against auxiliary request 2. Decision T 120/96 was not pertinent since, in the case at hand, oral proceedings before the opposition division had taken place.

Reasons for the Decision

1. Main request

The appellants submitted that the subject-matter of claim 1 lacked novelty in view of the embodiment disclosed in Figures 6 to 8 and on page 13, line 4, to page 14, line 23, of document D1. In point 15.3 of the Reasons for the decision under appeal, the opposition division considered this objection and concluded that document D1 did not disclose features M11 and M11.1. This objection is thus part of the appeal proceedings (see Article 12(1)(a) RPBA) and is not an amendment within the meaning of Article 12(4) RPBA. Consequently, the latter provision does not give the board discretion not to admit this objection in the appeal proceedings.

The respondent perceives further differentiating features over document D1 in addition to features M11 and M11.1.

1.1 Further alleged differences

The respondent submitted that in view of features M6.4, M7, M8 and M9 claim 1 of the main request required the number of pixels in each digitally processed viewpoint image to be at least equal to the number of focusing elements. This feature was not disclosed in document D1.

The appellants took the view that this submission should not be considered in the appeal proceedings. In point 13.3.1 of the Reasons for the decision under appeal, the opposition division concluded that the subject-matter of claim 1 of the patent as granted was not new in view of document D1, since this document disclosed the combination of features M1 to M10. The appellants were of the opinion that, with respect to novelty of the subject-matter of claim 1 of the current main request, the question of whether document D1 discloses features M1 to M10 was outside the scope of the current appeal proceedings.

The opposition division's conclusions in point 13.3.1 of the Reasons for the decision under appeal regarding novelty of the subject-matter of claim 1 of the patent as granted in view of document D1 are not binding on the board when considering novelty of the subject-matter of claim 1 of the current main request. Moreover, it would not violate the principle of prohibition of *reformatio in peius* if the board came to the conclusion that one or more of features M1 to M10 was not disclosed in document D1 when assessing novelty

of the subject-matter of claim 1 of the current main request in view of this document. The board therefore considered the respondent's submissions on further alleged differences over document D1 on their merits.

According to the respondent, viewpoint images are understood by the skilled person from the wording of the claim alone as images of a particular object taken from different positions or viewpoints.

This is one possible interpretation of the expression "viewpoint images". However, the skilled person would also understand this expression as referring to the viewpoint of a viewer of the security device rather than the viewpoint of a viewer of a displayed object.

In support of its interpretation, the respondent referred to paragraph [0059] of the patent and submitted that this passage provided a definition of "no snap".

The cited passage states that

> *"[t]his sort of relationship can be formed, for example, by defining each viewpoint image to be the view of an object from a location that would correspond to the location of the observer as they observe the device"* (underlining added by the board).

The cited passage thus merely refers to an exemplary feature of the viewpoint images, but does not give a definition of the expression.

Moreover, paragraph [0032] of the patent states that

> *"these viewpoint images may represent, stationary or static, moving, or dynamic (e.g., morphing or transforming) 3D objects or images, a dynamic design of curves, abstract designs, shapes, photographs, and the like"*.

It is not unambiguously derivable from the description of the patent that the expression "viewpoint images" must be interpreted as submitted by the respondent. Rather, the skilled person would have understood that the expression "viewpoint images" refers to the images projected by the security device at different viewing angles, without limitation on the content of the images. It is uncontested that this interpretation is consistent with the description and supported, for example, by paragraph [0010] of the patent cited by appellant I, stating that

> "*[f]or example, the synthetic images may represent different viewpoints of a target object or image that change from one viewpoint image to another viewpoint image as the location of the observer changes relative to the device*"

Consequently, the respondent's view that the use of the expression "viewing images" in claim 1 excluded artificial flipping images of different objects or moving images of an object is unfounded.

Appellant I submitted an annotated version of Figure 7 which is reproduced below.

