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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

**LG ELECTRONICS INC., LG ELECTRONICS U.S.A., INC. AND
GOOGLE LLC.**

Petitioners,

v.

SPACETIME3D, INC.

Patent Owner

Case IPR2023-00577

U.S. Patent No. 8,881,048

**PATENT OWNER'S PRELIMINARY RESPONSE
TO PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,881,048**

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Exhibit No.	Description
2001	Declaration of E. Eddie Bakhsh
2002	Provisional Patent Application (Serial No. 60/717,019)
2003	Prosecution File History of U.S. Patent No. 7,735,018
2004	U.S. Patent Publication No. 2003/0164827 (Gottesman et al.)
2005	U.S. Patent No. 6,725,427 (Freeman et al.)
2006	U.S. Patent No. 6,768,999 (Prager et al.)
2007	U.S. Patent Publication No. 2002/0033848 (Sciammarella et al.)
2008	U.S. Patent No. 5,428,735 (Kahl et al.)
2009	U.S. Patent Publication No. 2004/0268451 (Robbin et al.)
2010	Markman Order (Case 2:19-cv-00372-JRG) (12/07/2020)

I. INTRODUCTION

The challenged claims of U.S. Patent No. 8,881,048 (“the ‘048 Patent,” EX1001) relate to a novel graphical user interface (“GUI”) that is particularly useful in mobile computing devices having small displays, limited battery power, and reduced processing.

In general, the ‘048 Patent allows a user to easily switch between a plurality of open webpages and to interact with individual webpages by (1) presenting images of webpages (rendered, captured, and textured onto objects) in a three-dimensional (“3D”) space, (2) switching to a two-dimensional (“2D”) space once an image in the 3D space has been interacted with, and (3) presenting an active, windowed version of a corresponding webpage in the 2D space, where the webpage in 2D space replaces the images in 3D space.

The active webpage, or a link embedded therein, can then be interacted with to acquire additional information (*e.g.*, another webpage). The additional information can then be used to update both the window in 2D space and the corresponding image in 3D space. It is this toggling back-and-forth between 2D space and 3D space, and between active, individual webpages and images of webpages, that is novel. The invention does this to enable ease of presenting and interacting with HTML documents in 2D space and the fact that *images* of webpages are easier to manipulate, skew, etc. in 3D space than are the actual, *active* webpages themselves.

At the outset, the Board should deny institution under Section 325(d) because Petitioner is asserting either the same (Tsuda) or virtually identical references and arguments that were considered by the Examiner during prosecution

of the claimed inventions. *See* 35 U.S.C. § 325(d) (“In determining whether to institute ... the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.”). The Examiner only allowed the claims after amendments were made to distinguish the claims over the prior art. Rehashing arguments and prior art rejected during prosecution can only result in the Petition being denied, as there is no “reasonable likelihood that the petitioner would prevail with respect to at least one of the claims challenged in the petition.” 35 U.S.C. § 314.

If the Board does not exercise its discretion under Section 325(d), the Board should dismiss the Petition on the merits because the prior art (*e.g.*, Tsuda, Robertson, and Gettman) fails to disclose critical features of the claimed inventions. For example, the cited references do not disclose a GUI that toggles back-and-forth between images of webpages in 3D space and active webpages in 2D space, where (a) the webpage in 2D space *replaces* the images in 3D space and *vice versa*, and (b) the images in 3D space are *updated* as a result of the user's interaction with the webpage in 2D space. Instead, the prior art presents all information (including images of webpages and active webpages) in 3D space.

II. DISCRETIONARY DENIAL UNDER 35 U.S.C. § 325(d)

Petitioner argues that “the Examiner's failure to consider obviousness of the Challenged Claims over uncited references such as Robertson, Gettman, and Suave constitutes a material error,” and that the *Advanced Bionics* framework, strongly favors institution.” Pet. at 87-88. Patent Owner disagrees.

In *Advanced Bionics*, the Board set forth a two-part test for discretionary

denial under § 325(d): (1) whether the same or substantially the same art or arguments were previously presented to the Office; and (2) whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. *Advanced Bionics LLC v. MED-EL Elektromedizinische Gerate GmbH*, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential).

In determining whether this two-part test is met, the Board set forth six non-exclusive factors to consider, including **(a)** the similarity and material differences between the asserted art and the prior art involved during examination, **(b)** the cumulative nature of the asserted art and the prior art evaluated during examination, **(c)** the extent to which the asserted art was evaluated, including whether the prior art was the basis for rejection, **(d)** the extent of overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art, **(e)** whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art, and **(f)** the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments. *Becton, Dickson and Co., v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17-18 (PTAB Dec. 15, 2017).

Factors (a)-(d) pertain to the cumulative nature of the references (similarities and differences) and the extent that the prior art was evaluated during examination, including whether the prior art was the basis for any rejection. These factors all favor discretionary denial.

First, Section 325(d) provides that “the Director may take into account whether ... the same or *substantially similar prior art* or arguments previously

were presented to the Office.” (emphasis added). As discussed in Section III below, the references cited in the Petition are virtually identical to Prior Art that was considered by the Examiner.

Second, cumulative prior art was not only considered by the Examiner but was the basis for several rejections. For example, Gottesman, Freeman, Prager, Kahl, and Robbin (discussed in detail in Section III below) were the basis for rejections during prosecution of U.S. Pat. No. 7,735,018 (“the ‘018 Patent”) (*i.e.*, the parent patent) and the ‘048 Patent. *See, e.g.*, EX1002 at 74, 85, 86, 129, 140, 141, 181, 191, and 192; and EX2003 at 92, 111, 117, 118, and 120.

During prosecution of the ‘018 Patent, Patent Owner amended the claims to include features that are very similar to the ones at issue in this proceeding, including ***capturing computer outputs*** (*e.g.*, webpages) and presenting those outputs ***on objects in 3D space*** (EX2003 at 150) where (a) ***images*** of the outputs ***are captured and textured on the objects*** (EX2003 at 151) and (b) ***interacting with an image*** results in ***receiving additional information*** (EX2003 at 155). They also included ***a replacing feature***. *Id.* (“the third image thereby ***replacing*** the first image on the first one of the at least two objects.”) (emphasis added).

In rejecting these claims, the Examiner cited prior art that is virtually identical (in all material respects) to Robertson and Gettman, including Gottesman, Freeman, and Prager. *See, e.g.*, EX2003 at 92-93 (“Gottesman teaches ... displaying at least a portion of the computing output on at least two objects within a 3D space ... wherein a first one of the at least two objects is displayed in a foreground of the 3D space and a second one of the at least two objects is displayed in a background of the 3D space”); and EX1002 at 129 (“Prager teaches

... capturing computing output from at least one computer source in response to the received end user input ... presenting a first portion of the computing output as at least two objects within a three-dimensional virtual space.”) and 192 (“Freeman teaches a graphical user interface that presents computing outputs within a three-dimensional virtual space in response to received user input ... similar to that of Gottesman and Kahl.”).

Not only was Tsuda considered by the Examiner during prosecution of the ‘048 Patent, but so was prior art that is virtually identical to Suave, including Kahl and Robbin. *See, e.g.*, EX2003 at 111, 117, 118, and 120; and EX1002 at 74, 85, 86, 129, 140, 141, 181, 191, and 192. In fact, Robbin was cited for the “replacing” feature that was then recited in the claims. *See, e.g.*, EX2003 at 120-121 (“Robbin further teaches texturing the third image on the first one of the at least two objects, the third image thereby **replacing** the first image on the first one of the at least two objects”) (emphasis added). The Examiner noted that the objects in Robbin function as shortcuts, where an interaction results in one object being replaced by another. *Id.* (“upon user selection of the first object, i.e., user selection of control 1568 within object 1552 in Figure 15C, the images displayed in object 1552 is replaced with a new image, i.e., a new set of items.”). This is exactly what Suave teaches, where each thumbnail in the quick pick user-interface is a shortcut to a different tab browser. *See, e.g.*, EX1007 at [0044].

Not only did the Examiner consider cumulative prior art, but she also considered several combinations including ones similar to Robertson and Gettman (*see, e.g.*, EX2003 at 92 (Gottesman and Freeman); and EX1002 at 86 and 141 (Prager, Kahl, and Gottesman) and 192 (Gottesman, Kahl, and Freeman)) and ones

similar to Suave and Tsuda (*see, e.g.*, EX2003 at 111 (Gottesman, Freeman, and Kahl) and 120 (Gottesman, Freeman, and Robbin)).

The fifth *Becton* factor is whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art. According to *Advanced Bionics*, it is the Petitioner that bears the burden of demonstrating “that the Office erred in a manner material to the patentability of challenged claims.” *Advanced Bionics*, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020). “***If reasonable minds can disagree*** regarding the purported treatment of the art or arguments, ***it cannot be said that the Office erred*** in a manner material to patentability.” *Id.* at 9 (emphasis added).

Evidence that the Examiner did not error in evaluating the cumulative prior art can be found in the various Notice of Allowances. With respect to the ‘018 Patent, the Examiner stated that “[t]he claims are allowable over the prior art in view of ... the applicant’s remarks filed on 1/28/2010” (EX2003 at 32), which stated that the claimed features including ***rendering*** a webpage, ***capturing*** an image, and ***texturing*** an image onto an object, ***where interaction with an image results in*** “[a]n image of the rendered additional information [being] captured and textured onto the window, thereby ***replacing the image of the website***,” were not disclosed in Gottesman, Freeman, or Robbin (EX2003 at 78).

With respect to the ‘048, the Examiner stated that “[t]he claims are allowable over the prior art in view of the examiner’s amendment and the applicant’s remarks filed on 06/27/2014.” EX1002 at 31. In the “applicant’s remarks” dated June 27, 2014, the Patent Owner argued that “***rendering*** a first webpage, ***capturing an image*** of the first webpage, and ***texturing the image*** on the

first object so that it can be *displayed (with other objects) in 3D space*,” and “[i]f *the user interacts with the first object* (i.e., *the image* of the first webpage), *then a windowed version of the first webpage is presented to the user [in 2D space]*,” is not shown or suggested by the prior art. EX1002 at 54-64 (emphasis added).

In response to Patent Owner's arguments, the Examiner agreed to allow the claims, but only after amending them to include the limitation “replacing the first and second images within the 3D space with a window within a two-dimensional (2D) space in response to receiving the interaction, *wherein the window includes the first webpage.*” *Id.* at 30 (emphasis added). Thus, the record illustrates that the Examiner was fully aware of the claims' scope and the importance of the “replacing” limitation in overcoming the prior art rejections.

As such, Petitioner has not shown *any* Office error, let alone error that is *material to patentability* and to a level that *reasonable minds could not disagree*. This, coupled with the fact that the evidence submitted by Petitioner merely rehashes arguments and prior art already considered by the Examiner (Becton factor (f)), dictates that discretionary denial under Section 325(d) is appropriate.

At the very least, the fact that the Examiner allowed the claims over cumulative prior art (including combinations) is evidence that a POSITA would not have found the Challenged Claims obvious over the combinations argued by Petitioner. *See, e.g., Advanced Bionics*, IPR2019-01469, Paper 6 at 9 (PTAB Feb. 20, 2020) (“At bottom, this framework reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown.”).

III. BACKGROUND OF U.S. PATENT NO. 8,881,048

A. Description Of The Patented Invention

The '048 Patent provides "an improved three-dimensional graphical user interface." According to the specification, "[b]ecause the 3D GUI creates the illusion of infinite space in 3D, it can create a visual history of the user's computing session, whereby the user can visit past visual computing events (or a snapshot in time) by simply navigating to previously recorded states or viewpoints." EX1001 at 5:6-11.

The specification describes several ways of presenting and interacting with information in 3D space. The '048 Patent, however, focuses on one way, where images of webpages are presented in 3D space, and individual webpages are interacted with, one at a time, in 2D space. In particular, Claim 1 of the '048 Patent provides for a 3D GUI where (1) a user provides at least first and second web addresses, (2) corresponding first and second webpages are received and rendered, (3) images of the rendered webpages are captured and textured onto first and second objects, respectively, and (4) the first and second objects (with images of the first and second webpages, respectively) are then presented in 3D space, where the first object is displayed in the foreground and the second object is displayed in the background. EX1001 at 37:49–38:17 (Claim 1).

