

NOTE: This disposition is nonprecedential.

**United States Court of Appeals  
for the Federal Circuit**

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**D3D TECHNOLOGIES, INC.,**  
*Appellant*

v.

**MICROSOFT CORPORATION,**  
*Appellee*

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2023-1011

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Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2021-00647.

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Decided: February 20, 2024

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

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

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

PROST, *Circuit Judge*.

D3D Technologies, Inc. (“D3D”) appeals from a final written decision of the Patent Trial and Appeal Board (“Board”) in an inter partes review determining that claims 1–21 of U.S. Patent No. 8,384,771 (“the ’771 patent”) are unpatentable. We affirm.

#### BACKGROUND

D3D owns the ’771 patent, titled “Method and Apparatus for Three Dimensional Viewing of Images.” ’771 patent col. 1 ll. 1–2. The ’771 patent describes “a process for combining slices generated by medical imaging devices to create a volume of interest and then presenting this volume in a three-dimensional representation to a Head Display Unit (HDU),” so that a user, such as a radiologist or other medical professional, “can obtain a holistic view” of a patient. *Id.* at col. 4 ll. 59–64. The user “is afforded control over options designed to enhance the viewing process,” such as “rotating the image, selectively filtering out items (e.g., tissues), adding a color schematic, and zooming in or out.” *Id.* at col. 9 ll. 28–32.

Independent claim 1 is representative and recites:

1. A method of three-dimensional viewing of images by a user comprising:

selecting a volume of interest from a collection of image slices;

arranging said slices corresponding to said volume of interest;

selecting an initial viewing angle of said slices;

...

selecting items of said image to be filtered, wherein said selecting items of said image to be filtered comprises:

*selecting items of said image to be subtracted from said image to produce a filtered image;*

displaying, in said HDU, a filtered image for said left eye based on said initial viewing angle, said view point for said left eye and said volume of interest; and

displaying, in said HDU, a filtered image for said right eye based on said initial viewing angle, said view point for said right eye, and said volume of interest and wherein said filtered image for said left eye and said filtered image for said right eye produce a filtered three-dimensional image to said user.

'771 patent claim 1 (emphasis added). We refer to the language emphasized above as the “subtracted limitation.”

Dependent claim 6 additionally recites in relevant part:

6. The method of claim 4 wherein said selecting items of said image to be colored comprises:

sorting voxels of said items by a *property* of said voxel;

applying colors to groups of sorted voxels to obtain a colored image; . . . .

'771 patent claim 6 (emphasis added).

Microsoft Corporation (“Microsoft”) filed a petition for inter partes review of claims 1–21 of the '771 patent. In a final written decision, the Board found the challenged claims anticipated by and obvious over WO 2007/059477 (“Murphy”). *Microsoft Corp. v. D3D Techs., Inc.*, No. IPR2021-00647, 2022 WL 3137967, at \*1 (P.T.A.B. Aug. 3, 2022) (“*Final Written Decision*”).

The Board began by construing the term “subtracted” as used in the subtracted limitation. The Board noted that

the specification does not define the term “subtracted” and construed that term to mean “withdrawn or taken away, as a part from a whole.” *Id.* at \*6.

Turning to the prior art, the Board noted that D3D disputed only whether Murphy disclosed the subtracted limitation but did not otherwise contest Microsoft’s showing with respect to other limitations. *Id.* at \*7. The Board found that Murphy describes a display system that can virtually display “data representing human anatomy” and that Murphy discloses the ability to hide and show anatomical features. *Id.* at \*7–8. The Board concluded that “Murphy’s hiding, cutting away, and making items completely transparent teaches withdrawing or taking away items from an image.” *Id.* at \*8. The Board therefore held that under its construction of “subtracted” Murphy discloses the subtracted limitation and that claim 1 is anticipated by and would have been obvious over Murphy. *Id.* The Board additionally concluded that because Murphy discloses “applying colors to groups of sorted voxels to obtain a colored image,” it anticipated and would have rendered obvious dependent claim 6 and, similarly, claims 13 and 20. *Id.* at \*9–10.

D3D appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

#### DISCUSSION

We review the Board’s claim construction de novo and any subsidiary factual findings based on extrinsic evidence for substantial evidence. *Apple Inc. v. MPH Techs. Oy*, 28 F.4th 254, 259 (Fed. Cir. 2022). We “review the Board’s legal conclusions of obviousness de novo and factual findings for substantial evidence.” *Id.* (citing *PersonalWeb Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 991 (Fed. Cir. 2017)). Anticipation is “a question of fact reviewed for substantial evidence.” *ABS Glob., Inc. v. Cytonome/St, LLC*, 84 F.4th 1034, 1043 (Fed. Cir. 2023). What a piece of prior art teaches is also a question of fact. *Apple*, 28 F.4th at

259. Substantial evidence “is such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.” *Novartis AG v. Torrent Pharms. Ltd.*, 853 F.3d 1316, 1323–24 (Fed. Cir. 2017) (cleaned up).

We turn first to the Board’s construction of the term “subtracted” and subsequently consider the Board’s findings that Murphy anticipates or renders obvious claims 1–21.

## I

D3D argues that the Board’s construction of the term “subtracted” to mean “withdrawn or taken away, as a part from a whole,” was unduly broad. According to D3D, subtraction requires actual “elimination of data from the underlying model from which left eye and right eye images are created,” rather than merely removing data from the displayed image. Appellant’s Br. 30. We disagree.