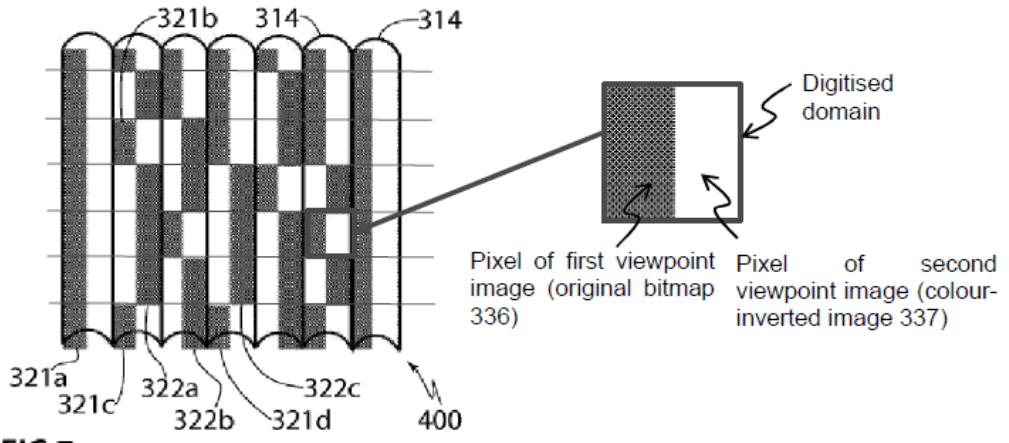


FIG 7

The annotated version of Figure 7 as such is not included in document D1. However, it was filed to illustrate appellant I's view on what the skilled person would have derived from document D1. There is no reason for not considering the annotated figure for this purpose. While, for example, the term "domain" is not explicitly used in document D1, the skilled person would have understood the pairs of adjacent pixels of the two images illustrated in the annotated figure to be digitised domains within the meaning of claim 1.

Consequently, in document D1, there are several digitised domains below each focusing element, each domain including one pixel from each of the two viewpoint images. The viewpoint images have been processed digitally (see feature M7), see page 13, lines 6 to 12, of document D1. Each of the two pixels of the domain represents a portion of a different one of the two viewpoint images (see feature M6.4), where the pixels of the first image are included on the left side and the pixels of the second image are included on the right side of the domain (see feature M9). The number of pixels in each of the two images is larger than and proportionate to the number of focusing elements (see feature M8) since there is a constant

number of pixels of each of the first and second images under each focusing element. In Figure 7 of document D1, six (and a half) pixels of the first (or second) image are shown as being arranged vertically under each focusing element.

Features M6.4, M7, M8 and M9 are thus disclosed by the embodiment of Figures 6 to 8 of document D1.

1.2 Feature M11

It is common ground between the parties that the term "snap" refers to a large discontinuity in what the viewer sees when they move outside the device's range and look at the device. This interpretation is also consistent with paragraphs [0007] and [0059] of the patent. It is also common ground that if the set of images already includes sizeable changes from one image to the next, a similarly sizeable change at the end of the sequence does not appear discontinuous, so there is no snap.

Document D1 does not explicitly disclose feature M11. However, the skilled person, directly and unambiguously, implicitly derives the following from document D1 (see in particular Figure 7). As the tilt angle increases, the focal position on the image layer moves away from the optical axis. It eventually crosses over from the part of the image layer immediately under the focusing element in question to a part of the image layer under the neighbouring focusing element. Thereby the focal position moves from a slice of the second image to a slice of the first image, or vice versa. The same occurs under each focusing element. It is thus inevitable that the device, upon continued tilting beyond the viewing-angle range at which the second

image is displayed, will revert to displaying the first image. The amount of change in the perceived image occurring at this stage is the same as the amount of change between the first and second image occurring within the normal viewing-angle range, i.e. the change between the positive portrait and the negative portrait illustrated in Figure 8 of document D1. Hence the security device of document D1 projects a collection of synthetic images that have no snap.

The respondent is correct in that the focusing elements interact with the image layer to project a synthetic image, i.e. they affect what the viewer sees. As a result of this interaction, the viewer sees the positive portrait or the negative portrait. No snap occurs when the viewer moves outside the first and second viewing ranges.

The first paragraph on page 14 of document D1 refers to cross-talk. However, cross-talk does not add new synthetic images to the collection of two synthetic images disclosed in document D1: it merely affects the transition between the two images. The cross-talk phenomenon disclosed in document D1 is therefore not pertinent to feature M11.