When the user interacts with the first webpage, a window is presented to the user in 2D space (the GUI switches from 3D space to 2D space), where the window in 2D space (a) *replaces* the plurality of objects (or images) in 3D space and (b) includes an *active version* of the first webpage (*i.e.*, the image selected in 3D space). *Id.* The user can then interact with (click on) links embedded within the active version of the first webpage to acquire additional information, where the additional information replaces the first webpage in the window presented in 2D

space. *Id.*

In other words, the claimed invention allows a user to navigate through a plurality of webpages presented as images in 3D space and to select a particular image, which results in the GUI switching from the 3D space to a 2D space, where an active webpage (corresponding to the selected image) replaces the plurality of images, thereby allowing the user to acquire additional information (*e.g.*, a different webpage, etc.). *Id.* This “replacing” also takes place when switching back from 2D space to 3D space. *Id.* at 38:18-27 (Claim 2). When switching from 2D to 3D, an image of the “additional information” is *captured and presented* to the user *as an image in 3D space* (“replacing the first image on the first object”). *Id.* Hence “a visual history of the user’s computing session,” ensuring that the images presented in 3D space show exactly where the user last left off. *Id.* at 5:6-11; *see also* EX2001 at [56-57].

There are several embodiments disclosed in the specification. Petitioner quotes from “one embodiment” where “the 2D version of the webpage ... [is] positioned in a layer that is in front of the 3D virtual space.” Pet. at 10. However, the specification also provides that “an end user can toggle or switch between 2D and 3D for selectively captured computing output and information.” EX1001 at 21:53-58. It is the latter—toggling from 3D to 2D and vice versa—that is claimed in the ‘048 Patent. *Id.* at 37:49–38:32.

The claims of the ‘048 Patent are particularly advantageous in ultra-mobile personal computer (“UMPC”) devices. By interacting with individual, active webpages in 2D space and navigating through images of webpages in 3D space, which is a non-conventional technique that exploits the fact that images of

webpages can be more easily manipulated in 3D space than active webpages, the claimed invention improves the functionality of the UMPC devices (*e.g.*, smartphones) by requiring less power, minimal (or reduced) processing, and smaller screen sizes. EX2001 at [4-12] and [56-58].

B. Prosecution History Of The '048 Patent

During prosecution of the '048 Patent, the Examiner considered, and cited several prior art references that are virtually identical to the prior art relied upon by Petitioner. To better understand the '048 Patent and its prosecution, a brief description of the parent applications will first be discussed. The '048 Patent is a continuation of U.S. Patent No. 7,735,018 ("the '018 Patent"), which claims priority to provisional patent application, Serial No. 60/717,019 ("Provisional"). The Provisional discloses a novel 3D GUI that provides "a visual history of the user's computing session." EX2002 at 4.

Not only is the 3D space immersive (*e.g.*, allowing the user to move forward and backward), but it must also retain "full functionality and interactivity." *Id.* It should do so in a way that "eliminates the need to constantly open and close programs or hide and reveal them each time [applications] are needed, tak[ing] advantage of dormant computing time, reduc[ing] mouse-clicks and/or offer[ing] a more natural alternative to accessing programs and documents than the traditional folders-within-folders storage system." *Id.* at 3.

The '048 Patent solves this via a "graphical user interface that uses the two-dimensional ('2D') display of a user's computer to display three-dimensional ('3D') objects in a simulated real-time 3D immersive Cartesian space." EX1001 at 2:51-55. In one embodiment, this involves capturing images of webpages,

applications, etc., and texturing those images on objects in 3D space. A critical feature of the invention, however, is not so much presenting 2D graphics in 3D space, *but doing so while maintaining “full functionality and interactivity.”* *Id.* at 22:17-24 (emphasis added).

For example, “[w]ebpages, unlike pictures that the end user simply view, require interactivity to function properly in a virtual space.” *Id.* at 23:7-25. Thus, “a special system must be created to insure [sic] that the end user can interact with the mapped object in a 3D virtual space with the same responsiveness of input and output that one would find in a 2D desktop.” *Id.*

The specification discloses a number of ways to achieve this. In a first embodiment, programmatic control (along with 2D graphical output) can be mapped onto the object in 3D space. *See, e.g., id.* at 23:44-56. This embodiment, where everything is done in 3D space, was the focus of the ‘018 Patent. During prosecution of the ‘018 Patent, in a first Office Action, the Examiner rejected the claims under 35 U.S.C. § 103(a) for being unpatentable over Gottesman et al. (U.S. Publication No. 2003/0164827) (“Gottesman”) and Freeman et al. (U.S. Patent 6,725,427) (“Freeman”). EX2003 at 87-123.

Gottesman provides “[a] system and method for presenting search and/or data query results within a virtual three-dimensional environment.” EX2004 at Abstract. The 3D environment may include a plurality of containers (*see* Figure 1A at 220A and 220B, reproduced below), where “[each] container may be rendered in the virtual three-dimensional environment.” *Id.* at [0031].

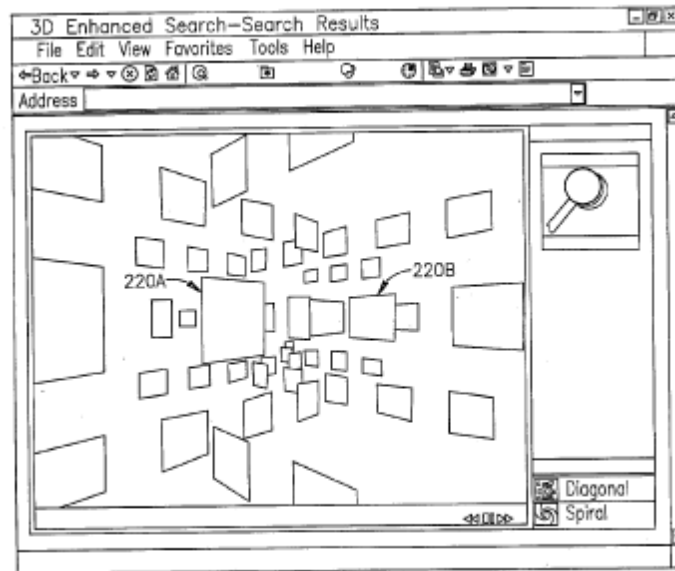


Figure 1A of Gottesman

With respect to what is actually presented in 3D space, Gottesman provides that “[a] container may have an associated message or picture that is mapped onto the surface of the container.” *Id.* at [0034]; *see also id.* at [0048] (“each container is provided with an image, where each image is mapped as a display parameter on at least one data container”).

Gottesman also provides that each container may have an associated function (*id.* at [0033]), which may include at least one hyperlink (*id.*). To this end, Gottesman states “[a]n associated function may be executed or initiated when a viewer interacts with the data container 220 to which the function is associated.” *Id.* at [0043].

A different three-dimensional (“3D”) graphical user interface (“GUI”) is disclosed in Freeman, where a “stream” of documents are presented in 3D space. *See, e.g.*, Figure 1 (reproduced below). According to Freeman, the documents in

the stream are “designed to work with conventional World Wide Web browsers.” EX2005 at 13:22-29. “The effects of opening a Web address document in a stream is that the web browser comes to the foreground and attempts to connected to the Web address.” *Id.* at 13:39-48.

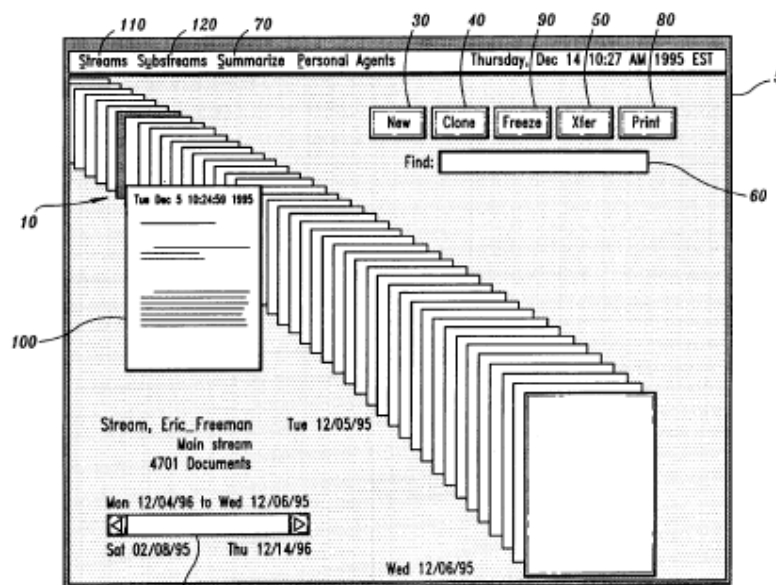


Figure 1 of Freeman

The documents in the stream are “graphical representations” of the actual document, with the document on top of the stream (*i.e.*, the foremost document) being “live” or “active,” so that it can be interacted with as traditionally done on a 2D desktop. *See, e.g., id.* at 5:48-56.

To overcome these rejections, SpaceTime3D amended the claims to capture first and second images of the computing output and texture them onto first and second objects in 3D space. EX2003 at 52-80. The claims were further amended to provide that interacting on the first image resulted in “mapping the interaction”

to determine a link associated with additional information. *Id.* The additional information is then captured as a third image and textured onto the first object, where the third image replaces the first image in 3D space. *Id.* ***This allows the user to interact with images of webpages while remaining in 3D space.***

SpaceTime3D argued that “[w]hile Gottesman provides that each container may include an associated function, such as a link to a URL, there is no disclosure in Gottesman of the step of ‘mapping the interaction to a location on the first one of the plurality of websites, the location corresponding to a link embedded in the first one of the plurality of websites.’” *Id.* SpaceTime3D argued that this feature is also not disclosed in Freeman. The Examiner agreed and allowed the claims over Gottesman and Freeman. *Id.* at 18-33.

Shortly before the ‘018 Patent issued, SpaceTime3D filed a continuation, which resulted in the ‘048 Patent. The originally filed claims were similar to the claims that were originally filed in the ‘018 Patent, before the “mapping” feature was added. EX1002 at 398-342. In first, second, and third Office Actions, the Examiner rejected the claims over Gottesman and Prager et al. (U.S. Patent No. 6,768,999) (“Prager”). *Id.* at 71-89, 126-145, and 176-194.

Prager is similar to Freeman in that it discloses a 3D space that includes “a time-ordered stream” where “glance views” can be used to display additional information on documents in the stream. Like Freeman, the “stream” in Prager comprises a plurality of “document representations.” This can be seen in Figure 1 (reproduced below).

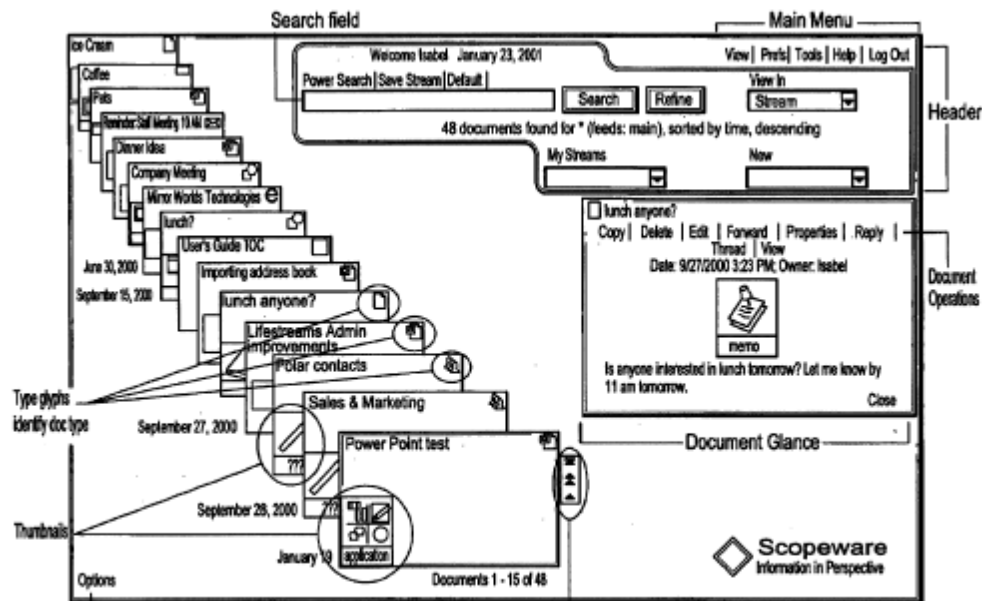


Figure 1 of Prager

Like Freeman, Prager provides that “when the user touches a document on the screen with the cursor, a summary of that document with a thumbnail vies [sic] appears immediately ... [as] a dedicated small window besides the receding parade of time ordered documents.” EX2006 at 2:23-34.

