

NOTE: This disposition is nonprecedential.

# United States Court of Appeals for the Federal Circuit

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APPLE INC., GOOGLE LLC,  
*Appellants*

v.

SPACETIME3D, INC.,  
*Cross-Appellant*

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2025-1022, 2025-1051, 2025-1082

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Appeals from the United States Patent and Trademark  
Office, Patent Trial and Appeal Board in Nos. IPR2023-  
00242, IPR2023-00577.

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Decided: August 31, 2026

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

STARK, *Circuit Judge*.

SpaceTime3D, Inc. (“SpaceTime3D”) is the owner of U.S. Patent No. 8,881,048 (the “’048 patent”), which relates to a graphical user interface that displays webpages as objects in a three-dimensional space and, upon a user’s selection of an object, displays the corresponding webpage in a two-dimensional space. Apple Inc. and Google LLC (together, “Apple”) filed petitions for *inter partes* review challenging claims 1-18 of the ’048 patent as obvious under 35 U.S.C. § 103. In its final written decision, the Patent Trial and Appeal Board (“Board”) determined that Apple had not proven claims 1-13 unpatentable but had proven claims 14-18 unpatentable. Apple appeals the Board’s determination as to claims 1-13 and SpaceTime3D cross-appeals the Board’s determination as to claims 14-18. We affirm.

## I

## A

The ’048 patent, entitled “System and Method for Providing Three-Dimensional Graphical User Interface,” generally relates to graphical user interfaces (“GUIs”) for navigating among webpages using two-dimensional (“2D”) and simulated three-dimensional (“3D”) spaces. The specification explains that conventional GUIs display webpages and other information in windows on a finite 2D desktop. As additional windows are opened, they may overlap, making it more difficult for a user to organize and retrieve information.

The '048 patent seeks to address this problem by allowing a user to navigate among images corresponding to webpages in a simulated 3D space and, upon selecting an image, return to the corresponding webpage in a 2D space. The specification explains that the “3D GUI program creates the appearance of a 3-D space within a 2-D window on the desktop of a computer.” J.A. 124 at 7:66-67. Within that simulated space, images corresponding to webpages may be displayed on objects arranged at different depths. When the user selects one of those images, the system may replace the objects in the 3D space with a 2D window containing the corresponding webpage, allowing the user to interact with that webpage.

Independent claims 1 and 14 are representative of claims 1-13 and 14-18, respectively. Relevant to this appeal, claim 1 recites receiving first and second webpages and subsequently “*rendering* the first and second webpages.” J.A. 139 at 37:61 (emphasis added). The claim further recites capturing images of portions of the rendered webpages and displaying those images on objects within a 3D space. Following a user interaction with the first image, the method requires:

replacing the first and second objects within the 3D space with a window within a two-dimensional (2D) space . . . wherein the window includes *the rendered first webpage*;

J.A. 139 at 38:7-10 (emphasis added). Claim 1 also requires that the first object be displayed “in a foreground of the 3D space and the second object . . . in a background of the 3D space.” J.A. 139 at 38:1-3.

Claim 14 largely parallels claim 1, in that it recites retrieving first and second webpages and generating corresponding images. It does not, however, expressly recite rendering those webpages. Its corresponding limitation instead requires:

replacing the first and second images within the 3D space with a window within a two-dimensional (2D) space . . . wherein the window includes *the first webpage*.

J.A. 140 at 40:36-40 (emphasis added).

## B

Apple Inc. filed a petition for *inter partes* review of claims 1-18 of the '048 patent, asserting two obviousness grounds: (1) Robertson in view of Gralla and Gettman, and (2) Sauve in view of Tsuda. Google filed a substantially identical petition and was joined to the instituted proceeding.

Robertson<sup>1</sup> discloses a GUI in which object thumbnails are displayed in a 3D environment and, upon selection of a thumbnail, the corresponding object is “displayed in a preferred viewing position.” J.A. 897 at 13:55-14:10. Gettman<sup>2</sup> similarly discloses a virtual 3D browser in which webpages may be displayed and selected. Gralla<sup>3</sup> describes conventional webpages and web browsers, including how browsers interpret Hypertext Markup Language (“HTML”) webpages for display. In Ground 1, Apple relied principally on Robertson and Gettman for the claimed 3D interface and on Gralla for teachings concerning conventional webpages and web browsers.