However, even if it were assumed (to the respondent's benefit) that cross-talk were relevant to the occurrence of a discontinuity, the skilled person would have understood that, in the embodiment of Figures 6 to 8 of document D1, the cross-talk would be the same between the image slices. There is no reason to assume that the cross-talk would be any different between the two image slices located under one focusing element or between adjacent image slices located under neighbouring focusing elements. This holds true

irrespective of whether the cross-talk to which the first paragraph on page 14 of document D1 refers is due to a cross-talk region or the finite extension of the focal area, i.e. the area of the focal position projected by the device. While document D1, in a different embodiment (see Figure 5), shows a cross-talk region 220 formed by an overlap of image elements 216 and 217, no such cross-talk region is shown in Figure 7.

The respondent submitted that, according to page 10, line 6, of document D1, Figure 7 was a schematic depiction. It was not derivable, for example, whether there was a background colour or a gap between the focusing elements and/or the image slices. A gap between the image slices could, for example, have a blue colour. A gap between the focusing elements could be opaque.

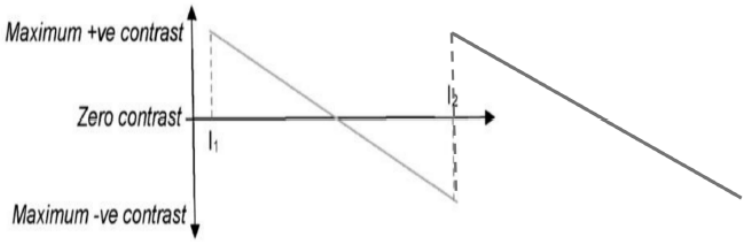
Page 10, lines 6 and 7, of document D1 states that Figures 6 and 7 schematically depict a method of producing artwork for another embodiment of the present invention. The qualification "schematically" thus refers to the depiction of the method rather than the device. Moreover, even on the assumption that the skilled person would have understood Figure 7 of document D1 as being schematic, this would not imply that they could not derive any technical information from this figure. Whether the figure is drawn to scale is irrelevant to the issues at hand since claim 1 of document D1 does not require any specific numerical values.

Neither Figures 6 to 8 of document D1 nor the corresponding description disclose or suggest any gaps formed between the focusing elements and/or the image

slices. Page 13, line 6, to page 15, line 7, of document D1 gives details on the structure and functioning of the device. If there were any gaps between the focusing elements and/or the image slices, this would affect what the viewer sees when looking at the device within the normal viewing-angle ranges. For example, it would be expected that vertical stripes would be visible. The detailed description of what the viewer sees in the first paragraph on page 14 of document D1 does not provide any indication in this regard. Nor are there stripes in Figure 8 showing the effect generated by the embodiment of Figures 6 and 7. The respondent has not convincingly demonstrated that the presence of such gaps would be consistent with the disclosure of document D1. The skilled person would, rather, have directly and unambiguously derived from document D1 that the presence of gaps is ruled out.

Similarly, document D1 does not disclose or suggest that the device has a background colour. However, given the level of detail of the description of the embodiment, the skilled person would have expected that a background colour affecting how the viewer sees the device would have been indicated in the document. Yet, even assuming (to the respondent's benefit) that there was a background colour, there is no reason to assume that it would introduce a snap.

The respondent submitted that it was within the disclosure of document D1 that the contrast changed according to the graph in the following figure when the device was tilted, resulting in a substantial snap.



The respondent's submission in this regard does not go beyond a mere assertion. The respondent has not convincingly shown that it was technically possible and not ruled out that the contrast of the images projected by the device of document D1 follows this graph. The figure was originally submitted by appellant I to illustrate a possible continuous mathematical scalar function according to which the images of the device of document D1 could have been prepared (see feature M11.1). As submitted by appellant I, the horizontal axis of the above figure does not represent the viewing angle, nor does the gradient of the function represent the speed at which the change in contrast value is visualised on tilting the device.