As shown in Figure 5 of Prager, “[i]f the user has clicked on a browse card to fix the glance view as a stationary window, the user can then select any of the visible and available document operations.” *Id.* at 7:43–8:8. If a “document operation” is selected (*e.g.*, Copy, Delete, etc.), “the system executes the selected operation (command) and the display reflects this at S511.” *Id.* Thus, the 3D space includes both a stream having a plurality of “browser cards” and a “document glance” for any selected “browser card,” where the “document glance” can be interacted with to alter the contents of the document.

In an Amendment dated June 27, 2014, SpaceTime3D canceled the pending

claims (Claims 1-66), and added new Claims 67-86. EX1002 at 54-64. While the new claims were similar to those allowed in the '018 Patent, in that images of webpages are presented to the user in a 3D space, and that the user can interact with an image of a webpage to receive additional information, the interaction is not accomplished via a "mapping" step. Instead, interacting with an image results in the plurality of images in 3D space being "replaced" by a corresponding website in 2D space, where the corresponding website in 2D space can be interacted with to acquire (and display) additional information. In other words, instead of remaining in 3D space with a plurality of images, *the GUI switches back-and-forth between a plurality of images in 3D space and an active (or "live") window of a corresponding website in 2D space.*

In the Amendment, SpaceTime3D argued that "Claim 67 is directed toward a method of interacting with a webpage (e.g., a two-dimensional webpage) that is being displayed in a three-dimensional space." *Id.* This is accomplished by "rendering a first webpage, capturing an image of the first webpage, and texturing the image on a first object so that it can be displayed (with other objects) in 3D space. The user can then scroll through the plurality of objects that are being displayed in 3D space. If the user interacts with the first object (i.e., the image of the first webpage), then a windowed version of the first webpage is presented to the user, thereby allowing the user to navigate the webpage in a more traditional fashion." *Id.*

SpaceTime3D then argued that these features are not disclosed in or suggested by the cited prior art. In other words, instead of staying in the 3D space (like the '018 patent), the display switches back-and-forth between active

webpages in 2D space and images of webpages in 3D space. This toggling between two different spaces is unconventional, counterintuitive, and the opposite of what is taught in the prior art. *See* EX2001 at [9-12] and [56-58].

The Examiner agreed and issued a Notice of Allowance. *Id.* at 16-29. In doing so, the Examiner entered an Examiner's Amendment, amending the last independent Claim 82 to provide the step of "replacing the first and second images within the 3D space with a window within a two-dimensional (2D) space in response to receiving the interaction, wherein the window includes the first webpage," indicating that the "replacing" step (from 3D to 2D), which was already recited in the other independent claims, is critical to the allowed claims. *Id.*

Petitioner argues that "the Challenged Claims asserted against Petitioner ... [were] never rejected over the prior art" and therefore "were not thoroughly vetted during prosecution." Pet. at 13. As can be seen above, Ting Lee, the Examiner for both the '018 and '048 Patents, issued several prior art rejections. It was only after years of prosecution, an in-person interview (EX2003 at 143-174), a telephonic interview (EX1002 at 33), and Examiner amendments (EX1002 at 19-32), that the '048 Patent was allowed. To argue that the claims were not thoroughly vetted during prosecution is clearly not supported by the record.

C. Level Of Ordinary Skill In The Art

Petitioner argues that a POSITA at the time of the claimed invention would have a bachelor's degree in computer science or a comparable field and at least two years of professional experience working with 2D and 3D graphical user interfaces or, in the alternative, additional years of experience working with 2D and 3D GUIs. Pet. at 13. SpaceTime3D submits that at least the inventor of the

'048 Patent, E. Eddie Bakhsh, is a POSITA, and reserves the right to further address this issue at a later point in time if necessary. Mr. Bakhsh's education and level of experience is provided in his declaration, filed herewith. EX2001. at [1-3].

IV. CLAIM CONSTRUCTION

Petitioner's claim construction arguments focus on three terms in the '048 Patent: "3D space," "2D space," and "texturing." Petitioner has not identified any other terms for construction. Thus, terms like "foreground" and "background" should be given their plain and ordinary meaning. *See* EX2001 at [54].

A. "2D Space" and "3D Space"

The District Court in *SpaceTime3D, Inc. v. Samsung Elecs. Co., Ltd., et al.*, No. 2:19-cv-00372-JRG (E.D. Tex.) addressed these terms in its Markman Order, which issued on December 7, 2020. EX2010. The Court construed the term "3D space" to mean "a virtual space defined by a three-dimensional coordinate system [X, Y, and Z]." *Id.* at 19. The Court also construed the term "2D space" to mean "a finite graphical area defined by a two-dimensional coordinate system [only X and Y]." *Id.* at 7-19. Both Petitioner and Patent Owner request the Board to adopt these two constructions. Pet. at 14.

In its analysis rejecting Samsung's construction, the Court stated that "[i]t is true that 'objects' may be displayed in the 3D space, but the term at issue is 'spaces,' and not the term 'objects.' Indeed, 'objects' is a separately recited element in the claims." EX2010 at 16. "The Court agrees that a 3D space may be populated with an 'object,' but an 'object' does not define a 3D space. Instead, a 3D space is defined by the characteristic of the space. ... Accordingly, the Court

rejects Defendants' constructions because they require both the 2D Terms and 3D Terms to include 'objects.'" *Id.* at 17. Both Petitioner and Patent Owner agree that these constructions and the Court's attendant reasoning are correct. *Id.* at 7-19 and Pet. at 14.

B. "Texturing"

Petitioner argues that the proper construction for the term "texturing" is "drawing or mapping an image onto a 3D object." They then argue that because their construction is similar to SpaceTime3D's construction, that this term need not be construed by the Board. Pet. at 13-14. Patent Owner agrees that the Board need not construe this term. This is because the prior art cited by Petitioner is so thoroughly deficient that the texturing limitation becomes largely irrelevant.

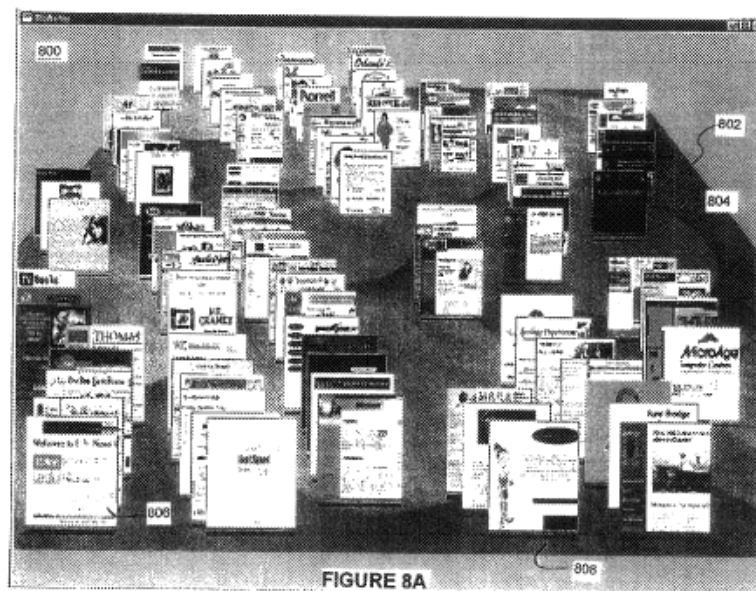
V. OVERVIEW OF PETITIONER'S ASSERTED GROUNDS AND REFERENCES

A. Robertson

In Ground 1, Petitioner relies primarily on U.S. Patent No. 6,414,677 ("Robertson") (EX1004). As discussed above, during prosecution of the '048 Patent, the Examiner identified and discussed several prior art 3D GUIs where both active and inactive objects are rendered in a simulated 3D space. This is exactly what is disclosed in Robertson.

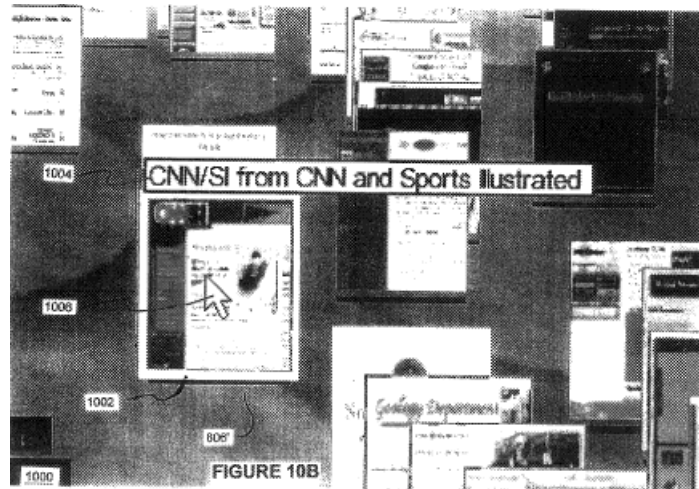
According to Robertson, "[t]he present invention permits a user to view and organize all objects and to edit or otherwise work on a selected object by, for example, representing, graphically, objects or content with a low resolution image which can be added, moved, or deleted from a simulated three-dimensional environment on a user's video monitor." EX1004 at 6:32-40. This can be seen,

for example, in Figure 8A of Robertson (reproduced below), where object thumbnails (*i.e.*, low resolution images) (806) are presented in 3D space. According to Robertson, this is advantageous because “more objects can be represented, at one time, on a single display screen.” EX1004 at 6:65-67.

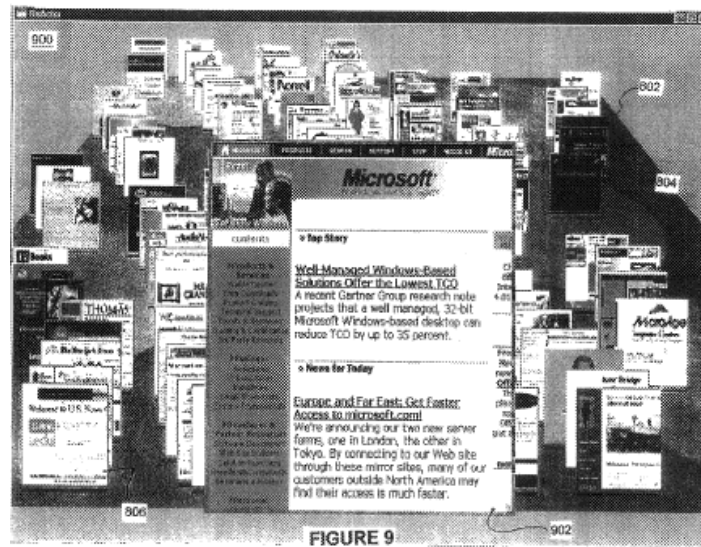


As the object thumbnails are quite small, additional information on the object can be acquired by hovering the cursor over the object, thereby “activating” the object. This can be seen in Figure 10B of Robertson (reproduced below), where placing a cursor (1006) over an object (806) results in the presentation of additional information (1004) (“CNN/SI from CNN and Sports Illustrated”) in an overlay. *Id.* at 13:28-44 (“when a cursor 1006, under control of a user, is on (or passes over, or hovers over) an object thumbnail 806, that object thumbnail may be considered ‘active’ ... [and] a pop-up title bar 1004 may be provided over the

active object thumbnail 806.”).



After the object is “activated,” the user can “select” the object by clicking on it, resulting in the object being brought to the foreground of the 3D space. This can be seen, for example, in Figure 9 of Robertson (reproduced below). According to Robertson, “a display 900 showing a ‘selected’ object thumbnail 902 is shown. The selected object thumbnail 902 is displayed in a preferred viewing position, in this case, at the center foreground in the three-dimensional environment.” *Id.* at 13:55-62). This is done “for editing or otherwise working on a selected object.” *Id.*

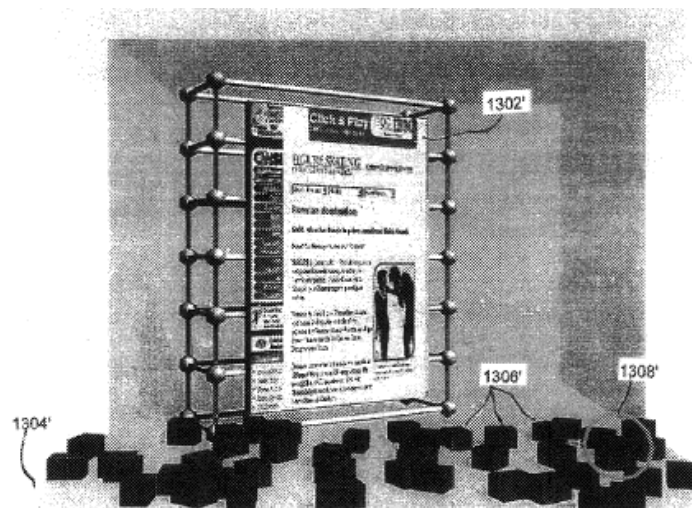


Robertson provides that the selected object can either be a high-resolution image of the object (e.g., thumbnail) or a “live” object within an associated application (e.g., web browser, etc.). *Id.* at 13:55-62). Either way, it is presented in 3D space, or more particularly, in a “preferred viewing position ... of the three-dimensional environment.” *Id.*, see also *id.* at 22:1-5 (“Recall, from FIG. 9 that a ‘selected’ object is rendered in the center of the foreground, closer to the user so that it appears larger.”).