Claim 1 recites “selecting items of said image to be *subtracted from said image* to produce a filtered image.” ’771 patent claim 1 (emphasis added). As is evident from the plain language of the claim, the recited subtraction occurs relative to the *image*. In other words, items are subtracted from the three-dimensional image displayed in the HDU; nothing in the claim language suggests that subtraction requires data to be eliminated from the underlying data model.

The specification further indicates that D3D’s arguments regarding elimination of data are misplaced. The ’771 patent’s references to “filtering” an image suggest that subtraction is essentially filtering:

Method 500 begins with processing block 502 which recites selecting items of the image to be subtracted from the image to produce a filtered image. The user selects the tissues to be filtered. Several filtering processes are possible, including by

composition (e.g. Houndsfeld unit or signal intensity) or position (x, y, z) of the tissue.

*Id.* at col. 9 ll. 60–67. The specification discloses other instances in which filtering does not involve deletion of any data. *See, e.g., id.* at col. 13 ll. 15–18 (explaining as an example of filtering that “one method would be to *ignore* all voxels with H. units less than 500” (emphasis added)). The specification also explains that the user selects tissues—as opposed to data—to remove from the image to create a filtered image. *Id.* at col. 9 ll. 60–67; *see also Final Written Decision*, 2022 WL 3137967, at \*5 (reasoning that “[i]t takes a logical leap to suggest that eliminating displayed tissue means eliminating the data underlying the displayed tissue”).

Finally, even assuming that intrinsic evidence does not suffice to resolve this claim construction dispute, extrinsic evidence additionally supports the Board’s construction. Microsoft’s expert, Dr. Zyda, explained that D3D’s construction “would be inconsistent with a [skilled artisan’s] desire to quickly and efficiently manipulate 3D images in real time by, for instance, repeatedly removing and re-adding different tissue sections.” *Final Written Decision*, 2022 WL 3137967, at \*6 (citing J.A. 1394 ¶ 8). The Board reasonably credited Dr. Zyda’s testimony over the testimony of D3D’s expert, Dr. Bajaj, which failed to explain the lack of “*any* discussion [in the ’771 patent] of deleting underlying data and reloading such data from an archive” in the manner advanced by D3D. *Id.* (emphasis in original).

For the foregoing reasons, we agree with the Board that the term “subtracted” need not be construed to mean that data is eliminated from the underlying data model.

## II

Turning next to the Board’s consideration of the prior art, substantial evidence supports the Board’s determination that Murphy anticipates or renders obvious claim 1.

*Id.* at \*7. The parties dispute only whether Murphy meets the subtracted limitation of claim 1.

The Board determined that “Murphy’s hiding, cutting away, and making items completely transparent teaches withdrawing or taking away items from an image.” *Id.* at \*8. The Board considered Murphy’s teachings, including Murphy’s ability to hide and show each anatomical feature, and credited Dr. Zyda’s testimony that this ability “corresponds to subtracting the selected items from the image to produce a filtered image,” as claimed in the ’771 patent. *Id.*

On appeal, D3D urges that the Board’s decision rests on a flawed claim construction and “[b]ecause mere removal [of] an item from a displayed image is not eliminating the item from the underlying volume of interest . . . there was no substantial evidence for the Board to conclude that Murphy anticipated independent claims 1, 8, and 15.” Appellant’s Br. 62. We disagree. For the reasons discussed above, we agree with Microsoft that the Board correctly construed the term subtracted. Under that construction, substantial evidence supports the Board’s finding that Murphy teaches the subtracted limitation. We therefore affirm the Board’s determination that Murphy anticipates or renders obvious the challenged independent claims.

### III

Finally, D3D argues that dependent claims 6, 13, and 20 are independently patentable over Murphy. Claim 6, which is similar to claims 13 and 20, recites “sorting voxels of said items by a property of said voxel; [and] applying colors to groups of sorted voxels to obtain a colored image.” ’771 patent claim 6.

D3D argues, as it did before the Board, that Murphy does not teach or suggest sorting voxels or applying colors to groups of sorted voxels by a *property* of the voxel because “Murphy is clear that color assignment is based on anatomical features,” rather than specific properties. Appellant’s

Br. 72. In other words, D3D argues that because Murphy might, for example, apply the color orange to spleen voxels, and blue to liver voxels, Murphy does not apply color according to some specific property, but instead based solely on anatomical features. *Id.*

We agree with Microsoft that substantial evidence supports the Board’s rejection of D3D’s arguments. As the Board reasoned, D3D reads too much into the word “property.” *Final Written Decision*, 2022 WL 3137967, at \*9. Murphy discloses creating new segment volumes in which “all voxels that are inside the desired segment fall on one side of the threshold value, and all voxels that are outside the desired segment fall on the other side of the threshold value.” *Id.* (quoting J.A. 1157–58 ¶ 42). The Board therefore found that Murphy teaches comparing the values of voxels to a threshold and sorting voxels according to their properties. *Id.* Further, the Board determined that Murphy renders color for each voxel, including those voxels in segment volumes. *Id.* at \*10. This led the Board to determine that Murphy discloses “applying colors to groups of sorted voxels to obtain a colored image.” *Id.* (citing J.A. 1158–59 ¶ 45). Because substantial evidence supports the Board’s determination that Murphy anticipates or renders obvious claims 6, 13, and 20, we affirm.

#### CONCLUSION

We have considered D3D’s remaining arguments and find them unpersuasive. For the foregoing reasons, we affirm.

**AFFIRMED**