

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

**APPLE INC. and
GOOGLE LLC,**

Petitioner,

v.

SPACETIME3D, INC.

Patent Owner

Case IPR2023-00344¹

U.S. Patent No. 9,696,868

**PATENT OWNER'S RESPONSE
TO PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,696,868**

¹ Google LLC, which filed a petition in IPR2023-00578, has been joined as a petitioner in this proceeding.

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LIST OF EXHIBITS

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	Prosecution File History of U.S. Patent No. 8,881,048
2005	Prosecution File History of U.S. Patent No. 9,304,654
2006	U.S. Patent Publication No. 2003/0164827 (Gottesman et al.)
2007	U.S. Patent No. 6,725,427 (Freeman et al.)
2008	U.S. Patent No. 6,768,999 (Prager et al.)
2009	U.S. Patent Publication No. 2002/0033848 (Sciammarella et al.)
2010	U.S. Patent Publication No. 2001/0050687 (Iida et al.)
2011	U.S. Patent Publication No. 2003/0179231 (Kamiwada et al.)
2012	Markman Order (Case 2:19-cv-00372-JRG) (12/07/2020)
2013	Markman Order (Case 6:22-cv-00149-ADA (03/19/2023)
2014	Order Denying Stay (Case 6:22-cv-00149-ADA) (02/02/2023)
2015	Order Temporary Stay (Case 6:22-cv-00149-ADA) (03/08/23)
2016	Declaration of Dr. Scott Schaefer
2017	Deposition Transcript of Dr. Henry Fuchs
2018	Declaration of Todd Fitzsimmons
2019	Oxford American College Dictionary

I. INTRODUCTION

The '868 Patent claims a unique GUI that allows a user to easily (1) interact with individual, active applications in 2D space and (2) switch between images of open applications in 3D space. To begin with, this is accomplished by (a) receiving inputs from a user, (b) opening applications in response to the inputs, (c) generating objects having application-specific data, (d) displaying the objects with application-specific data in a 2D space, and (e) allowing the user to modify the application-specific data by interacting with individual objects. APPLE1001 at 38:40-56.¹

However, as the '868 Patent provides, “[t]his output is usually confined within a window that is drawn on a finite-sized desktop, i.e., the working area of the computer, that has a given length and width [*i.e.*, a 2D space].” *Id.* at 2:7-14. “When the computer’s output exceeds this finite working graphical area, elements of the GUI (the windows) are typically drawn on top of each other, such that the GUI components overlap one another.” *Id.* This “overlapping” can make it difficult to locate a particular open application.

¹ This description corresponds to limitations [1a] and [1b].

The claimed invention solves this problem by generating *images of the open applications* (e.g., objects with application-specific data) and presenting those images in *a three-dimensional (3D) space* where the images are *arranged in the order in which the applications were last opened or interacted with by the user*. *Id.* at 38:57-39:19. The user can then interact with a particular image in 3D space, resulting in the corresponding application (as previously opened) (1) being displayed *within a 2D space* and (2) *replacing* the plurality of images in 3D space. *Id.* at 39:29-51.² The user can then interact with the application (or corresponding object) in 2D space to modify the application-specific data. *Id.*

Not only does this allow the user to easily open and interact with individual applications (e.g., in 2D space), but by generating and displaying *images* of the open applications (including the application-specific data) *in 3D space*, the user can more easily switch from one application to another to resume where they last left off. Further, by arranging the images *in the order in which the applications were last opened or interacted with by the user*, this makes it easier for the user to locate and select applications that are more frequently used.

Petitioners' Grounds largely ignore these important aspects of the '868

² This description corresponds to remaining limitations of Claim 1, *i.e.*, [1c]-[1d].

Patent, and Petitioners failed to meet their burden of establishing unpatentability of any claim. Patent Owner now addresses the Petition's numerous errors and omissions, supported by Dr. Schaefer's expert testimony (EX2016),³ and free of §42.108(c)'s institution-only constraints.