Petitioner contends that in Robertson, when a low-resolution object in 3D space is selected, “[t]he webpage (‘live object’) is presented in the foreground in 2D and ‘can be maximized ... to substantially fill the screen of the video monitor,’ while the 3D space remains ‘in the background.’” Pet. at 16.

First, Petitioner incorrectly states the selected object is presented in “2D.” There is a “view point locator” (226) that “determines a point in the virtual three-dimensional space from which a user is viewing the virtual three-dimensional

environment.” EX1004 at 17:9-14. If the user’s viewpoint is top-down, the object appears 2D, as shown in Figure 9 (above). However, if the user changes their viewpoint (*e.g.*, from the side), one can clearly see that the object has depth, and is actually 3D. This can be seen, for example, in Figure 13B (reproduced below). *See, e.g., id.* at 22:39-43 (“In the display 1300’ of FIG. 13B, a ‘selected’ object 1302’ is displayed, in perspective view, on the left side of the display 1300, behind (background) a plane 1304’ having object thumbnails 1306’.”).



1300'
FIGURE 13B

However, as the District Court stated in construing “3D Space,” it is the space that is 3D, not the objects that reside therein, and a 3D space may include both 2D and 3D objects. EX2010 at 17. Thus, it is largely irrelevant whether the selected object is 2D or 3D. What is relevant is that the object, “live” or otherwise,

is presented in a 3D space either in the foreground or the background.

In the embodiment shown in Figure 9, the selected object is in the “foreground” and the unselected objects remain in the “background.” As Petitioner admits, this is true even when the selected object is enlarged or maximized. Pet. at 16 (“[t]he webpage (‘live object’) is presented in the foreground ...”). Support for this can be found in Figure 13B, where the selected object is in the “background” of the 3D space and the unselected objects are in the “foreground.” Even if the selected object is “maximized ... to substantially fill the screen,” it is still in the background of the 3D space, and the unselected objects are still in the foreground of the 3D space. It is also *active* in 3D space before it is enlarged, so there is no “replacing” an image of a webpage with an active webpage as claimed.

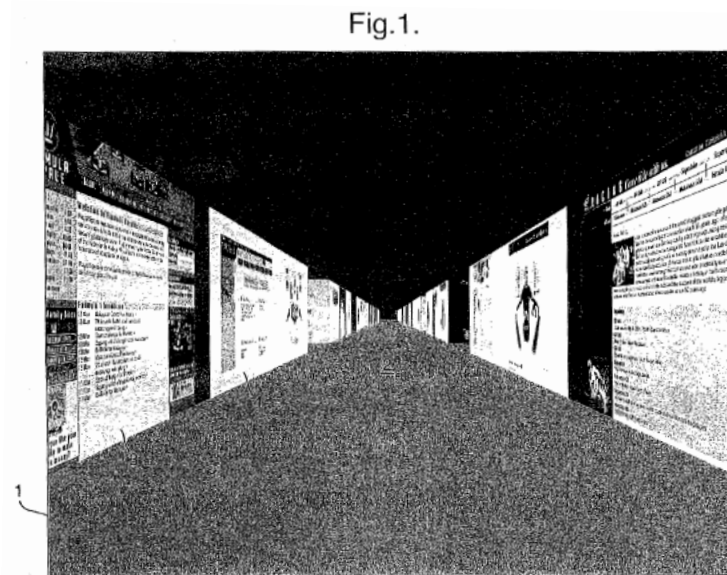
B. Gralla

Petitioner relies on a book entitled “How the Internet Works,” by Preston Gralla (“Gralla”). EX1005. Gralla describes how computers connect to the Internet and receive web pages from servers. Gralla does not disclose or discuss any graphical user interface (“GUI”), let alone a 3D GUI. As such, it cannot make up for the deficiencies of Robertson. In fact, Petitioner is only relying on Gralla for “how webpages work” and “how web browsers work.” Pet. at 16-17.

C. Gettman

U.S. Patent Publication No. 2005/0086612 (“Gettman”) (EX1006) describes a 3D GUI that is configured to map “a plurality of display windows within a virtual three-dimensional space so that each display window is allocated a specific and predetermined position ... relative to a viewer’s virtual position in the virtual

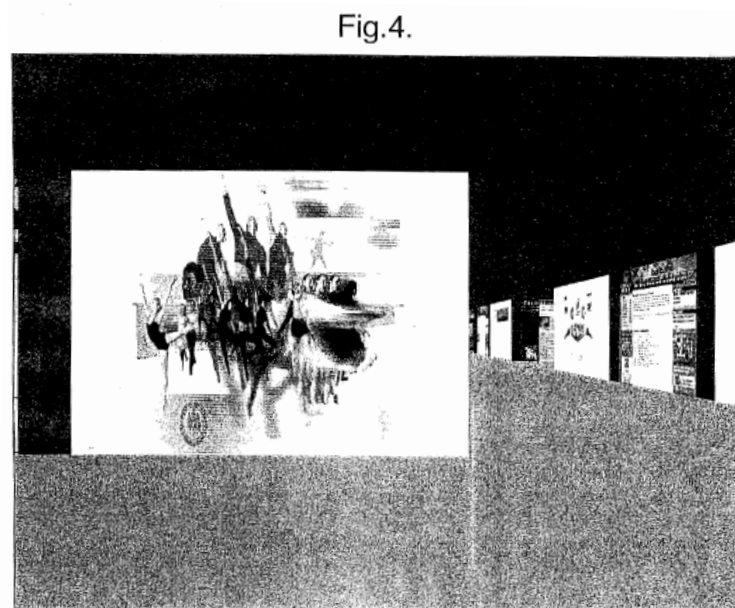
space.” EX1006 at [0046]. This can be seen, for example, in Figure 1 (reproduced below).



Petitioner states that the display windows are “bitmap screenshots of [the] HTML pages [that] are cached in local memory.” Pet. at 17. This is true only for windows that are far away from the user. As a user approaches a window, the window switches from a bitmap screenshot to a “live” (e.g., interactable) window. *See, e.g.*, EX1006 at [0083] (“When a window first become visible in the viewer’s screen, the corresponding cached HTML page is copied by the program from the internal memory and rendered in the window. The page is not rendered dynamically until the viewer turns toward it (and “clicks” on it or remains in that position for a set period of time)”); and [0121] (“[D]isplay windows closest to the viewer which containing moving images or sounds may be kept active so that changes are continually reflected on the display window in real time.”).

In one embodiment, the “live” web page is displayed on the wall in the 3D space. To this end, Gettman provides that “a user may interact with a virtual display window as if the window is a Web page.” *Id.* at [0164]. With reference to Figure 6C, Gettman states that “a user can navigate to a particular virtual display window 646, view and select hyperlinks 648.” *Id.* This is further supported by Figure 2, which provides that user’s interaction with a wall results in “[d]isplay[ing] normal web browser window on wall.”

In an alternate embodiment, the “live” webpage is presented in a conventional, 2D browser in the 3D space. This can be seen in Figure 4 (reproduced below).



With respect to Figure 4, Gettman states that “the viewer is facing a display window and could potentially interact with the window in the manner of a

conventional two-dimensional browser.” *Id.* at [0128]. Thus, while a “live” webpage can be displayed in a 2D browser, the 2D browser is presented in 3D space. *See, e.g., id.* at [0164] (“In yet another embodiment, the result of the interaction may cause the target Web site to open in a conventional two-dimensional web browser which forms another ‘view’ within the virtual space browser.”).

Petitioner mischaracterizes Gettman by stating that “[w]hen the user interacts with a display window in the virtual 3D city ... the target [w]eb site [will] open in a convention two-dimensional web browser” (Pet. at 18), without pointing out that the 2D browser is presented “within the [3D] virtual space browser,” as shown in Figure 4. *Id.* at [0164]. As discussed in the *Markman* Order, both 2D and 3D objects can be presented in 3D space. EX2010 at 16-17.

In support of its argument that a 2D browser is being displayed in a 2D space, Petitioner references Gettman’s Figure 13. However, this figure does not show the 2D browser that is presented when the user clicks on a window in 3D space. That browser is shown in Figure 4. Instead, Figures 12-15B are screenshots of an implementation in which the user can interact with a toolbar at the top of a window to launch several other applications, including route directions (Figure 15B), city map (Figure 15A), district map (Figure 14), and traditional web browser (Figure 13). These different applications are launched by clicking on the appropriate button on the toolbar (1202)—not by clicking on an image in 3D space. To launch the web browser (Figure 13), the user clicks on the “web button area” (1204) on the toolbar (1202). *See* EX1006 at Figure 12 and [0200].

Further evidence that Gettman does not switch back-and-forth between 2D

and 3D space is the fact that when a user switches back to the 3D GUI (*i.e.*, by clicking on the 3B button (1222) on the toolbar), the result of an interaction in 2D space (*e.g.*, clicking on a link) is not captured and textured on the first object in 3D space, replacing the first image, as claimed. *See, e.g.*, EX1001 at 38:18-27.

D. Suave

In Ground 2, Petitioner relies primarily on U.S. Patent Publication No. 2006/0230356 (“Suave”). EX1007. Suave describes a traditional 2D, tabbed web browser, operating in 2D space, with the addition of a “quick-pick user interface” for easily switching between a plurality of “content windows” (*e.g.*, different web pages). *Id.* at [0025]. The quick-pick user interface includes “a graphical representation (*e.g.*, thumbnails 402-411) for each of the open tabs” (*e.g.*, different web pages). *Id.* at [0042]. This can best be seen in Figure 4 of Suave, reproduced below.

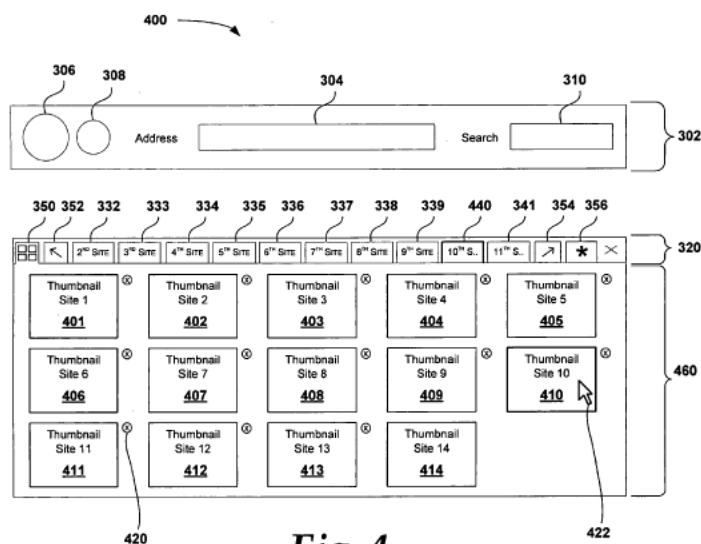


Fig. 4

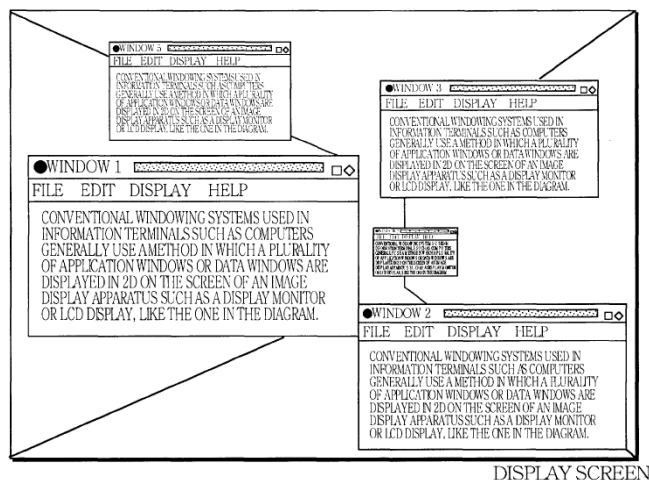
By clicking on a particular graphical representation, a corresponding web page is presented to the user, much like a traditional “shortcut.” According to Suave, this solves a problem in the prior art where “after opening several web pages ... it [becomes] difficult to re-locate a particular web page.” *Id.* at [0003]. This can be seen in Figure 4 above, where there is insufficient space to display each “tab” in the tabbed web browser (only tabs 2-11 are visible). First, it should be noted that both the graphical representations of web pages and the selected web page are presented to the user in a 2D space. There is no 3D space discussed in Suave. Second, Suave is cumulative of prior art that was cited by the Examiner during prosecution of the ‘048 Patent. *See* Section VI(A).

