NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

D3D TECHNOLOGIES, INC.,
Appellant

v.

MICROSOFT CORPORATION,
Appellee

2023-1462

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2021-00878.

Decided: April 3, 2024

TAREK N. FAHMI, Ascenda Law Group, PC, San Jose, CA, argued for appellant.

SARAH JACK, Fish & Richardson P.C., Minneapolis, MN, argued for appellee. Also represented by, NITIKA GUPTA FIORELLA, Wilmington, DE; AAMIR ABDULQADER KAZI, Atlanta, GA; BETTY H. CHEN, Desmarais LLP, San Francisco, CA.

Before PROST, SCHALL, and REYNA, *Circuit Judges*.

SCHALL, *Circuit Judge*.

D3D Technologies, Inc. ("D3D") owns U.S. Patent No. 9,980,691 ("the '691 patent"), which is at issue in *D3D Technologies, Inc. v. Microsoft Corp.*, 6:20-cv-01699 (M.D. Fla). In this appeal, D3D challenges the Final Written Decision ("FWD") of the Patent Trial and Appeal Board ("Board") in an inter partes review proceeding initiated by petitioner Microsoft Corporation ("Microsoft"). In the FWD, the Board found claims 1–9 and 11–21 of the '691 patent rendered obvious by the prior art combination of U.S. Patent Publication No. 2006/0279569 ("Acosta") and U.S. Patent Publication No. 2004/0059214 ("Tomoda"). *Microsoft Corp. v. D3D Techs., Inc.*, IPR2021-00878, 2022 WL 17254077 (P.T.A.B. Nov. 28, 2022) ("*Final Written Decision*"). For the reasons stated below, we *affirm*.

BACKGROUND

I

The '691 patent relates to methods for providing three-dimensional (or "3D") viewing of images. The patent describes combining image "slices" (i.e., two-dimensional (or "2D") images) generated by medical imaging devices such as CT (Computed Tomography), MRI (Magnetic Resonance Imaging), and PET (Positron Emission Tomography) to create a "volume of interest." '691 patent col. 2 ll. 43–46, col. 5 ll. 8–10, 21–43. The volume of interest is presented in a three-dimensional representation to a display unit worn on a user's head. *Id.* col. 2 ll. 46–48, col. 5 ll. 10–13, 36–60.

The '691 patent also describes the generation and display of a movable three-dimensional cursor within the three-dimensional image space. *Id.* col. 17 ll. 14–20, 36–41. In a medical setting, for example, this allows a user to subtract from view tissue falling outside the cursor or to rotate the cursor to permit examination of the volume of interest from different angles. *Id.* col. 17 ll. 36–57.

II

As noted, the Board found claims 1–9 and 11–21 of the '691 patent obvious in view of Acosta and Tomoda. Acosta describes a system and method for analyzing and imaging three-dimensional volume data sets using a "3D sampling probe" that "corresponds to a sub-volume of a larger 3D volume." J.A. 1505 Abstract, J.A. 1506 figs. 1–2, J.A. 1526 ¶ 59, J.A. 1528 ¶ 83. Acosta primarily discusses use of its system and method for manipulating seismic data, but also explains that they can be used "for analyzing and imaging in the medical field, where the datavalue element of the voxel is obtained from a CAT (computerized axial tomography) scanner or a magnetic resonance imaging (MRI) procedure." J.A. 1526 ¶ 54; *see also id.* ¶¶ 51–53.[1]

Tomoda describes an apparatus and method for processing a plurality of images using a three-dimensional region of interest ("ROI") specifying unit. J.A. 1417 Title, ¶¶ 10–13, J.A. 1421 ¶ 72, J.A. 1412–14 figs. 9–11. In one embodiment of Tomoda's process, three-dimensional image data is obtained, two-dimensional images are produced from the three-dimensional image data, and then a spherical three-dimensional ROI is placed and located in the two-dimensional images. J.A. 1421 ¶¶ 71–72. At that point, one or more sections of the original three-dimensional image that cross the specified ROI are searched, and their sectional images are displayed. J.A. 1420 ¶ 55, J.A. 1421 ¶¶ 72–73, J.A. 1414–15 figs. 11–12.