First, Petitioners' own arguments and evidence confirm they cannot meet their burden to prove any of the Challenged Claims (Claims 1-20) unpatentable. *See, e.g.*, §314; §42.108(c). Petitioners ignore key claim limitations that affect all of their obviousness Grounds and render their analyses of the references incomplete, flawed, and ultimately without merit:

- The claimed GUI does not start in 3D space, but in 2D space where applications are opened in response to user inputs, where objects (*e.g.*, a window) and application-specific data (*e.g.*, the window's contents) are displayed in 2D space. The claimed GUI then generates and displays images of the open applications (*including the object and application-specific data*) in 3D space, and, in response to an image

³ Dr. Schaefer is a distinguished computer scientist and researcher who has extensive knowledge and experience regarding graphical user interfaces ("GUIs"), including 2D and 3D GUIs.

selection, replaces the images with a corresponding active application (including the previously displayed object and application-specific data) in 2D space. This back-and-forth, from active applications, where objects and application-specific data are displayed in 2D space, to images in 3D space, where each image includes *both the object* (e.g., a window for the application) *and application-specific data* (e.g., the window's contents), and then back to an individual, active application (as previously displayed) in 2D space, not only allows the user to easily switch applications, but to do so by scrolling through images in 3D space that identify *both the open applications* (i.e., the objects) *and where the user last left off in each one* (i.e., the application-specific data). These features are not disclosed in Petitioners' cited prior art.

- Yet another critical feature of the claims is arranging images of open applications in 3D space in a particular, chronological order. The claims specify that this is done by arranging the images *in the order in which the applications were last opened or interacted with*. The '868 Patent explains that the benefit of this approach is that it provides “a

visual chronological history of the user's computing session” (APPLE1001 at 5:22-27), where the last used application is displayed in the foreground of 3D space, the previously used application is displayed in the background of 3D space, behind the last used application, and so forth. Not only does this display the applications in the order in which they were last used but includes images of application-specific data, illustrating where the user last left off. *See, e.g., id.* at 5:27-32 (“the 3D GUI will navigate the user through a 3D space that is a visual history of *where the user last left off*.”) (emphasis added). Petitioners’ cited prior art fails to disclose such features.

- Finally, Petitioners ignored the critical distinction in that the prior art does not disclose “replacing the plurality of images within said three-dimensional space with one of said first, second, and third objects corresponding to said one of said plurality of applications within a two-dimensional space.” Petitioners improperly conflat *2D object* with *2D space*—an interpretation that is contrary to the claim language and the District Court’s Markman Order. *See* EX2011 at 16.

As the District Court recognized, and Petitioner ignores, claims of the '868 Patent clearly provide that the terms 2D and 3D define the space—not the objects presented therein. Thus, as Dr. Schaefer explains, a person of ordinary skill in the art ("POSITA") would not have understood that maximizing a 3D object (*i.e.*, window) replaces a 3D object in 3D space with an active application in 2D space as required by the claims.⁴

Second, in support of their obviousness Grounds, Petitioners offered only superficial and conclusory assertions concerning the alleged motivations to combine references. Such arguments are insufficient for Petitioner to meet its burden.

Third, further evidence of the nonobviousness of the Challenged Claims is that the Examiner of the '868 Patent allowed the claims after considering prior art disclosing the same GUI features as cited references and combinations that were similar to those presented here.

⁴ Patent Owner presented this argument in its POPR without the benefit of expert testimony regarding the understanding of a POSITA on this issue. As Dr. Schaefer explains, Petitioners' argument are contrary to the understanding of a POSITA.

Petitioner's evidence fails to establish unpatentability for either of the instituted Grounds, and every claim therefore should be confirmed.

II. BACKGROUND OF U.S. PATENT NO. 9,696,868

A. Description Of The Patented Invention

The '868 Patent provides an improved graphical user interface (GUI). 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.” APPLE1001 at 5:18-22.

However, there are times when it is difficult to operate in 3D space. For example, “[i]n certain cases it may be difficult to interact with a file, document, application, desktop or other output within a 3D virtual space.” *Id.* at 21:58-62 “This can be the case if the end user is occupying an unfavorable viewpoint in the virtual space.” *Id.* As such, the claimed invention allows the user to interact with active applications in 2D space while displaying images of open applications in 3D space, thereby making it easier for the user to identify and switch between open applications.