E. Tsuda

Petitioner relies on U.S. Patent No. 6,577,330 (“Tsuda”) (EX1008) for describing a 3D GUI where objects are rendered in a simulated 3D space in order to increase the amount of information that can be presented on a given screen. In describing the prior art, Tsuda provides Figure 69 (reproduced below), stating that “[i]n the prior art, windows are placed in a virtual 3D space, with windows positioned deep within the 3D space.” EX1008 at 1:23-31. The problem with this is that “a window placed deep within the 3D space is displayed reduced in size, making it impossible to distinguish any of the display content of the window.” *Id.*

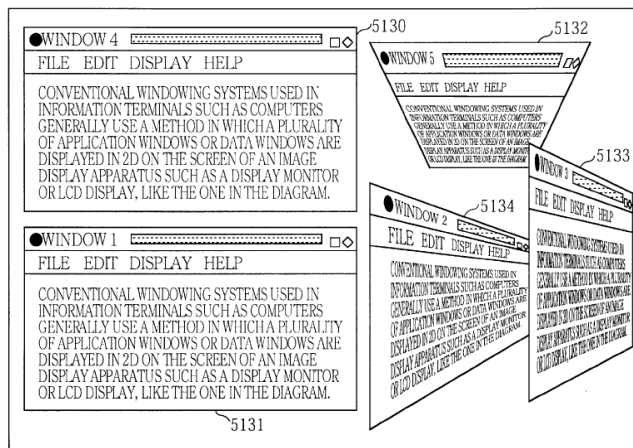
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FIG. 69



Tsuda solves this problem by presenting at least a portion of each window in the foreground of the 3D space. This can be seen in Figure 5, reproduced below. According to Tsuda, windows are displayed in the foreground, either in their entirety or “inclined in a depth direction, so that the key part of the display content is near the front of the 3D space [*i.e.*, in the foreground]. Therefore, even if a plurality of windows are being displayed, the user can grasp the type and display content of each window at a glance.” *Id.* at 2:13-26.

FIG. 5



Petitioner description of Tsuda fails to mention four critical features. First, there is no mention of 2D space in Tsuda. The windows in Tsuda are all located in 3D space. Second, the windows in Tsuda (or a portion thereof) are all presented in the foreground. Tsuda teaches away from presenting windows in the background, as that is the problem that is being solved—illegible, small windows in the background of 3D space (*see* Figure 69).

Third, the windows in Tsuda (which may include text, images, etc.) are “live” in 3D space so that they can be interacted with to alter the content. For example, Tsuda describes how the user can scroll (*see, e.g.*, Figure 19A-B and 3:31-37), highlight (*see, e.g.*, Figure 25 and 3:48-51) and copy/paste (*see, e.g.*, Figures 28A-29B and 4:22-32) in 3D space. Thus, not only does Tsuda not switch from 3D to 2D, but it also does not switch from a plurality of inactive images to an individual active window, as claimed.

Fourth, and perhaps most important, Tsuda was cited by the Examiner during prosecution of the ‘048 Patent. Thus, Tsuda by definition cannot raise “a substantial question of patentability.” This is especially true since Petitioner is only combining Tsuda with Suave—a reference that is cumulative of prior art cited by the Examiner during prosecution of the ‘048 Patent.

VI. PETITIONER FAILS TO ESTABLISH A REASONABLE LIKELIHOOD OF PROVING ANY CHALLENGED CLAIM UNPATENTABLE

The arguments in this response are preliminary and support denial of the Petition. SpaceTime3D reserves the right to further address the Petition at a later point in time if necessary, through rebuttal expert testimony.

Petitioner's expert, Dr. Fuchs, provides that "research and development efforts on 3D-GUIs date back more than a decade before the 2005 Critical Date," and that "those skilled in the art had already integrated these lines of development to create new and improved 3D-GUIs for web browsers." Pet. at 5-8. Despite this, Petitioner fails to identify a single reference that discloses the claimed invention. In such a crowded art group, the fact that the Petition lacks a single anticipatory reference is telling.

And the references that are cited by Petitioner fail to disclose critical features of the claimed invention, are cumulative of prior art cited by the Examiner, and actually teach away from the claimed invention. As such, institution should be denied.

A. The Petition Is Defective Under 35 U.S.C. § 325(d) Because The Proposed Grounds Are Cumulative Of Grounds Already Considered In Prosecution

The Petition should be rejected because it proposes invalidity grounds based on prior art and arguments identical or cumulative to those previously before the USPTO. 35 U.S.C. § 325(d) provides that "[i]n determining whether to institute or order a proceeding under this chapter, chapter 30, or chapter 31 [*i.e., inter partes* review], the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office."

This is exactly the case here. The Petition need not be considered because the USPTO has already rejected the same (or substantially the same) arguments and prior art during prosecution of the '048 Patent. *See, e.g., Conopco, Inc. dba Unilever v. The Procter & Gamble Co.*, IPR2014-00628, Paper 21 at 5-10 (PTAB

Oct. 20, 2014) (denying institution under 35 U.S.C. § 325(d) a Petition that asserted new art but nonetheless presented “substantially the same ... arguments” that “previously were presented to the Office” and noting that “substantially similarity of argument, standing alone, is sufficient reason for a denial under § 325(d)"); *Neil Ziegman, N.P.Z, Inc. v. Stephens*, IPR2015-01860, Paper 11 at 6-14 (PTAB Feb. 24, 2016) (denying institution under 35 U.S.C. § 325(d) based on the cumulativeness of the asserted art and arguments that were considered during the prosecution of the challenged patents).

During prosecution, SpaceTime3D distinguished its invention from several prior art references, including Gottesman, Freeman, Prager, Tsuda, Robbin, and Kahl—even amending the claims to further distinguish over the GUIs described therein. Petitioner is arguing that the ‘048 Patent is invalid over Robertson, Gralla, and Gettman (Ground 1) and Suave and Tsuda (Ground 2). But the USPTO already considered and allowed the ‘048 Patent over Tsuda and references that are virtually identical to Robertson, Gralla, Gettman, and Suave.

For example, as discussed above, in Robertson and Gettman, there is no switching between 3D and 2D space. And the 3D GUIs that are disclosed include images in the background of the 3D space and an active, “live” window in the foreground of the 3D space. This is identical to Gottesman, Freeman, and Prager, where everything takes place in 3D space.

For example, compare Figure 9 of Robertson to Figure 1 of Freeman (both reproduced below). Freeman provides that in the 3D space, the stream includes a plurality of “document representations” in the background with an active document in the foreground. Freeman states that in the case of a webpage, the uppermost

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document (in the foreground) would be an actual, live webpage, opened in a browser. *See* EX2005 at 13:43-47.

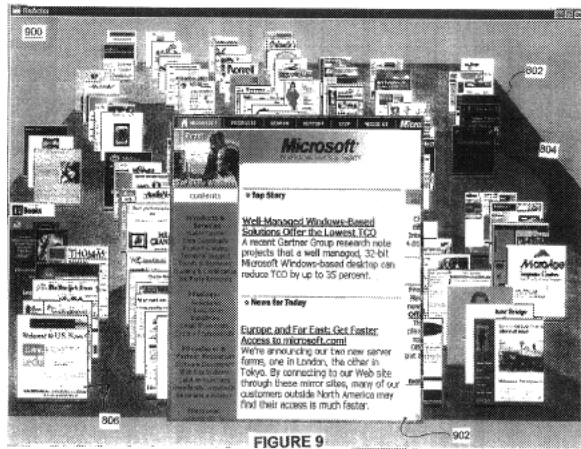


Figure 9 of Robertson

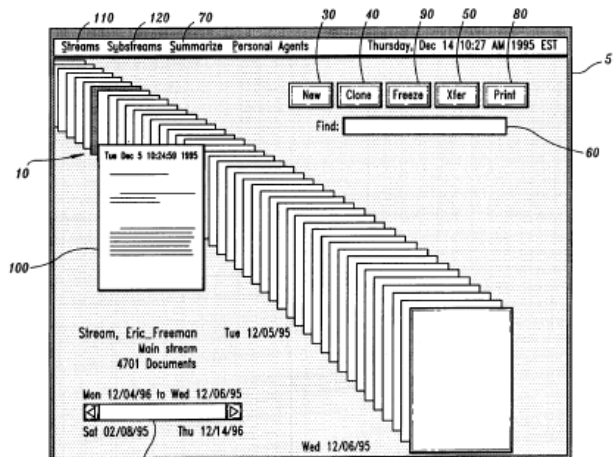


Figure 1 of Freeman

This is identical to how Robertson and Gettman function. In Robertson the background items are low-resolution (inactive) images and the foreground item is a high-resolution “live” (active) object. *See, e.g.*, EX1004 at 6:34-50. The same is true for Gettman. *See, e.g.*, EX1006 at [0083] and [0084]. In Robertson, Gettman, and Freeman, interacting with an object in 3D space results in the object being ***edited in 3D space—not “replacing the first and second objects within the 3D space with a window within two-dimensional (2D) space,”*** as claimed.

The is also how Prager functions. Compare Figure 9 of Robertson to Figure 1 of Prager (both reproduced below). Prager, like Robertson, discloses a 3D space, where browse cards are presented in a time-ordered stream. EX2006 at Abstract. If the user wants to edit a document, the user can interact with a browse card, bringing up a document glance, where the user can interact with the document and

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edit it. *Id.* at 7:23-42. Again, this is just like Robertson and Gettman where a plurality of documents are presented in a 3D space and individual documents can be edited without leaving the 3D space.

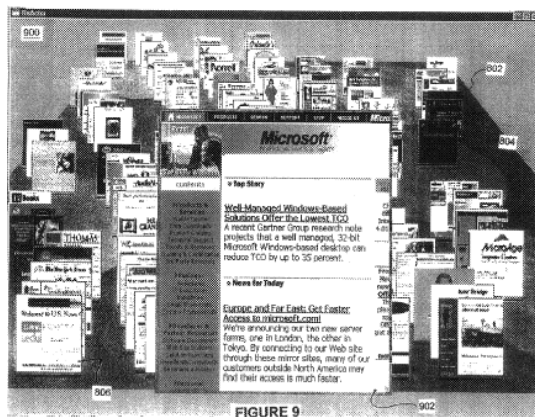


Figure 9 of Robertson

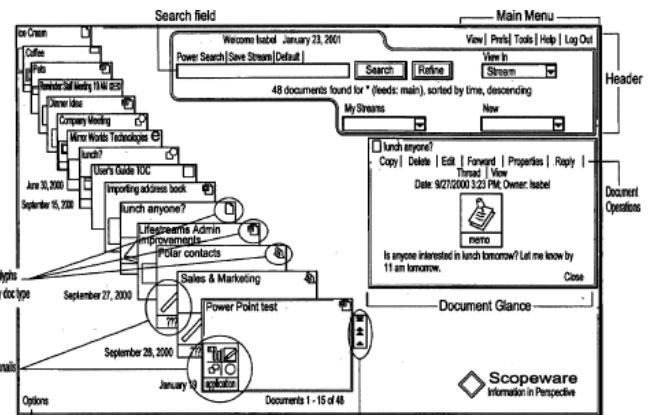


Figure 1 of Prager

The same is true for Gottesman (cited by the Examiner during prosecution), where items are presented in 3D space, and the items can be edited without ever leaving the 3D space. As shown in Figure 1A of Gottesman (reproduced below), a plurality of images are presented in a 3D space. If the user interacts with a particular image, an associated function can be performed, and the image updated if necessary. *See, e.g.*, EX2004 at [0015].