III

The parties assert, and we agree, that for purposes of this appeal independent claim 1 of the '691 patent is representative. Claim 1 pertains to displaying a three-

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[1] A "voxel" is a volume element within a 3D volume data set. *See* J.A. 1523 ¶ 6, J.A. 1526 ¶ 51; '691 patent col. 13 ll. 55–65.

dimensional cursor in the volume of interest and then selecting portions of the two-dimensional image slices corresponding to the cursor's volume for further processing. It provides as follows:

> 1. A method comprising:
>
> [a] generating a three-dimensional image space or volume from a plurality of two-dimensional radiological image slices;
>
> [b] generating a three-dimensional cursor that has a non-zero volume;
>
> [c] displaying the three-dimensional cursor in the three-dimensional medical image space or volume;
>
> [d] responsive to a first input, moving said three-dimensional cursor within the three-dimensional medical image space or volume; and
>
> [e] responsive to a second input, selecting portions of the two-dimensional radiological image slices corresponding to the volume of the three-dimensional cursor for further processing.

'691 patent col. 22 ll. 49–63.

The Board found elements [a]–[d] of claim 1 to be taught by Acosta. *Final Written Decision*, 2022 WL 17254077, at *17–19. On appeal D3D does not challenge those findings. That leaves only element [e] of claim 1 at issue.

As seen, in relevant part element 1[e] recites "selecting portions of the two-dimensional radiological image slices corresponding to the volume of the three-dimensional cursor for further processing." Microsoft's petition asserted that the combination of Acosta and Tomoda, which it referenced as "ATC," J.A. 185, taught this limitation, J.A. 198–99. Specifically, the petition stated that "ATC renders [1e] obvious . . . because Acosta's 3D sampling probe would

have been used to select the ROI in response to an input, and Tomoda's method would have been used to select portions of the original 2D radiological slices corresponding to the volume of [Acosta's] 3D cursor for further processing, e.g., displaying." J.A. 194; *see also* J.A. 57, 185. In its Patent Owner Response, D3D contended that, in the petition, Microsoft "effectively admits that Acosta fails to teach selection of portions of two-dimensional radiological image slices corresponding to the volume of the three-dimensional cursor for further processing." J.A. 517. Instead, D3D argued, Microsoft relied solely on Tomoda as teaching that part of claim element 1[e]. *Id.* D3D further argued that Tomoda describes the selection of *entire* two-dimensional image slices that correspond to the ROI, not the selection of *portions* of the image slices corresponding to the volume of the three-dimensional cursor, as required by element 1[e]. J.A. 517–29.

In the FWD, the Board construed as follows the language in element 1[e] that recites "selecting portions of the two-dimensional radiological image slices corresponding to the volume of the three-dimensional cursor for further processing":

> (1) the term "corresponding" means "to match or have a close similarity;" and (2) the phrase "selecting portions" is limited in two respects, specifically, first that the selected portions are "of the two-dimensional radiological image slices" and second that the selected portions must be corresponding to the volume of the three-dimensional cursor; and (3) the phrase "for further processing" is an intended use that has no patentable weight.

Final Written Decision, 2022 WL 17254077, at *8.

The Board then set forth Microsoft's argument that the combination of Acosta and Tomoda teaches element 1[e], *id.* at *19–20, 21–22, and D3D's arguments to the contrary, *id.* at *20–21, 22.

Proceeding to its analysis, the Board concluded that Microsoft's arguments and the testimony of its expert Dr. Fuchs relating to Acosta's teachings of "selecting," as well as Tomoda's teachings relating to the specified ROI, showed that "the combination of Acosta and Tomoda teaches 'selecting portions of the two-dimensional radiological image slices corresponding to the volume of the three-dimensional cursor' using the correct construction of 'corresponding.'" *Id.* at *22. Having stated that the combination of Acosta and Tomoda taught limitation 1[e], the Board next explained its reasoning. *See id.* at *22–27. In its explanation the Board made clear that it found that Acosta teaches the "selecting of portions of two-dimensional radiological slices corresponding to the volume of the three-dimensional cursor," while Tomoda teaches the required "for further processing," to the extent the latter phrase is given patentable weight. *See id.* at *22–25 (relying on Acosta's teaching of a 3D sampling probe that can be placed at a ROI within the 3D volume data set as performing the claimed "selecting"), *id.* at *29 (noting that, to the extent the "for further processing" phrase is given patentable weight, Tomoda's "displaying" teaches this claim element). On this basis, the Board found claims 1–9 and 11–21 of the '691 patent unpatentable as obvious in view of Acosta and Tomoda.