1. Each Image in 3D Space Must Include an Object (e.g., a Window) and Application-Specific Data (e.g., its Content)

The claimed invention does not start in 3D space. For example, Claim 1 of the '868 Patent provides for a GUI where (1) a user provides at least first, second, and third inputs, (2) corresponding first, second, and third applications are then opened by (a) generating objects having application-specific data, (b) displaying the objects (including application-specific data) in 2D space, and (c) allowing the user to modify the application specific data by interacting with a corresponding object. Thus, *the claims require that active applications including objects and application-specific data are first opened and displayed in 2D space.*

Then, to enable switching from one open application to another, the GUI *generates images of the objects (e.g., a window) and application-specific data (e.g., data, or the window's contents)* and displays the images in 3D space, with the image of the application that was last opened or interacted with being displayed in the foreground. APPLE1001 at 38:59–39:19. In other words, the images identify both the open applications (*i.e.*, the objects) and where the user last left off in each application (*i.e.*, the application-specific data). This allows the user to not only switch from one application (*e.g.*, Microsoft Word) to another (*e.g.*, Internet Explorer), but to one having particular content (*e.g.*, Netflix).

When the user interacts with a particular image (*e.g.*, clicks on), the corresponding object and application-specific data (as previously displayed) is displayed (again) in 2D space, where the object *replaces* the plurality of images in 3D space, and the user can resume modifying the application-specific data (*e.g.*, where the user left off in 2D space). *Id.* at 39:34-50.

Thus, the applications (including application-specific data) must be opened and displayed before the images can be generated. The images in 3D space allow the user to switch from one open application having specific content to another. Once an image is selected, the images are replaced by the corresponding application in 2D space (*i.e.*, the previously displayed object and application-specific data), allowing the user to pick up where they last left off.

2. Chronological Presentation of Images in 3D Space

With respect to the 3D space, not only are the images of open application displayed, but they are displayed in an order of use (last opened or interacted with) so that “the user can visit past visual computing events (or snapshots in time) by simply navigating to previously recorded states or viewpoints.” APPLE1001 at 5:18-22.

As discussed, a feature of the ‘868 Patent is to provide “a visual history of

the user's computing session.” *Id.* at 2:19-29 and 5:18-22; *see also* EX2001 at [52-53]. By plotting images of applications in 3D space, where the application *that was last opened or interacted with* is displayed in the foreground, the application *that was previously opened or interacted with* is displayed in a background, and so forth, “the 3D GUI can function as a visual chronological history of the user's computing session.” *Id.* at 5:22-24.

This can be seen in Figures 16B and 20 of the ‘868 Patent (reproduced below), where “an end user selects the helper application called Yahoo! Search ... [which] plots the search result in a unique 3D stack 560, which is represented by in the timeline 340 by an icon 562.” *Id.* at 13:4-16. “An end user can select another helper application called Yahoo! Image Search ... [which] plots the search results in its own unique 3D stack 570 ... whereby another icon 572 representing stack 570 is added to the timeline (to the right of the last icon 562).” *Id.* at 13:17-28. “[S]hould an end user create a web-browser page within the virtual space ... the new webpage would be drawn in its own 3D stack 580 ... [and] would add another icon 582 to the timeline (to the right of the last icon 572).” *Id.* at 13:29-39.

As can best be seen in Figure 20, this creates “a historical visual chronology of the user's computing session” (*id.* at 20:27-29), with the most recently opened

application, web-browser (580) (or image thereof) being displayed in the foreground of the 3D space, and images of the previously opened applications (Yahoo! Image Search (570) and Yahoo! Search (560)) being displayed in the background of the 3D space.