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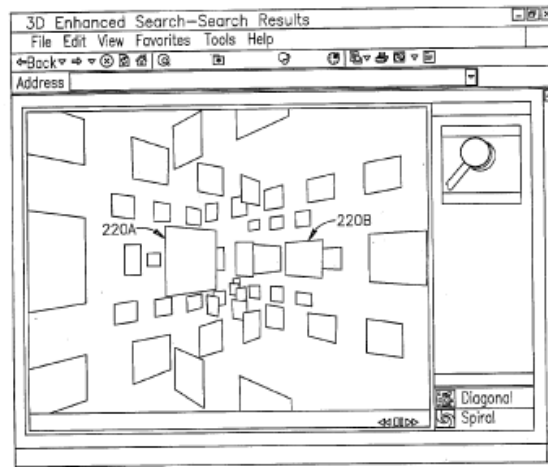


Figure 1A of Gottesman

Other 3D GUIs were cited during prosecution, including those disclosed in Tsuda (EX1008) and U.S. Publication No. 2002/0033848 (“Sciammarella” (EX2007), Figures 5 and 3 of which, respectively, are reproduced below.

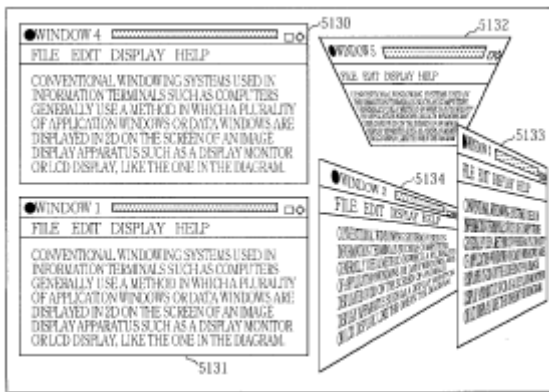


Figure 5 of Tsuda

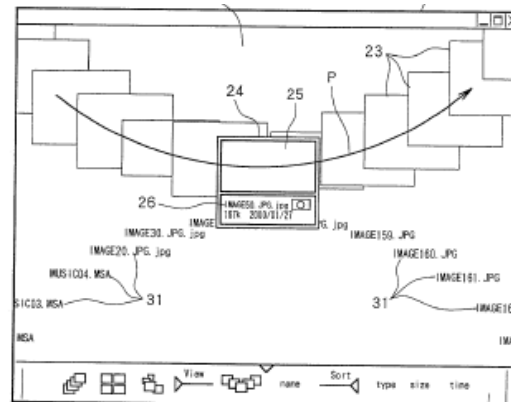


Figure 3 of Sciammarella

The Examiner also considered prior art that is very similar to Suave, where everything remains in 2D space. For example, U.S. Patent No. 5,428,735 (“Kahl”)

was cited by the Examiner during prosecution. Kahl deals with the problem where “the computer display screen is crowded with overlapping windows.” EX2008 at 1:21-26. Kahl addresses this problem the same way as Suave, *i.e.*, by “creating and displaying a plurality of visual representations, one for each of the set-creating activities” (*e.g.*, web pages). *Id.* at Abstract.

This can best be seen in Figure 2C of Kahl (reproduced below) where visual representations of search queries (88) and search results (92) are presented to the user. By selecting a particular visual representation, a corresponding web page (*e.g.*, search result) is provided to the user. *See, e.g., id.* at 7:53–8:19 (“Another important component of the present invention is that the iconographic representation of search queries and search results may be used to access previously performed queries and associated data sets.”). Depending on the embodiment, the visual representations (images) and an individual search result (active webpage) can be presented to the user “simultaneously” (at the same time) or “consecutively” (one *replacing* the other). *Id.* at 4:13-19.

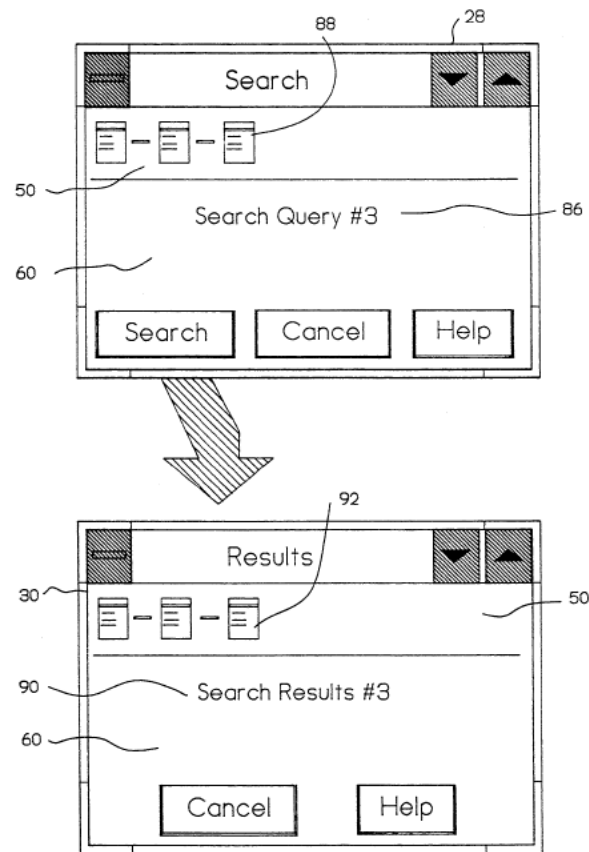


FIGURE 2c

This feature was also disclosed in U.S. Patent Publication No. 2004/0268451 (“Robbin”), which was assigned to Petitioner (Apple) and cited by the Examiner during prosecution of the ‘048 Patent. EX2009. Robbin discloses the well-known iTunes application where thumbnails of content (*e.g.*, songs, artists, albums, etc.) are presented to the user, where each thumbnail is linked to an associated webpage. Once the user clicks on a particular thumbnail, a corresponding webpage is presented to the user. The presentation of “thumbnails” or “images”: can be seen in Figures 15A and 15C, reproduced below. *See also* EX2009 at [0125] (“the image is rather small and thus can be referred to as a ‘thumbnail’ image”) and

[0131] (“the artwork images are thumbnail sized”).

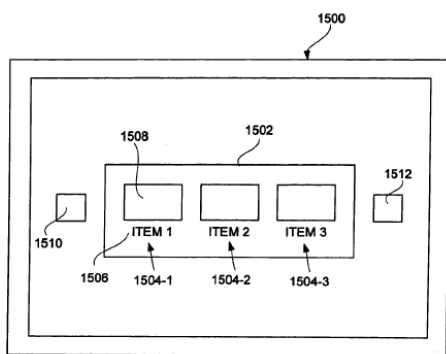
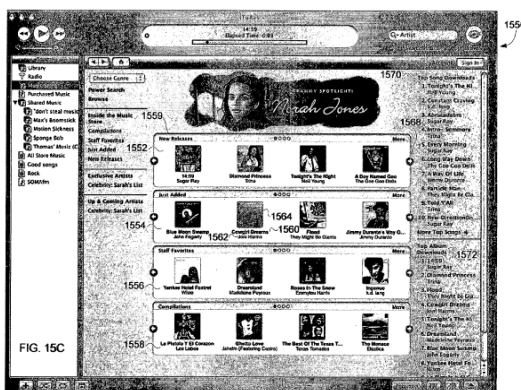


FIG. 15A



The user can select an image (or thumbnail) to acquire a webpage corresponding to the selected image, where the webpage replaces the images. For example, with respect to Figures 14A and B, “[i]f the user does select either the image 1412 or the ‘go to’ button 1414, an application program window 1450 as shown in FIG. 14B would be produced.” *Id.* at [0121]. “The server-provided information in response to the request is, for example, a markup language document (e.g., XML)” (*id.* at [0127]), and “although produced by an application program, is presented in a network browser style, and thus looks like a web page in many respects” (*id.* at [0129]). Just like Suave, a plurality of thumbnails is presented to the user, where the selection of a particular thumbnail results in a particular webpage being displayed to the user, where both the thumbnails and webpage are presented in 2D space. To this end, Suave is very similar to a desktop on Microsoft Windows, where graphical representations are used as shortcuts to content or applications.

Because the prior art cited by Petitioner is substantially the same (and in some instances identical) to prior art considered by the Examiner during prosecution of the '048 Patent, the Petitioner presents no new grounds of rejection, and therefore the Petition should be denied pursuant to 35 U.S.C. § 325(d).

B. Petitioner Fails To Show That The Asserted Prior Art Teaches Or Suggests All Elements Of The Challenged Claims

In each and every asserted ground, Petitioner fails to “specify where each element of the claim is found in the prior art patents or printed publications relied upon.” 37 C.F.R. § 42.104(b)(4); *see also* 35 U.S.C. § 312. This is because Petitioner's prior art is deficient in several respects. As such, the Petition should be denied.

1. Combining Robertson, Gralla, and Gettman Does Not Disclose The Claimed Limitations (Ground 1)

In Ground 1, Petitioner relies on Gralla for “foundational principles regarding the Internet” (Pet. at 16) and not for switching from 3D to 2D or replacing a plurality of inactive images in a 3D space with an active webpage in a 2D space. Instead, Petitioner relies solely on Robertson and Gettman for these features. Thus, Petitioner's entire argument boils down to whether Robertson and Gettman (when combined) teaches or suggests the 2D/3D features recited in the claims of the '048 Patent.

As discussed above, a critical feature of the invention is how webpages are presented to the user in 3D space and how the user then interacts with a particular webpage to acquire additional information (*e.g.*, another webpage). In the '018 Patent, this was done by mapping interactions on an image of a webpage in 3D space to a rendered version of the webpage (off screen). The '048 Patent provides

for a different sequence of events—events involving the switching, back-and-forth, between 2D and 3D space, and replacing images in 3D space with a single, active webpage in 2D space, where the webpage is selected based on the interaction with one of the plurality of images.

As discussed in the Declaration of Eddie Bakhsh, the inventor of the '048 Patent, it is customary for everything to occur in one space. EX2001 at [9-10] and [56]. Thus, by way of example, in Microsoft Windows™, everything occurs on a single desktop GUI. The same is true for Robertson, Gettman, and Tsuda, where everything occurs on a single 3D GUI. There is no switching from one space to another. These GUIs are generally designed for personal computers (PCs) having unlimited power and relatively powerful processors (*e.g.*, Pentium). *Id.* However, on mobile devices, having relatively small displays, limited battery life, and limited processing power, it is neither feasible nor efficient to present a plurality of active webpages in a 3D space where items are skewed, manipulated, etc. *Id.*

Thus, SpaceTime3D did what is counterintuitive—requiring switching from a 3D environment, where only images are presented, to a 2D environment, where only one active application is presented for interaction. Switching environments allows the user to go from a first environment (a 3D space) where a user can navigate through a plurality of images of webpages and select a particular one, to a second environment (a 2D space) where the user can interact with an actual, live version of the selected webpage. Not only does this require switching from a 3D space to a 2D space, and vice versa, it also requires the actual, live webpage to “replace” the plurality of images. And when the user switches back to 2D space, the images are *updated* to reflect where the user last left off (*i.e.*, a visual history of

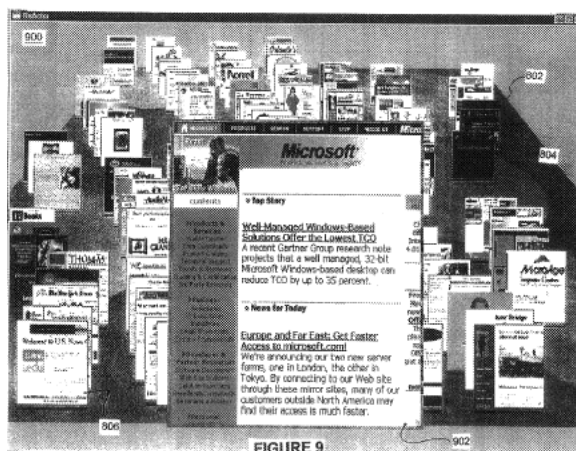
the user's computing session.).

It should be appreciated that *in 3D space, the images are inactive because interacting with an image in 3D space does not result in editing the corresponding webpage—rather, interacting with an image results in the image being replaced with an active version in 2D space where it can be edited and updated*. Thus, the claimed invention switches between *inactive images* of webpages in 3D space and an individual, *active webpage* in 2D space.

These features are not disclosed in Robertson or Gettman. Both references describe GUIs for presenting and interacting with webpages in 3D space. For example, in Robertson, low-resolution thumbnails are presented in 3D space. As the object thumbnails are quite small, additional information on the object can be acquired by hovering the cursor over the object, thereby “activating” the object. EX1004 at 13:28-44.