DISCUSSION

I

We review the Board's legal determinations de novo and its underlying factual determinations for substantial evidence. *Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1335 (Fed. Cir. 2020). We review the Board's process for compliance with the Administrative Procedure Act ("APA") de novo, and we must set aside Board decisions if they are "arbitrary, capricious, an abuse of discretion, . . . otherwise not in accordance with law," "in excess of statutory jurisdiction, authority, or limitations," or "without

observance of procedure required by law." 5 U.S.C. § 706; *Sirona Dental Sys. GmbH v. Institut Straumann AG*, 892 F.3d 1349, 1352 (Fed. Cir. 2018).

II

On appeal, D3D argues that the Board violated the APA when it held claim 1 of the '691 patent obvious in view of Acosta and Tomoda. In making this argument, D3D focuses on the Board's finding that Acosta alone teaches the "selecting" required by element 1[e]. According to D3D, this finding was based on a theory not set forth in Microsoft's petition, which should have guided the litigation, in line with *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018). Specifically, D3D asserts that, as presented in the petition, Microsoft's argument was that the *combination* of Acosta and Tomoda, not Acosta *alone*, teaches claim element 1[e]. In that regard, D3D points, Appellant's Br. 39, to the following statement in the petition: "ATC renders [1e] obvious . . . because Acosta's 3D sampling probe would have been used to select the ROI in response to an input, and Tomoda's method would have been used to select portions of the original 2D radiological slices corresponding to the volume of [Acosta's] 3D cursor for further processing, e.g., displaying." J.A. 194; *see* J.A. 57, 185.

In response, Microsoft contends that the Board had discretion to interpret the petition and properly read it to delineate arguments that *both* Acosta and Tomoda disclose the claimed methods. Appellee's Br. 23 (citing J.A. 183 ("Acosta and Tomoda disclose methods for viewing a 3D image and selecting regions/volume of interest (ROIs) in the 3D image using a 3D cursor (e.g., Acosta's 3D sampling probe, Tomoda's 3D ROI.")). As for Acosta's teachings alone, Microsoft states that "[t]he same portions of the petition that establish how Acosta's probe 'selects' also establish that such selecting results in a selection 'corresponding' to the probe, as the Board construed the term." *Id.* at 22.

III

IPR proceedings are formal administrative adjudications subject to the procedural requirements of the APA. *Arthrex, Inc. v. Smith & Nephew, Inc.*, 935 F.3d 1319, 1326 (Fed. Cir. 2019) (citations omitted). As seen, D3D argues that the Board's reliance on Acosta alone with respect to the "selecting" part of claim element 1[e] amounted to an APA violation. We have stated that an APA violation occurs when the Board "depart[s] markedly from the evidence and theories presented by the petition or institution decision, creating unfair surprise." *Arthrex*, 935 F.3d at 1328.[2] We affirm the Board's decision because we conclude that such a violation did not occur here.

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[2] Microsoft argues that we should review the Board's interpretation of the petition for abuse of discretion. The cases Microsoft points to, however, dealt with the situation where we were reviewing the Board's compliance with its own procedures, e.g., where the Board was reviewing a petition in the context of 37 C.F.R. § 42.23(b), which permits the Board to strike arguments not responsive to ones presented in the patent owner's response or the institution decision, or in the context of 37 C.F.R. §§ 42.22(a)(2) and 42.104, pertaining to what a petitioner must provide in the petition. *See* Appellee's Br. 20; *Ericsson Inc. v. Intell. Ventures I LLC*, 901 F.3d 1374, 1379 (Fed. Cir. 2018) (considering whether the Board abused its discretion in the context of § 42.23(b)); *MModal LLC v. Nuance Commc'ns, Inc.*, 846 F. App'x 900, 906–07 (Fed. Cir. 2021) (reviewing for abuse of discretion the Board's decision finding a petition to be inadequate under §§ 42.22 and 42.104); *see also Corephotonics, Ltd. v. Apple, Inc.*, 84 F.4th 990, 1008 (Fed. Cir. 2023) (explaining that we review de novo whether a reply brief presents a new theory of unpatentability, but that we review for abuse of discretion whether a reply brief properly responds to arguments pursuant to § 42.23(b)).