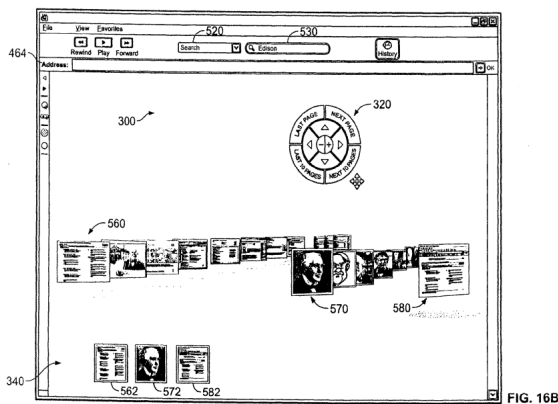


Figure 16B

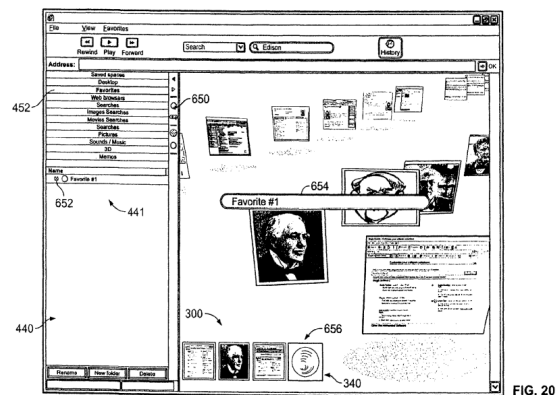


Figure 20

The ordering in 3D space (including the timeline) can then be changed based on input from the end user, referred to as a “visual event.” “[E]ach new action, initiated as a result of input from the end user or otherwise initiated by programmatic access, that results in a visual event, is ... plotted as an icon on the dynamic timeline linear map 340,” where “[a] ‘visual event’ refers to a change in appearance in the 3D virtual space.” *Id.* at 12:8-26.

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This can be seen in Figures 13A and 13B (reproduced below). In Figure 13A, the Microsoft Word application (490) is presented in the foreground, with a Yahoo! Search application (492) being presented in the background. However, as discussed in Figure 2, a “user input” (22) results in “recalculating geometry” (24) and “redraw[ing] [the] scene” (26), thereby moving the Yahoo! Search application (492) to the foreground. This can be seen in Figure 13B. In other words, the “input from the end user” on, or the “programmable access” of, the Yahoo! Search application (492) moves the application to the foreground of the 3D space. *Id.* at 12:21-23.

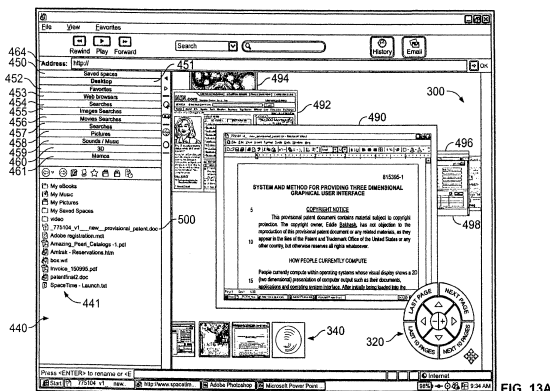


Figure 13A

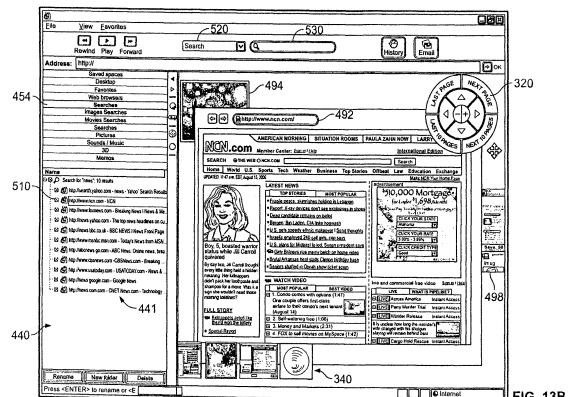


Figure 13B

Such a feature is recited in Claim 1 of '868 Patent where the images are displayed in 3D space “in an order based on a last time that said user one of ... opened said ... application and interacted with said ... object.” *Id.* at 39:3-19. By displaying the most recently used application (or an image thereof) in the foreground of the 3D space and the other applications (or images thereof) in the background of the 3D space in the order that they were used, “it can create a visual history of the user’s computing session.” *Id.* at 26:34-38; *see also id.* at 3:1-2 and 22:56-57.

It is important to note that the ordering is not based on the creation or editing of application-specific data (*e.g.*, a file or document), but *the opening or last interaction with a specific application*. Thus, ***the claimed invention orders images in 3D space based on the most recently used applications—not the most recently used documents or files.***

B. Prosecution History Of The '868 Patent

During prosecution of the '868 Patent, the Examiner considered and cited several prior art references that are virtually identical to the prior art relied upon by Petitioner. The prosecution histories of the '868 Patent and its parents, the '654, '048 and '018 Patents, were discussed in detail in the POPR. *See, e.g.*, Paper 6 at

11-19.

During prosecution of the '018 Patent, the Examiner rejected the claims for being unpatentable over Gottesman et al. (U.S. Publication No. 2003/0164827) (EX2007) and Freeman et al. (U.S. Patent 6,725,427) (EX2006). EX2003 at 87-123. Gottesman provides “[a] system and method for presenting search and/or data query results within a virtual three-dimensional environment.” EX2007 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].