In summary, the skilled person would have understood that the arrangements described by the respondent as possibly providing a snap, i.e. not implementing feature M11, are ruled out by the content of document D1.

Document D1 implicitly discloses feature M11.

1.3 Feature M11.1

The expression "prepared by" in feature M11.1 defines a product-by-process feature. Hence, even on the assumption that document D1 did not disclose a process step of preparing each distributed image as defined in

feature M11.1, this would not be sufficient to conclude that this feature establishes novelty of the subject-matter of claim 1. The question is, rather, whether the definition of the process feature in feature M11.1 causes the security device of claim 1 to have properties that are different from the security device disclosed in document D1.

The parties are in dispute as to whether claim 1 defines a functional relation between features M11 and M11.1.

Claim 1 specifies that features M11 and M11.1 must be present. Hence the continuous mathematical scalar function must be consistent with features M11 and M11.1. However, feature M11.1 does not provide a definition of the expression "no snap" used in feature M11. The claim also leaves it open whether there is a causal link between both features.

Claim 1 does not rule out that the continuous mathematical scalar function is realised by the quantifiable parameter being constant. In document D1, the image size and the resolution are constant across the two images, thereby implementing two continuous mathematical scalar functions. In other words, the distributed images of the device of document D1 are composite images that are technically identical to composite images prepared using continuous mathematical scalar functions (in this case constant functions, i.e. identity mappings) to define a quantifiable parameter (in this case the image size or resolution) in the image.

Document D1 thus discloses feature M11.1.

1.4 Summary on novelty

The features under dispute are directly and unambiguously disclosed in document D1. The subject-matter of claim 1 of the main request therefore lacks novelty in view of this document (Article 54 EPC).

2. Auxiliary requests I, II, IIa and III

2.1 Admittance

The sets of claims of auxiliary requests I, II, IIa and III (then auxiliary requests IIa, III, IIIa and IV) were filed in the opposition proceedings by letter dated 9 September 2022, i.e. on the final date for making written submissions fixed in accordance with Rule 116 EPC.

In points 14 and 15.1 of the Reasons for the decision under appeal, the opposition division decided to admit the then auxiliary requests I and II, which had been filed on the same date and under the same circumstances. It must therefore be presumed that the opposition division would also have admitted the current auxiliary requests I to III.

The auxiliary requests were thus admissibly raised in the opposition proceedings and maintained throughout the proceedings. They are not amendments within the meaning of Article 12(4) RPBA. This provision thus does not give the board discretion not to admit these auxiliary requests.

2.2 Novelty

Claim 1 of auxiliary requests I, II and IIa are identical to claim 1 of the main request. The subject-matter of these claims thus lacks novelty for the same reasons as set out above with respect to claim 1 of the main request (Article 54 EPC).

Therefore the board did not need to consider the issue of a possible violation of the principle of prohibition of *reformatio in peius* raised by appellant I, and hence the issue can be left undecided.

As an auxiliary request ranking higher than auxiliary requests I, II and IIa, the respondent requested remittal of the case to the opposition division for further prosecution. However, since claim 1 of auxiliary requests I, II and IIa are identical to claim 1 of the main request, and as the board concluded that the subject-matter of this claim is not new (see point 1. above), remittal of the case to the opposition division to consider these auxiliary requests was neither appropriate nor procedurally efficient. Exercising its discretion under Article 111(1) EPC and Article 11 RPBA, the board therefore decided not to remit the case to the opposition division for further prosecution at this stage of the proceedings, i.e. before considering novelty of the subject-matter of claim 1 of auxiliary requests I, II and IIa.

No objections of lack of novelty have been raised against the claims of auxiliary request III.

2.3 Auxiliary request III and remittal of the case to the opposition division for further prosecution

The respondent requested remittal of the case to the opposition division for further prosecution, to which the other parties did not object. Claim 1 of auxiliary request III differs from claim 1 of the main request in that it includes feature M12. Neither auxiliary request III nor feature M12 were considered in the decision under appeal. The primary object of appeal proceedings is to review the decision under appeal in a judicial manner (see also Article 12(2) RPBA).

Exercising its discretion under Article 111(1) EPC and Article 11 RPBA, the board therefore decided to remit the case to the opposition division for further prosecution.