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<sup>1</sup> U.S. Patent No. 6,414,677 (“Robertson”).

<sup>2</sup> U.S. Patent Pub. No. 2005/0086612 (“Gettman”).

<sup>3</sup> Preston Gralla, Que, HOW THE INTERNET WORKS (6th ed. 2002) (“Gralla”).

Sauve<sup>4</sup> discloses a tabbed web browser with a “quick pick” interface that displays thumbnail images corresponding to open tabs and permits a user to select a thumbnail to view the associated content. Tsuda<sup>5</sup> discloses arranging windows within a virtual 3D space, including where the windows are “stacked horizontally” extending in the depth direction. J.A. 1392 at 18:8-15. In Ground 2, Apple proposed combining Sauve’s thumbnail-based browser interface with Tsuda’s 3D display.

The Board determined that Apple had not proven claims 1-13 unpatentable under either ground. Central to that determination was the Board’s construction of the term “the rendered first webpage” to mean “the rendered version from which the corresponding image was captured.” J.A. 20-23. For Ground 1, the Board found that the prior art references disclose rendering a webpage anew in response to the user’s selection rather than displaying the previously rendered webpage (in the status in which it had existed at the time the corresponding image was captured). Also with respect to Ground 1, Apple submitted evidence concerning browser caching along with its reply (though not before). The Board refused to consider this reply-stage evidence because it found Apple’s new expert declaration and prior art references were being used to teach a claim limitation that “could have [been] presented earlier, e.g. to make out a prima facie case of unpatentability.” J.A. 46-47. For Ground 2, the Board found that Sauve did not make clear whether selecting its thumbnail triggers display of the previously rendered webpage or instead renders the webpage anew. Therefore, Apple had not carried its burden of proving unpatentability.

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<sup>4</sup> U.S. Patent Pub. No. 2006/0230356 (“Sauve”).

<sup>5</sup> U.S. Patent No. 6,577,330 (“Tsuda”).

The Board reached the opposite conclusion as to claims 14-18. Claim 14 requires the 2D window to include “the first webpage,” rather than “the rendered first webpage.” J.A. 140 at 40:37-40. The Board understood “the first webpage” to be broad enough to encompass both a previously rendered webpage (as required by claim 1) and also one rendered anew in response to the claimed user interaction. Applying this broader understanding of “the first webpage,” the Board determined that Apple had proven claims 14-18 unpatentable under both Grounds 1 and 2.

Apple sought Director Review, which was denied. It then filed a timely appeal from the Board’s judgment as to claims 1-13. SpaceTime3D timely cross-appealed as to claims 14-18. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A) and 35 U.S.C. § 141(c).

## II

Claim construction is a question of law we review de novo when, as here, it is based solely on intrinsic evidence. *See Arendi S.A.R.L. v. Google LLC*, 882 F.3d 1132, 1133 (Fed. Cir. 2018); *Trs. of Columbia Univ. v. Symantec Corp.*, 811 F.3d 1359, 1362 (Fed. Cir. 2016) (“The construction of claim terms based on the claim language, the specification, and the prosecution history are legal determinations.”).

“We review the Board’s ultimate determination of obviousness de novo and its underlying findings of fact for substantial evidence.” *Medtronic, Inc. v. Teleflex Innovations S.A.R.L.*, 70 F.4th 1331, 1336 (Fed. Cir. 2023). We review the Board’s “judgment about when a reply contention crosses the line from the responsive to the new . . . for abuse of discretion.” *Yita LLC v. MacNeil IP LLC*, 69 F.4th 1356, 1365-66 (Fed. Cir. 2023) (alterations omitted).