After the object is “activated,” the user can “select” the object by clicking on it, resulting in the object being present in the foreground of the 3D space. This can be seen in Figure 9 of Robertson (reproduced below). According to Robertson, “[t]he selected object thumbnail 902 is displayed in a preferred viewing position, in this case, at the center foreground in the three-dimensional environment.” *Id.* at 13:55-62. This is done “for editing or otherwise working on a selected object.” *Id.* Thus, while Robertson discloses presenting a plurality of images in 3D space, interacting with one does not result in “replacing” the images in 3D space with an active window in 2D space.

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Robertson provides that in one embodiment, the selected webpage may be presented in an Internet Explorer™ Internet browser in 3D space. *Id.* at 13:64–14:10. While it is true that the browser can be enlarged, it is still in 3D space. This is supported by the fact that Robertson provides that when the browser is enlarged, the other objects (or images) are “in the background.” *Id.* at 13:55–14:10.

The fact that the browser (enlarged or otherwise) is in 3D space is also supported by Figure 13B of Robertson, which provides that the selected object could be presented in the background so as to not to occlude the other objects. *See, e.g., id.* at 22:39-43. Thus, even if the selected object is enlarged “to substantially fill the screen,” it is still in the background of the 3D space, and the unselected objects are still in the foreground.

Assuming arguendo that enlarging the browser constitutes switching from a 3D to a 2D space, which it does not, there is still no switching back-and-forth, where *an active window* in 2D space *replaces a plurality of inactive images* in 3D space (Claim 1) and vice versa (Claim 2). Robertson teaches just the opposite. In

Robertson, when an object has been selected, *it becomes active* “for editing or otherwise working on a selected object” *in 3D space*. *Id.* at 13:55–14:20. In one embodiment, when an object is selected, the “actual object” (e.g., a webpage) in its “associated application” (e.g., Internet Explorer) is presented in the center foreground of the 3D space. The associated application can then be “maximized” or enlarged. *Id.* However, both prior to and after the object has been enlarged, the object is “live” (*i.e.*, active), allowing it to be edited by the user.

Thus, because the webpage is “live” in 3D space, there is no switching between an *inactive image in 3D space* and an *active webpage in 2D space*. Also, and equally important, the “maximize” function is not “in response to ... an interaction by the end user *on the first image*,” as claimed, but by interacting with the “*application*” (e.g., “Internet Explorer”). Even Petitioner acknowledges that it is the “browser” that is interacted with and maximized (Pet. at 40), as the webpage is “live” and interacting with the webpage in 3D would result in editing the webpage, not switching to a 2D space as claimed.

Finally, because both active and inactive objects are presented in 3D space (just like Freeman and Prager—prior art cited during prosecution), it also would not have been obvious to do the opposite. In other words, ***Robertson’s use of a single 3D space actually teaches away from the claimed invention***, which requires switching back-and-forth between two different spaces, and between active and inactive windows. *See, e.g., KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740 (2007) (“The Court relied upon the corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious.”); *see also*

In re Francis S. Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994) (“A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.”).

The same is true for Gettman. Windows that are far from the user's perspective are presented as images or bitmap screenshots of HTML pages. However, as a user approaches a window, the window switches from a bitmap screenshot to a “live” (e.g., interactable) window. To this end, Gettman provides “[t]he page is not rendered dynamically until the viewer turns toward it (and “clicks” on it or remains in that position for a set period of time)” EX1006 at [0083]; *see also id.* at [0121].

In one embodiment, the “live” web page is displayed on the wall in the 3D space. *Id.* at [0164]. In an alternate embodiment, the “live” webpage is presented in a conventional, 2D browser in the 3D space. *See, e.g.*, Figure 4 and *id.* at [0128]. Thus, while a “live” webpage can be displayed in a 2D browser, the 2D browser is presented in the 3D space. *See also id.* at [0164]. Like Robertson, interacting with an image does not result in “replacing” the plurality of images in 3D space with an active webpage in 2D space, where the webpage corresponds to the selected image.

In arguing that Gettman switches from 3D to 2D, Petitioner references Figure 13. However, as discussed in Section V(C), Figure 13 is not the 2D browser that is presented when the user clicks on a window in a 3D space. That browser is shown in Figure 4. Instead, Figures 12-15B are implementations where the user can interact with a toolbar at the top of a window to launch other

applications, including route directions (Figure 15B), city map (Figure 15A), district map (Figure 14), and traditional web browser (Figure 13). These different applications are launched by clicking on the appropriate button on the toolbar (1202)—not by clicking on an image in 3D space as Petitioner contends. To launch the web browser (Figure 13), the user would click on the “web button area” (1204) on the toolbar (1202). *See id.* at Figure 12 and [0200].

Further evidence that Gettman does not switch back-and-forth is the fact that once a traditional web browser (Figure 13) is launched, switching back to the 3D GUI, which is accomplished by clicking on the 3B button (1222) on the toolbar, does not result in “capturing a third image of ... the rendered additional information” and “texturing the third image on the first object, the third image thereby replacing the first image on the first object” in the foreground of the 3D space, as required by Claims 2, 9, and 16. This is because Gettman does not switch back-and-forth between 3D and 2D, where additional information acquired in 2D space is captured and presented on objects in 3D space.

As such, it is clear that Gettman does not switch between a 3D space where inactive windows (or images thereof) are present and a 2D space where an active window is present. Instead, active windows are presented in 3D space—just like Freeman and Prager. And just like Robertson, ***Gettman’s use of a single 3D space actually teaches away from the claimed invention.*** And because Gettman does not make up for the deficiencies of Robertson, combining the two cannot render the claimed inventions obvious. Both references teach the same solution to the same problem—a GUI where both active (“live”) and inactive (images) webpages are presented to the user exclusively in 3D space—and both teach away from the

toggling back-and-forth between 3D and 2D spaces, as claimed in the '048 Patent.

Petitioner acknowledges that Robertson does not disclose the claimed switching from 3D to 2D space in response to a user interacting with an image, and that Robertson describes a “specific series of steps that the user must perform to obtain the ‘maximized’ view of the 2D browser.” Pet. at 24. Petitioner then argues that a POSITA would have applied the “single interaction” technique disclosed in Gettman to reduce the number of interactions in Robertson from four to one to achieve the “maximized” view.

First, Gettman does not teach “that the interface should be designed to facilitate switching between 3D and 2D with a minimal number of user interactions,” as Petitioner contends. Pet. at 24. As discussed above, Gettman teaches an implementation where a toolbar at the top of the window can be used to open other applications, including a traditional web browser (Figure 13). *See* EX1006 at Figure 12 and [0200]. Thus, the “single interaction” referred to by Petitioner is not an interaction on a webpage image in 3D space to switch to an active version in 2D space. The same is true for Robertson where the maximize function is achieved by interacting with the web browser application (*e.g.*, Internet Explorer), not an image of a webpage.

Second, Robertson teaches that while its 3D GUI is advantageous in that “more objects can be represented, at one time, on a single display screen” (EX1004 at 6:20-23 and 65-67), it should also address the problem of “object occlusion.” *See, e.g., id.* at 5:62-67; *see also id.* at 7:13-16 (“The present invention may also prevent one object thumbnail (or landscape feature) from totally occluding another object thumbnail so that the latter is not totally hidden from the user.”). When an

object is “selected” (*e.g.*, for editing) it is positioned at a “preferred viewing location.” Robertson stresses that this location “will not occlude the collection of thumbnails on the information landscape.” *Id.* at 22:32-34. In fact, Robertson provides several flow charts on “object occlusion avoidance.” *See id.* at Figures 20A-B. This is because “total object (thumbnail) occlusion should be avoided.” *Id.* at 25:20.

Petitioner argues that “[b]olstering Robertson’s 2D browser technique based on Gettman’s teachings would not have disturbed the other aspects of Robertson’s 3D-GUI, and it would have produced substantially similar functionality to what Robertson described.” Pet. at 24. Not true. Modifying Robertson as Petitioner suggests, where a single interaction would result in the occlusion of each and every object in 3D space, would undermine a primary objective of Robertson. As such, Robertson actually teaches away from such a combination. *See, e.g., Depuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326 (Fed. Cir. 2009) (“An inference of nonobviousness is especially strong where the prior art’s teachings undermine the very reason being proffered as to why a person of ordinary skill would have combined the known elements.”).

In light of the foregoing, Petitioner has failed to show that Robertson, Gralla, and Gettman, either alone or in combination, discloses each and every feature of Independent Claims 1, 8 and 14. They also do not render Claims 2-7, 9-13, or 15-18 obvious. Not only do these claims depend from the foregoing independent claims, but they also include features that are not disclosed in or suggested by Robertson, Gralla, and Gettman. *See, e.g.*, Claims 2, 9, and 16, which require replacing the active webpage in 2D space with a plurality of images in 3D space,

where a third image (of additional information) is captured and textured on the first object in 3D space.

2. Combining Suave and Tsuda Does Not Disclose The Claimed Limitations (Ground 2)

In Ground 2, Petitioner argues that Claims 1-18 are obvious over Suave in view of Tsuda. As stated above, Tsuda was cited by the Examiner during prosecution and therefore, in and of itself, cannot raise a substantial question of patentability. Moreover, Tsuda shares the same fatal shortcoming as Robertson, Gettman, Prager, and Freeman, where all objects are presented in 3D space.

As discussed above, Tsuda was trying to solve a problem with prior art 3D GUIs where “a window placed deep within the 3D space is displayed reduced in size, making it impossible to distinguish any of the display content of the window.” EX1008 at 1:23-32 and *id.* at Figure 69. Tsuda solves this problem by presenting all windows (or at least a portion thereof) in the foreground of the 3D space. According to Tsuda, windows are either displayed in the foreground or “inclined in a depth direction, so that the key part of the display content is near the front of the 3D space [*i.e.*, in the foreground]. Therefore, even if a plurality of windows are being displayed, the user can grasp the type and display content of each window at a glance.” *Id.* at 2:13-26.

In light of the foregoing, it is clear why the Examiner allowed the ‘048 Patent claims over Tsuda. First, there is no mention of 2D space in Tsuda. The windows in Tsuda are all located in 3D space. Second, Tsuda teaches away from any window being “displayed in a background of the 3D space.” Finally, the windows in Tsuda are all “live” in that they can be interacted with to alter the content. *See, e.g.*, EX1008 at Figure 19A-B and 3:31-37 (discussing scrolling),

Figure 25 and 3:48-51 (discussing highlighting), and Figures 28A-29B and 4:22-32 (discussing copying and pasting). Thus, not only does Tsuda not disclose the critical switching from 3D to 2D and back, it also does not switch from a plurality of inactive images to an individual active object.

Neither does Suave disclose or suggest this feature. Suave describes a traditional 2D, tabbed web browser, operating in 2D space, with the addition of a “quick-pick user interface” for easily switching between a plurality of “content windows” (e.g., different web pages). EX1007 at [0025]. The quick-pick user interface includes “a graphical representation (e.g., thumbnails 402-411) for each of the open tabs” (e.g., different web pages). *Id.* at [0042]. By clicking on a particular graphical representation, a corresponding web page is presented to the user.

According to Suave, this solves a problem in the prior art where “after opening several web pages ... it [becomes] difficult to re-locate a particular web page.” *Id.* at [0003]. First, it should be noted that in Suave, both the graphical representations of web pages and the selected web page are presented to the user in 2D space. There is no 3D space discussed in Suave. Second, prior art disclosing the use of graphical representations as “shortcuts” to individual web pages in 2D space was cited by the Examiner during prosecution of the ‘048 Patent. *See* Section V(D).

It would also not be obvious to combine Tsuda and Suave as Petitioner contends. Petitioner argues that Suave’s quick-pick interface could be replaced with Tsuda’s 3D GUI, thereby teaching the claimed invention. Pet. At 57-58. First, the combination argued by Petitioner would not result in the claimed

invention. In Tsuda, interacting with a window in 3D space does not transport the user (*i.e.*, switch) to a different (*e.g.*, active) window. Instead, the windows in Tsuda are already active and interacting with one merely results in the window being displayed “facing the front.” EX1008 at 2:57-67.

To this end, Tsuda teaches a “position determining means” which “enables a[n] operation, in which a window faces the front when it is being operated on, and returns to the alignment position once it is no longer being operated on.” *Id.*, see also *id.* at 18:25-40.

This can be seen in Figures 12A-C, reproduced below. “FIG. 12 A shows a display screen after automatic alignment has been performed, and corresponds to FIG. 11B,” which is the figured cited by Petitioner. See *id.* at 18:41-57 and Pet. at 58. “FIG. 12B shows a display screen immediately after a window 5241 in FIG. 12A has been selected by the input unit 5103.” *Id.* “Here, the 3D position calculating unit 5104 calculates a new position so that the selected window 5241 is rotated to face the front with the edge that was near the front of the 3D space in perspective (the left edge) remaining in a fixed position.” *Id.* Figure 12C shows the display screen after the window has been returned to its default position (*e.g.*, after editing is finished).