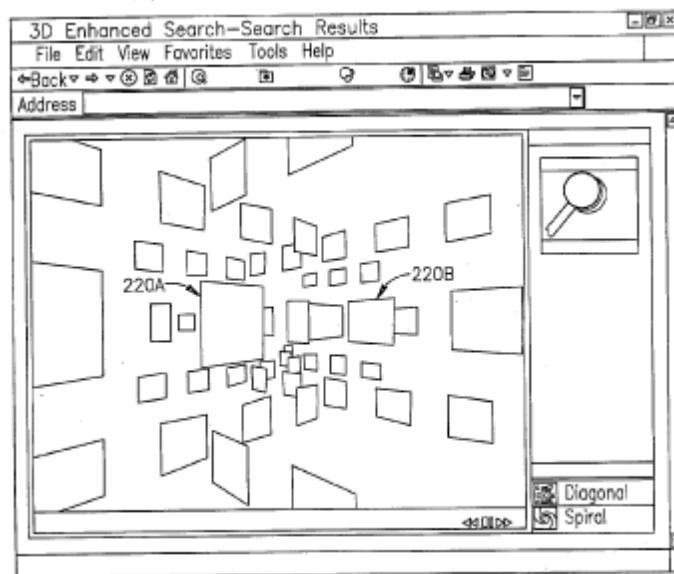


Figure 1A of Gottesman

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).

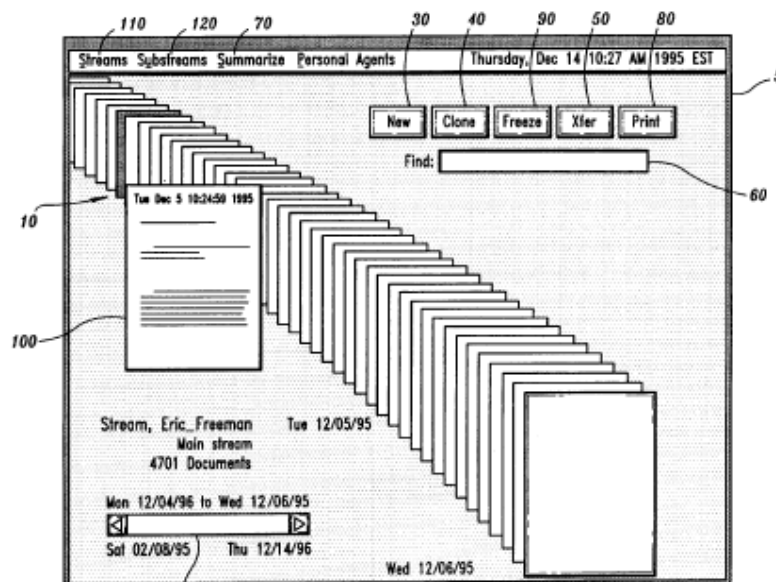


Figure 1 of Freeman

During prosecution of the ‘048 Patent, the Examiner rejected the claims over Gottesman and Prager et al. (U.S. Patent No. 6,768,999) (EX2008). EX2004 at 71-86, 127-140, and 179-191. Prager is similar to Freeman in that it discloses a 3D space that includes a “stream” where “glance views” can be used to display

additional information on documents in the stream. This can be seen in Figure 1 (reproduced below).