## III

Apple’s challenge to the Board’s determination that it failed to prove claims 1-13 unpatentable consists of three parts. Apple argues that: (a) the Board misconstrued “the

rendered first webpage;” (b) even under the Board’s construction, it improperly declined to consider Apple’s reply evidence concerning browser caching; and (c) the Board applied an incorrect legal standard in evaluating Ground 2. We address each argument in turn.

#### A

The Board construed “the rendered first webpage” to mean “the rendered version from which the corresponding image was captured.” J.A. 23. Apple deems this construction erroneous. We disagree.

The claim language supports the Board’s construction. Claim 1 first recites “rendering the first and second webpages,” followed by “capturing first and second images” of portions of those webpages and texturing those images onto objects displayed in a 3D space. J.A. 139 at 37:61-38:3. The claim later requires replacing those objects with a 2D window that “includes the rendered first webpage.” J.A. 139 at 38:4-10. In this context, the definite article “the” in “the rendered first webpage” refers back to the webpage previously rendered that was used to generate the corresponding image. *See Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1343 (Fed. Cir. 2008) (recognizing “need, in most cases, for claim terms to have proper antecedent bases” to avoid “lack of clarity”). Apple’s proposed construction fails to give sufficient effect to this antecedent relationship.

The specification, while never using the term “the rendered first webpage,” confirms the Board’s construction.<sup>6</sup> It describes an embodiment (“Bind to the HUD [heads-up display] feature”) in which the system brings a webpage into view by “revealing the 2D version of the webpage that

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<sup>6</sup> The term was added during prosecution, after three rejections. Neither party expressly argues that the prosecution history supports its claim construction position.

was initially hidden or drawn off screen” and positioning it in front of the 3D virtual space for user interaction. The version of the webpage thus being made available to the user is the previously rendered (i.e., static) version; it is being re-displayed to the user and is not a “live” version of that webpage. *See* J.A. 22 (Board noting “objects within the 3D space are replaced with ‘the 2D version of the webpage that was initially hidden or drawn off screen.’ This is the ‘old’ version, and not the ‘current’ or ‘live’ version of the webpage . . . .”) (quoting J.A. 3374; J.A. 131 at 21:45-47); *see also* Oral Arg., *Apple Inc. v. SpaceTime3D, Inc.*, No. 25-1022, at 24:03-12, 25:10-40 (Fed. Cir. July 6, 2026), [https://www.cafc.uscourts.gov/oral-arguments/25-1022\\_07062026.mp3](https://www.cafc.uscourts.gov/oral-arguments/25-1022_07062026.mp3) (patent owner’s counsel confirming that ’048 patent “does not deal with a situation like [a live website]” but is instead “dealing with essentially a static webpage”). While Apple characterizes the Board’s reliance on this portion of the specification as improperly limiting the claim to this embodiment, in our view it shows, rather, the Board’s correct understanding that this embodiment accurately reflects the full scope of what the claim means by “the rendered first webpage.”

Apple also asserts that construing the claims as limited to re-displaying previously rendered webpages cannot be correct because nothing in the ’048 patent references keeping track of rendered versions or pausing websites. *See* Open. Br. at 34 (“[T]he specification says nothing about ‘live’ and ‘old’ rendered versions of a webpage, much less a contrast between those versions.”); *see also* Oral Arg. at 9:43-10:41 (asserting “there is no disclosure” of presenting paused webpages in ’048 patent). Even assuming Apple’s premises (which perhaps go to enablement) are correct,<sup>7</sup>

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<sup>7</sup> SpaceTime3D disputes these points. *See* Oral Arg. at 22:33-24:14 (describing how Figs. 2-3 teach how 3D image can mirror 2D webpage).



they do nothing to undermine the Board’s claim construction.

In sum, we affirm the Board’s construction of “the rendered first webpage” as “the rendered version from which the corresponding image was captured.” J.A. 23.

## B

Under the Board’s construction of the “rendered first webpage,” substantial evidence supports the Board’s finding that Apple failed to prove claims 1-13 unpatentable under Ground 1. The Board found that Robertson and Gettman disclose rendering the corresponding webpage in response to user selection, rather than displaying the previously rendered version from which the image was captured. Apple does not identify evidence presented in the Petition that compels a contrary finding.