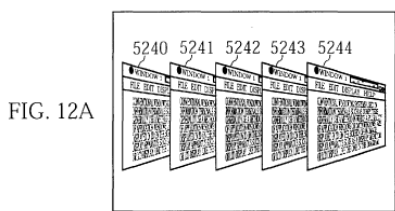


FIG. 12A

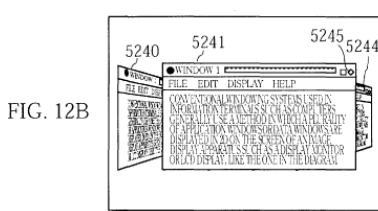


FIG. 12B

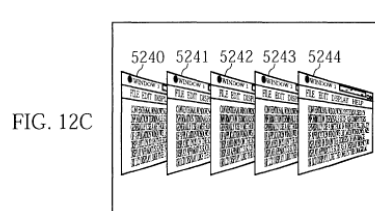


FIG. 12C

Thus, the combination suggested by Petitioner would not result in an active window in 2D space “replacing” a plurality of images in 3D space. Instead, it would result in an active window in 3D space being rotated to face the front (*e.g.*, for editing). According to Tsuda, this feature is “particularly useful in small portable information terminals, where it makes windows easier to manipulate.” *Id.* at 18:65–19:2.

Second, a POSITA would not be motivated to combine Suave and Tsuda, as Petitioner contends. Tsuda describes a GUI that functions exclusively in 3D, so that “more windows can be displayed, making the screen appear larger than it actually is.” *Id.* at 1:26-28. Switching to 2D would be counterintuitive to the teachings of Tsuda, and therefore nonobvious. Petitioner argues that motivation to combine can be found in Tsuda’s statement that “[t]his invention may also be effective for desktop computers, if a user is browsing various homepages on the Internet.” Pet. at 58. However, Petitioner takes this passage out of context. The entire paragraph reads as follows:

The screen display area is limited in notebook computers intended for portable use, and mobile information terminals, such as electronic organizers and PDAs (Personal Digital Assistants). In this case, *effective use of the screen could be achieved by treating the displayed objects so that a window on which an operation is being performed is displayed facing the front* and, if a plurality of windows are being viewed, *windows on which an operation is not being performed are displayed in perspective*. This invention may also be effective on desktop computers, if a user is browsing

various homepages on the Internet, or activating a variety of application programs.

EX1008 at 14:16-27 (emphasis added). Thus, while it may be true that Tsuda could be used to browse the Internet, it does so by staying in 3D space and allowing windows to move from perspective to front facing and vice versa.

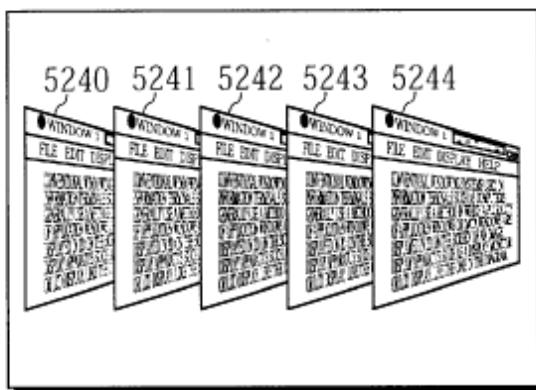
Petitioner argues that because the objects in Suave and Tsuda are “graphical representations reflecting the content of an underlying application,” it would have been obvious to replace one with the other. Pet. at 59. This is an oversimplification of the two references, which actually teach away from one another. Both references provide solutions to the same problem, *i.e.*, how to interact with windows that are otherwise hidden in 2D space. In Suave, thumbnails are used as shortcuts to the hidden windows. In Tsuda, the windows are presented in 3D space, so that the windows are no longer hidden. Thus, while both references provide solutions for moving from one active window to another, they do so in drastically different ways.

If a POSITA were to combine Suave and Tsuda, the motivation would be to present *the hidden webpages (tabs)* in 3D space—not *the thumbnails* as Petitioner contends. EX2001 at [52]. This is because Suave teaches that while there is sufficient space to display each thumbnail, it is the webpages (or tabs) for which “there is inefficient space.” EX1007 at [0038]; *see also id.* at Figure 4 (showing that while all thumbnails can be shown, there is insufficient space to present all webpages (or tabs)). Thus, it would not be obvious to combine these references as Petitioner contends.

Not only is switching from 3D to 2D space and vice versa not disclosed or suggested in Tsuda or Suave, but neither reference teaches a 3D space with “the first object being displayed in the foreground of the 3D space and the second object being displayed in the background of the 3D space.” Suave cannot teach this feature as Suave does not utilize a 3D space. Tsuda also does not teach this feature.

In Figure 12A (reproduced below), Petitioner argues that window 5244 is in the foreground and the other windows (5240-43) are in the background. Pet. at 69-70. This is not only contrary to what a POSITA would understand (EX2001 at [54]) but what Tsuda expressly teaches. Tsuda criticizes 3D GUIs where windows are presented in the background. *See, e.g.*, EX1008 at 1:28-31. Tsuda’s solution is to present every window so that at least a portion is in the foreground (near the front) and no window is in the background. *See, e.g., id.* at 2:13-26.

FIG. 12A



Independent Claim 1 requires “the second object being displayed in *a background of the 3D space*.” The same is true for independent Claims 8 and 14.

Claims 2, 9, and 16, also require objects to be presented in “*the background of the 3D space*.” The same is true for Claims 4, 11, and 18 (requiring “moving said second object [or image] *from the background of the 3D space* to the foreground of the 3D space”) and Claims 6 and 13 (requiring “the third object being displayed in *a further background of the 3D space*, behind the second object”) (*i.e.*, a stack that is at least three deep). Because these features are not only absent from the prior art, but criticized, Ground 2 should be denied.

Realizing this flaw, Petitioner *manufactures* an embodiment in Tsuda where the windows are stacked in the Z-direction and argues that such an embodiment is “a trivial modification” using “ordinary creativity.” Pet. at 70. First, such a modification is not trivial, as Tsuda teaches away from stacking windows in the Z-direction. *See* EX2001 at [54-55]. Second, this so-called “ordinary creativity” argument to manufacture a limitation when one is missing was rejected by the Board in *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 (PTAB Aug. 24, 2022).

In that case, the Board denied institution as the prior art failed to teach or suggest each and every limitation. Petitioner and their expert argued that the missing limitation would have been obvious. *Id.* at 15. The Board stated that “the cited declaration testimony is conclusory and unsupported” and is therefore “entitled to little weight.” *Id.* This is especially true when the “expert testimony is offered not simply to provide motivation to combine prior-art teachings, but rather to supply a limitation missing from the prior art.” *Id.* at 16. This is exactly the case here with the missing “background” feature. Because at least this feature is missing from the cited prior art, Ground 2 should be denied.

3. Petitioner Fails To Address The Required “Objective Indicia” Of Non-Obviousness

The Federal Circuit has “repeatedly held that ... objective evidence of secondary considerations ... *must* be considered before determining whether the claimed invention would have been obvious” *Apple, Inc. v. ITC*, 725 F.3d 1356, 1365 (Fed. Cir. 2012) (emphasis added); *see also Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012).

4. Evidence Of Industry Praise, Commercial Success, and Teaching Away

Secondary considerations, such as commercial success, praise by other, and teaching away, are strong indicators of whether the challenged claims would have been obvious at the time of invention. “Commercial success is relevant because the law presumes an idea would have been brought to market sooner, in response to market forces, had the idea been obvious to persons skilled in the art.” *Merck & Co. v. Teva Pharm. USA*, 395 F.3d 1364, 1376 (Fed Cir. 2005). The same is true for industry praise. In fact, “praise in the industry for a patented invention, and specifically praise from a competitor, tends to ‘indicat[e] that the invention was not obvious.’” *Power One, Inc. v. Artesyn Technologies, Inc.*, 599 F.3d 1343, (Fed. Cir. 2010), citing *Allen Archery, Inc. v. Browning Mfg. Co.*, 819 F.2d 1087, 1092 (Fed. Cir. 1987). This is exactly the case here.

In 2007, SpaceTime3D released a product that incorporated features of the claimed invention. The product received praise by technical journals and newspapers. EX2001 at [13-15]. For instance, the *San Jose Mercury News* stated that the product “is the most advanced 3-D navigation system I’ve seen.” *Id.* at

[15]. Similarly, *TechCrunch* stated that “[i]t’s difficult to describe the user experience ... [i]t’s pure eye candy.” *Id.* An *TechNewsWorld* stated that “I can already image SpaceTime’s tag line: We don’t do searches – we make search results amazing.” *Id.*

And it was not just the 3D browsing that was praised, but the switching back-and-forth between 3D and 2D space, where images of webpages are presented in 3D space and individual, active webpages are presented in 2D space. As such, there is a “nexus” between the claimed invention and the industry praise. *See, e.g., Merck & Co.*, 395 F.3d at 1376. For example, *TechNewsWorld* stated that “[w]ith SpaceTime, I have an unlimited 3-D space ... [that] lets me alternate between 3-D and 2-D perspectives” EX2001 at [16].

With respect to industry praise, Petitioner argues that there are statements that “undermine Patent Owner’s position.” Pet. at 85-87. For example, Petitioner points out that one article “acknowledged the extensive prior art” and another one “characterized the application of 3D-GUIs to web browsers as ‘obvious.’” *Id.* First, SpaceTime3D does not contend that it invented the 3D GUI. Even the Examiner was aware of many prior art 3D GUIs, and nonetheless allowed the claims. Second, the passage cited by Petitioner does not suggest that the claimed invention is obvious, but that it was obvious to use a 3D GUI as a web browser. Again, this is consistent with the prior art cited by the Examiner.

Manufacturers were also impressed by SpaceTime3D’s technology. For example, on February 2, 2008, Samsung sent emails to SpaceTime3D expressing interest in its technology and inviting SpaceTime3D to present its technology at Samsung’s headquarters. EX2001 at [17-23]. Petitioner argues that the email

string shows nothing more than a Samsung employee expressing interest in the technology. Pet. at 86-87. While that may be true, Petitioner fails to mention that both Samsung and LG Electronics ultimately licensed the ‘048 Patent, which is strong evidence of commercial success. EX2001 at [24].

“[O]bjective indicia ‘may often establish that an invention appearing to have been obvious in light of the prior art was not.’” *Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1378 (Fed. Cir. 2012). “These object criteria thus help turn back the clock and place the claims in the context that led to their invention.” *Id.* “This built-in protection can help place a scientific advance in the proper temporal and technical perspective when tested years later for obviousness against charges of making only minor incremental improvements.” *Id.*

Petitioner fails to adequately address these secondary considerations of non-obviousness and instead relies on improper hindsight by ignoring the express teachings of Robertson, Gettman, and Tsuda, where everything is presented in one 3D space. As such, these references actually teach away from the claimed invention. Secondary indicia of non-obviousness, such as “teaching away,” or industry praise and commercial success “are powerful tools for courts faced with the difficult tasks of avoiding subconscious reliance on hindsight.” *Mintz*, 679 F.3d at 1378.

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VII. CONCLUSION

For the reasons set forth above, SpaceTime3D respectfully requests that the Board deny the petition for *inter partes* review.

Respectfully submitted,

Date: May 17, 2023

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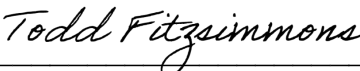
Attorney for Patent Owner

CERTIFICATE OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. §42.24(d) that the foregoing Patent Owner's Preliminary Response to Petition for *Inter Partes* Review of U.S. Patent No. 8,881,048, excluding any table of contents, table of authorities, grounds for standing under §42.104, §42.204, or §42.304, mandatory notices under §42.8, certificates of service or word count, or appendix of exhibits of claim listings, contains 13,864 words according to the word-processing program used to prepare this paper (Microsoft Word).

Respectfully submitted,

Date: May 17, 2023



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CERTIFICATE OF SERVICE

The undersigned certifies pursuant to 37 C.F.R. §42.6(e) and §42.105 that on May 17, 2023, a true and correct copy of this Preliminary Response to Petition for *Inter Partes* Review of U.S. Patent No. 8,881,048 and all supporting exhibits were served via Priority Mail Express® on the Petitioner at the following correspondence address of record:

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