3. Appellant II's request for reimbursement of the appeal fee

3.1 Appellant II submitted that the decision under appeal was incomplete since it did not consider

- objections of insufficiency of disclosure raised against claims 5 to 9 of the patent as granted under the ground for opposition under Article 100(b) EPC and contained in appellant I and II's notices of opposition
- objections of lack of novelty in view of any of documents D2, D3, D18, D19, D20 and D21 raised in appellant I and II's notices of opposition
- objections of lack of inventive step in view of documents D22 to D25 raised in appellant II's notice of opposition

In the decision under appeal, the opposition division concluded that the subject-matter of claim 1 of the patent as granted (then main request) was not new in view of documents D1 and D2 (see point 13.3 of the Reasons for the decision), and that therefore the ground for opposition under Article 100(a) EPC in conjunction with Article 54 EPC prejudiced maintenance of the patent. Against this background, the opposition division was not obliged to further examine whether other grounds for opposition or objections raised by the opponents would also have prejudiced maintenance of the patent as granted.

All the objections that had been raised against the current main request (then auxiliary request 2) in the opposition proceedings were considered by the opposition division and dealt with in the decision under appeal. The opposition division considered novelty of the subject-matter of claim 1 of auxiliary request 2 in view of documents D1 and D2 in point 15.3 of the Reasons for the decision under appeal.

However, no objections of lack of novelty in view of any of documents D3, D18, D19, D20 and D21 or objections of lack of inventive step in view of documents D22 to D25 had been raised against the claims of auxiliary request 2 in the opposition proceedings.

Appellant II's submissions rely on the view that claim 1 of the current main request is based on a combination of claim 1 and the third alternative of claim 2 of the patent as granted, and that the opposition division should therefore have examined whether objections that were raised against the third alternative of claim 2 of the patent as granted would

also apply to the current main request (then auxiliary request 2).

However, if any of the appellants were of the opinion that the patent should not be maintained as amended on the basis of the main request (then auxiliary request 2), since the request did not comply with the requirements of the EPC, they should have stated their objections in relation to that request. Since they did not raise the above objections against auxiliary request 2, either in writing or during the oral proceedings, the opposition division did not commit a procedural violation by "overlooking" them.

It is for the parties to address any point they consider relevant and fear may be overlooked and to insist, if necessary by way of a formal request, that it be discussed in the oral proceedings (see also "Case Law of the Boards of Appeal", 11th edn., July 2025, V.B.4.3.8 for the appeal proceedings; in the board's view, the parties to opposition proceedings have the same obligations).

Appellant I submitted that the opposition division had been aware that the opponents wished the objections raised against the third alternative of claim 2 of the patent as granted also to be examined against the claims of the then auxiliary request 2.

Indeed, in point 15.3 of the Reasons for the decision under appeal, the opposition division actually considered objections of lack of novelty that had not been raised in the oral proceedings but had been raised in appellant I's notice of opposition. However, in written proceedings, the admittance of auxiliary request 2 was objected to, but the above-mentioned

objections were not raised against it. At the oral proceedings before the opposition division, only objections of non-admittance and objections under Article 123(2) EPC and of lack of inventive step starting, *inter alia*, from document D1 or D2 as the closest prior art were raised. In point 15.3 of the Reasons for the decision under appeal, the opposition division stated what in its view were the differentiating features, and thus prepared the subsequent consideration of inventive step (see also subsequent point 15.4 of the Reasons). Based on its assessment, the opposition division concluded *ex officio* on novelty. It cannot be derived from the Reasons for the decision under appeal that the opposition division was aware of any objections against auxiliary request 2 that were not considered in the decision. This view is not altered by point 15.3.1 of the Reasons for the decision under appeal citing an argument of appellant I.

It is a different question whether or not an opposition division puts forward objections *ex officio* against a claim request which had been raised against another claim request. However, not raising such an objection *ex officio* cannot be regarded as a procedural violation, since the opponents themselves have the possibility of raising objections.

3.2 Appellant II also submitted that the reasoning in the decision under appeal regarding why novelty was acknowledged for the current main request in view of documents D3 and D18 to D21 was incomplete.