Apple argues that, even if the Board’s construction is correct, the Board violated the Administrative Procedure Act, 5 U.S.C. §§ 554(c), 556(d) (“APA”), by declining to consider its reply evidence concerning browser caching. In Apple’s view, because SpaceTime3D first advanced its construction of “the rendered first webpage” after institution, Apple was entitled to respond with evidence showing that Robertson and Gettman could display previously rendered webpages from a browser cache.

A petitioner must have a reasonable opportunity to respond to a claim construction first proposed after institution. *See Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374, 1383-84 (Fed. Cir. 2023). But “a petitioner may not in reply rely on new prior art to teach a claim limitation.” *Id.* at 1383.

The Board reasonably concluded that Apple’s reply crossed that line. The Petition initially relied on Robertson and Gettman as teaching that selecting a thumbnail causes a browser to retrieve, render, and display the corresponding webpage. In reply, Apple advanced a different theory:

that conventional browsers could instead display a previously rendered webpage stored in cache. Apple supported that theory with supplemental expert testimony and new prior art references concerning browser caching. J.A. 3804 (citing J.A. 3816-76; J.A. 3977-85; J.A. 4113-15 ¶¶ 78-80).

The Board found that the Petition contained no browser-caching theory and that Apple’s reply evidence, which consisted of new prior art, sought to “supply the missing teachings of web browser caching.” J.A. 46-47. We therefore discern no abuse of discretion in the Board’s decision not to consider Apple’s reply-stage browser-caching theory and supporting evidence.

### C

Apple next argues that the Board applied an unduly rigid obviousness standard to Ground 2 by requiring Sauve or Tsuda to expressly disclose “the rendered first webpage.” Apple predicates this contention on the Board’s statements that Sauve does not “clearly specif[y]” or “expressly state” whether selecting a thumbnail displays the previously rendered webpage. Open. Br. 44-45 (quoting J.A. 74-75).

Although the obviousness inquiry is not limited to the express disclosures of the prior art, *see Beckson Marine, Inc. v. NFM, Inc.*, 292 F.3d 718, 727 (Fed. Cir. 2002), the Board did not impose such a requirement here. The Board considered Sauve’s disclosure that selecting a thumbnail displays the corresponding content in a tabbed window, as well as its discussion of HTML rendering and webpage downloading. It also considered – but was not persuaded by – Dr. Fuchs’ testimony that a skilled artisan would have understood Sauve to display the same version of the webpage used to generate the thumbnail; it found he did “not explain the basis for the inferences he draws from reading Sauve.” J.A. 73-74. Substantial evidence supports these findings, as Sauve does not specify whether selecting a thumbnail displays the previously rendered version of

the webpage, and the Board reasonably found Dr. Fuchs's testimony insufficient to fill that gap.

Viewed in context, the Board's references to what Sauve does not "clearly specif[y]" or "expressly state" reflect its assessment of the evidence, not the application of an express-disclosure requirement. We discern no legal error in the Board's Ground 2 analysis and affirm its determination that Apple failed to prove claims 1-13 unpatentable on that ground.

#### IV

Turning to the cross-appeal, SpaceTime3D challenges the Board's determination that claims 14-18 are unpatentable. It presents three arguments: (a) the Board misconstrued "the first webpage" in claim 14; (b) it erred in determining that the asserted prior art teaches "a window within a two-dimensional (2D) space;" and (c) the Board further erred in finding the Sauve-Tsuda combination teaches the claimed "foreground" and "background" limitations. We address each argument in turn.

#### A

The Board properly construed "the first webpage" in claim 14 differently from "the rendered first webpage" in claim 1.

SpaceTime3D argues that the definite article "the" requires the window in the limitation to include the same rendered version of the webpage from which the first image was generated. Apple responds that the definite article "the" found in claim 14 identifies the previously recited webpage but does not itself import the additional "rendered" limitation found in claim 1. We agree with Apple.