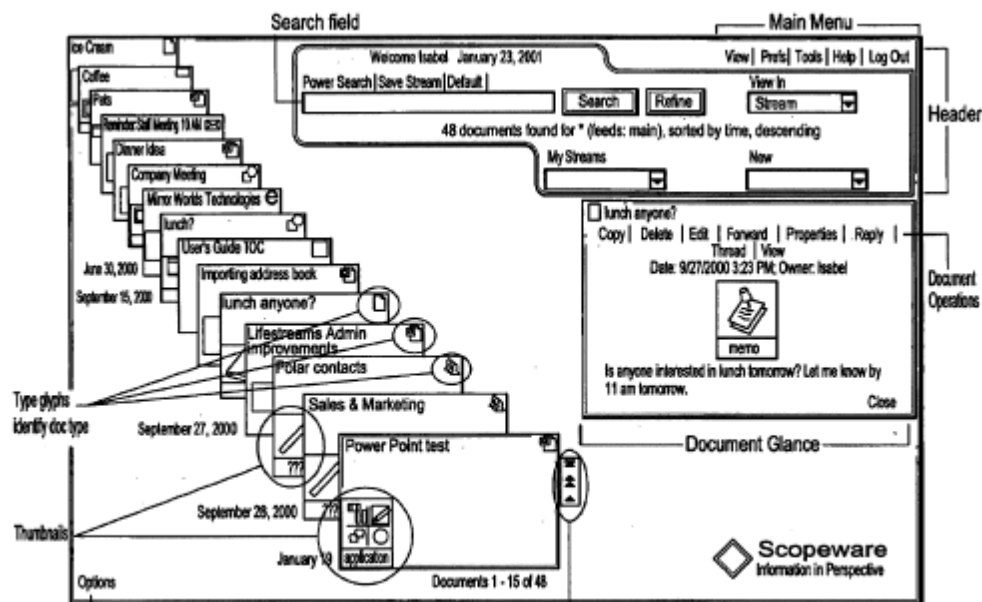


Figure 1 of Prager

In an Amendment dated June 27, 2014, SpaceTime3D canceled the pending claims (Claims 1-66), and added new Claims 67-86. EX2004 at 52-62. While the new claims were similar to the previous claims (*e.g.*, where objects are presented in 3D space), they further provided that the user can interact with the first image in 3D space, resulting in the images in 3D space being “replaced” by “the rendered first webpage” within a 2D space where the webpage can be interacted with to

acquire (and display) additional information.

During an interview, additional amendments were agreed upon to place the claims in condition for allowance. EX2004 at 21-30. In particular, Claim 82 (issued Claim 14) was amended (by the Examiner) to include 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.” *Id.* Clearly, the Examiner believed that the “replacing” step was critical to the allowance of the ‘048 Patent.

SpaceTime3D then filed a continuation, which resulted in the ‘654 Patent. Before a first Office Action could issue, SpaceTime3D filed a Preliminary Amendment, cancelling the originally filed claims and adding new Claims 67-86. EX2005 at 211-225. Claims 67-86 were similar to the claims that were allowed in the ‘048 Patent.

In response, the Examiner contacted SpaceTime3D's counsel, and suggested amendments that would place the claims in condition for allowance. *Id.* at 6-19. Those amendments, which were entered by way of an Examiner's Amendment, provided that the images were presented “in a three-dimensional space,” and that, in response to interacting with an image in 3D space, “replacing said plurality of

images within said three-dimensional space with one of said first, second, and third objects corresponding to said one of said plurality of application within a two-dimensional space in response to said first interaction, receiving a second interaction by said user with said one of said first, second, and third objects, within said two-dimensional space.” *Id.*

In allowing the claims, the Examiner stated that “[t]he following is an examiner’s statement of reasons for allowance: The present invention teaches *converting outputs* of a plurality of applications *into a plurality of images* displayed in a three-dimensional space, *replacing the plurality of images with the output of the first application* in a two-dimensional space in response to the first user interaction with the first image, and modifying the first application-specific data in response to the second user interaction with the output.” *Id.* (emphasis added). This together with the Examiner’s amendment emphasizes, yet again, the importance of the “replacing” step and that the images are of “outputs” of the applications (*i.e.*, objects *and* application-specific data) and that an interaction on an image replaces the images with “the output” (*i.e.*, the previous output, thereby allowing the user to resume where they last left off).

Similar claims were then presented and allowed during prosecution of the

'868 Patent. APPLE1002 at 22-29 and 68-80. SpaceTime3D also amended the Abstract to provide “replacing the output(s) in two-dimensional space with the images in three-dimensional space, and replacing the images in three-dimensional space with the output from the selected application in two-dimensional space.” *Id.* at 53-66.

C. Level Of Ordinary Skill In The Art

PO generally agrees with the Board's definition of a POSITA. Decision at 19-21. The definition includes PO's expert, Dr. Schaefer, and the named inventor on the '868 Patent, E. Eddie Bakhsh.

III. CLAIM CONSTRUCTION

Petitioner identified two terms in the '868 Patent that need to be construed, including “3D space” and “2D space.” The other terms should be given their plain and ordinary meaning.