However, no objections of lack of novelty against the claims of what was then auxiliary request 2 in view of documents D3 and D18 to D21 had been raised by the

parties to the opposition proceedings. Accordingly, the opposition division was not obliged to decide on these objections nor to provide reasoning in this regard. Still, novelty in view of document D2 has been considered *ex officio* by the opposition division. It provided its reasoning in this regard in point 15.3 of the Reasons for the decision under appeal.

3.3 Appellant II submitted that the decision under appeal was based on the incorrect factual assumption that none of the opponents present at the oral proceedings disputed that the subject-matter of the independent claims of the current main request (then auxiliary request 2) was novel (see point 15.3 of the Reasons for the decision under appeal). There had been no statement relating to novelty that the opponents could tacitly have acknowledged by not disputing it.

Firstly, it cannot be derived from appellant II's submissions at what stage it, as asserted, would have raised an objection of lack of novelty against the claims of the current main request. Secondly, it cannot be derived from the minutes of the oral proceedings before the opposition division that any of the opponents had disputed that the subject-matter of the independent claims of the main request was novel. To the contrary, according to point 7.4 of the minutes,

> "*[t]he Chair then stated that novelty was assumed, due to the lack of relevant objections, and all the parties concurred.*"

No correction of the minutes was requested. However, it could have been expected that the opponents would have expressed their disagreement if they did not agree and that they would have raised objections of lack of

novelty against the claims of the current main request if they had wished to. In contrast to appellant II's view, after the statement relating to the admittance of the request no "decision" on novelty was given. This cannot be derived from the minutes. Moreover, the statement by the Chair concerning novelty should not have prevented the opponents from making oral submissions in reply in the event that the statement was incorrect.

The decision under appeal is thus not based on incorrect factual assumptions.

3.4 Appellant II referred to alleged time pressure due to the availability of the interpreters at the oral proceedings before the opposition division. However, it is not apparent why this would have prevented appellant II from raising objections. By not raising objections at the oral proceedings, appellant II had deprived the opposition division of the opportunity to take any procedural measures, such as arranging for an adjournment of the oral proceedings, as necessary, and to decide on these objections.

Appellant II also referred to decision T 120/96. In the case underlying the cited decision, a remittal by the competent board for further prosecution on the basis of new evidence was immediately followed by the rejection of the opposition. No intervening communication announcing the resumption of proceedings had been issued by the opposition division after remittal and before the opposition was rejected.

However, this has not been the case in the decision under appeal, where oral proceedings were held before the opposition division and the case had not been

previously remitted by the board. Decision T 120/96 is thus not pertinent to the issues at hand.

It is uncontested that the sets of claims of the auxiliary requests, including the current main request, which had been filed by the respondent's letter dated 9 September 2022, were sent to appellant II by a communication issued on 14 September 2022. It is evident from points 7 and 8 of the minutes of the oral proceedings before the opposition division that the opponents not only had an opportunity to present their cases with respect to the current main request, but that they also used this opportunity to raise objections (see, for example, points 7.1, 7.2, 7.5, 8.1 to 8.4 of the minutes). For example, according to point 7.5 of the minutes, appellant II raised an objection under Article 123(2) EPC. It is not apparent that appellant II did not have the opportunity to raise other objections, such as objections of lack of novelty, in the same manner as the objection under Article 123(2) EPC, if it had wished to.

3.5 In view of the above, the opposition division did not commit a procedural violation, let alone a substantial procedural violation within the meaning of Rule 103(1)(a) EPC. Appellant II's request for reimbursement of the appeal fee therefore has to be rejected.

4. Conclusions

The subject-matter of claim 1 of the main request and auxiliary requests I, II and IIa is not new. The decision under appeal therefore has to be set aside. The board, exercising its discretion, decides to remit

the case to the opposition division for further prosecution. It rejects appellant II's request for reimbursement of the appeal fee.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division for further prosecution.

3. Appellant II's request for reimbursement of the appeal fee is rejected.

The Registrar: The Chairman:

N. Schneider P. Lanz

Decision electronically authenticated