The claim language resolves the dispute. Claim 14 recites retrieving "first and second webpages," generating images of "the first webpage" and "the second webpage," and later displaying a window that "includes the first

webpage.” J.A. 140 at 40:19-40. The definite article “the” in “the first webpage” refers back to the previously recited first webpage – but nothing in claim 14 requires that this webpage be the same rendered version from which the corresponding image was generated. Unlike claim 1, claim 14 neither recites “rendering the first and second webpages” nor later requires the window to include “the *rendered* first webpage.” *Compare* J.A. 139 at 37:57-61, 38:7-10, *with* J.A. 140 at 40:19-40.

The Board correctly concluded that claim 14 “does not recite that the window includes a ‘rendered’ first webpage; rather, it simply recites that the window includes the first webpage.” J.A. 50. We affirm the Board’s construction.

## B

SpaceTime3D next challenges the Board’s finding that Robertson and Gettman teach “a window within a two-dimensional (2D) space.”<sup>8</sup> The parties agreed that “2D space” means “a finite graphical area defined by a two-dimensional coordinate system,” and the Board adopted that construction. J.A. 11-12. SpaceTime3D nevertheless argues that the Board improperly treated a conventional web browser as the claimed 2D space without considering the space in which the browser window itself resides.

Substantial evidence supports the Board’s finding. Robertson discloses displaying a selected webpage using the “Internet Explorer™ Internet browser,” through which the user may interact with the webpage using conventional browser functionality. J.A. 897 at 13:58-14:10. The Board reasonably found that the browser rendering the webpage in its window constitutes “a finite graphical area defined by a two-dimensional coordinate system” under the agreed

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<sup>8</sup> The limitation appears in both claims 1 and 14. The Board incorporated its analysis of this limitation for claim 1 into its analysis of claim 14.

construction. J.A. 39. Gettman is even more explicit; it discloses that selecting an object in its 3D environment may cause the corresponding website to open in a “conventional two-dimensional web browser.” J.A. 1274 ¶ 128. The Board reasonably found that this “two dimensional, conventional-style browser display box’ rendering a webpage” satisfies the 2D space limitation. J.A. 40.

The claims do not impose SpaceTime3D’s additional requirement concerning the space in which the browser window must reside. Nor does the specification, which describes bringing a webpage into view by positioning a browser window “in front of the 3D virtual space” for interaction in 2D. J.A. 131 at 21:39-49; *see also* J.A. 13-14.

Thus, we affirm the Board’s determination that Robertson and Gettman teach a window within a 2D space.

### C

SpaceTime3D lastly challenges the Board’s finding that the Sauve-Tsuda combination teaches “the first object being displayed in a foreground of the 3D space and the second object being displayed in a background of the 3D space.”<sup>9</sup> SpaceTime3D argues that Tsuda’s Figure 11B depicts horizontally arranged windows that are all at least partially in the foreground and that the Board improperly relied on Dr. Fuchs’ contrary testimony.

Substantial evidence supports the Board’s finding. Tsuda describes its Figure 11B as depicting windows “stacked horizontally” with “the right half [of each window] overlapped by the next window.” J.A. 1392 at 18:11-15. Dr. Fuchs explained that, in this arrangement, the rightmost window “occupies a plane that is forward in the stack”

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<sup>9</sup> This limitation appears in both claims 1 and 14. The Board incorporated its analysis of this limitation for claim 1 into its analysis of claim 14.

while a window farther to the left occupies a plane behind it, thereby displaying one object in the foreground relative to another in the background. J.A. 774 ¶ 180. The Board credited this testimony and found that Tsuda's horizontal stack thereby teaches the claimed foreground/background relationship.

SpaceTime3D's contrary interpretation of Figure 11B does not render the Board's finding unsupported. The Board considered SpaceTime3D's argument that Tsuda's windows are all in the foreground but reasonably credited Dr. Fuchs' differing explanation. Because that finding is supported by both Tsuda's disclosure and Dr. Fuchs' testimony, we affirm the Board's determination.

V

We have considered the parties' remaining arguments and find them unpersuasive. For the foregoing reasons, we affirm the Board's judgment in all respects.

**AFFIRMED**

**COSTS**

Each party to bear its own costs.