We begin with a close examination of Microsoft's petition. The petition's analysis for element 1[e] first incorporates its analysis for the other elements of claim 1. J.A. 194 ("For the reasons noted above in Section III.A.3, ATC renders [1]e obvious . . .). The petition then explains that Acosta teaches a "3D sampling probe [that] can be placed at a ROI within a 3D volume dataset." *Id.* (citing J.A. 188–90 pertaining to claim element 1[b]). As previously stated in the petition, Acosta's larger three-dimensional volume set is generated from two-dimensional image slices. J.A. 175, 186–87 (corresponding to claim element 1[a]). The petition also explains using user input (the "second input" of claim element 1[e]) regarding "a second location to move the 3D sampling probe to a ROI for which the user would like to view 2D image slices." J.A. 194. The petition then goes on to state that a Volume Sampling Module in Acosta "extracts data from the data volume to draw an image of the intersection of the 3D sampling probe with the 3D volume." *Id.* (citing J.A. 1530 ¶¶ 102–04). In our view, this teaching of extracting data from the data volume formed of 2D slices, and drawing an image of the intersection of the 3D sampling probe with the 3D volume, corresponds to claim element 1[e]'s "selecting portions of the two-dimensional radiological image slices corresponding to the volume of the three-dimensional cursor for further processing."

While it is true that the petition refers to Tomoda as teaching "selecting portions," J.A. 194–98, we cannot say that it was a marked departure from the petition for the FWD to have relied on Acosta as teaching selecting portions. We say this for two reasons. *First*, as just described, the petition ties Acosta to "selecting portions of . . . two dimensional radiological image slices." And *second*, while the petition relies on both Acosta and Tomoda generally for element 1[e], it discussed Tomoda specifically in connection with the display of the selected slices, i.e., "for further processing." J.A. 195. Moreover, the petition has a detailed

discussion of Acosta. That discussion provides a teaching of the claimed element, and the FWD relied upon the same paragraphs of Acosta as the petition in concluding that Acosta teaches "selecting that corresponds 'to the volume of the three-dimensional cursor.'" *Final Written Decision*, 2022 WL 17254077, at *23 (quoting J.A. 1530 ¶¶102, 104).

For us to discern an APA violation, we must find more of a departure from the petition than we have here. *See Arthrex*, 935 F.3d at 1328 (finding no violation of the APA when "the Board properly relied on the same references, the same disclosures, and the same obviousness theories advanced by the petition and debated by the parties"). For example, we have concluded that there was a "marked departure" from the petition where the Board's final claim construction changed significantly from the institution decision, where the Board mixed arguments from two different grounds of obviousness to create its own theory of unpatentability, and where the Board relied on different portions of the prior art than those provided in the petition. *Id.* (citing *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1372–73, 1377 (Fed. Cir. 2016); *SAS Inst. v. ComplementSoft, LLC*, 825 F.3d 1341, 1351 (Fed. Cir. 2016), *rev'd on other grounds sub nom. SAS Inst. Inc.*, 138 S. Ct. 1348; *In re NuVasive, Inc.*, 841 F.3d 966, 971 (Fed. Cir. 2016)).

We also have found the Board to have violated the APA when the patent owner did not receive adequate notice or opportunity to respond to an argument. *Compare M&K Holdings, Inc. v. Samsung Elecs.*, 985 F.3d 1376, 1385 (Fed. Cir. 2021) (finding the Board had violated the APA because a patent owner was not put on notice that a reference would be used to anticipate a claim when the petition challenged the claim only for obviousness) *and EmeraChem Holdings v. Volkswagen Grp. of Am., Inc.*, 859 F.3d 1341, 1352 (Fed. Cir. 2017) (finding an APA violation when a reference relied upon in the final written decision was not a part of the grounds for rejection of those claims in the petition or the institution decision) *with Sirona Dental Sys. GmbH*, 892

F.3d at 1356 ("Because the petition provided Sirona notice and opportunity to address the portions of [the prior art] relied on by the Board, the Board's reliance on these portions of [the prior art] did not violate the APA and is not inconsistent with *SAS*."). Although Microsoft's petition spoke generally of a combination of Acosta and Tomoda, as seen, it did describe what Microsoft asserted was Acosta's teaching of the "selecting" component of claim element 1[e]. We thus cannot say D3D was not on notice of Microsoft's argument, and it certainly had ample opportunity to respond to the argument.

CONCLUSION

For the foregoing reasons, the FWD is affirmed.[3]

AFFIRMED

COSTS

No costs.

[3] We accordingly do not reach Microsoft's alternative argument regarding the construction of "corresponding" as part of the Board's construction of "selecting portions."