A. “2D Space” and “3D Space”

Both Petitioner and PO agree on the constructions of “3D space” and “2D space.” Decision at 21-22. However, it is important to note that these constructions are derived from the Markman Order issued by the District Court in *SpaceTime3D, Inc. v. Samsung Elecs. Co., Ltd., et al.*, No. 2:19-cv-00372-JRG

(E.D. Tex.). EX2012. As such, these constructions should be viewed in light of the Court's attendant reasoning.

During litigation, Samsung argued that a 3D space must include 3D objects, or cannot include 2D objects. In 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." *Id.* 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. In other words, in determining the presence of a 2D or 3D space, it is irrelevant whether the objects themselves are 2D or 3D. What is important is the space in which the objects are displayed.

IV. OVERVIEW OF PETITIONER'S PRIMARY REFERENCES

A. Anthony

In Grounds 1A, 2A and 3A, Petitioners rely on Anthony (APPLE1007). Anthony is similar to prior art 3D GUIs that were considered during prosecution, where everything takes place in 3D space. *See supra*, Section II.B (discussing

Gottesman, Freeman and Prager).

As shown in Figure 4 (reproduced below), files or folders are presented in a “dynamic timeline” in a 3D environment, where the items are placed “in some logical order using an attribute shared by each of the items.” APPLE1007 at [0011]. One item in the group (*e.g.*, a file or a folder) is designated by the user (*e.g.*, by clicking on it) as “a focal group” and “is displayed at a primary point of focus in the GUI.” *Id.*; *see also id.* at [0066] (“the focal group 509 may be placed in the front and center of the GUI view”). “The remainder of the groups are displayed on either side of the focal group based on their ordering ... such that ... [they] appear to be less prominent to the user than the focal group.” *Id.* at [0011] and [0012].

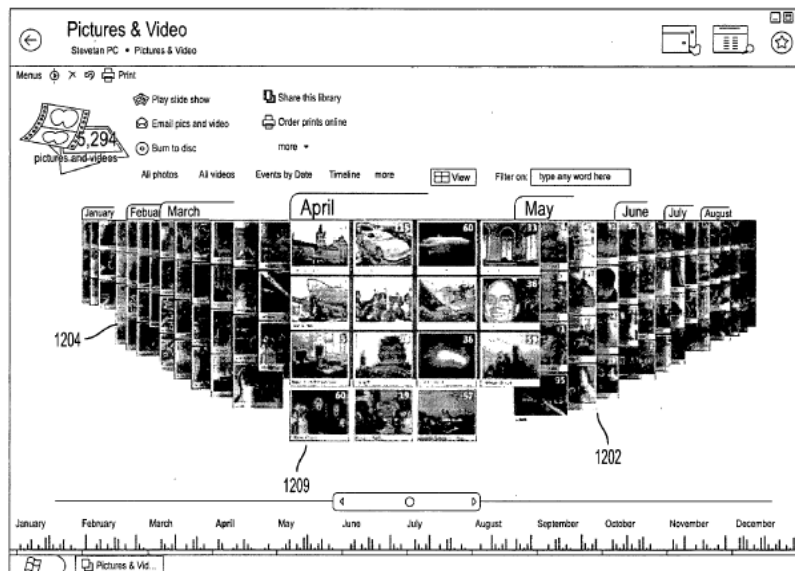


FIG. 4

In Figure 4, the focal group are digital pictures that were taken in April. “When the user selects a new focal group [e.g., May, as shown in Figure 12A], the system may initiate a series of steps to animate the process of changing focus from one group of icons to another.” *Id.* at [0059]. In other words, “the GUI is updated to reflect the view from the conceptual camera’s position.” *Id.* at [0060]. “[T]he conceptual camera provides for a ‘zooming’ effect that ***allows the focal group 509 to always remain fully visible in the foreground***, more prominently displayed, while ***the non-focal groups recede to the background***, less prominently displayed on either side of the focal group, according to the ordering attribute.” *Id.* at [0050] (emphasis added).

In Anthony, *the dynamic timeline is three-dimensional* and is *presented exclusively in a 3D environment*. See, e.g., *id.* at [0043] (“[T]hree dimensional (3D) graphics technology may be used to provide the dynamic timeline view in a 3D environment.”). If the user clicks on a non-focal group, it is animated to the foreground of the 3D space (becoming the focal group). See, e.g., *id.* at [0059] (“When the user selects a new focal group, the system may initiate a series of steps to animate the process of changing focus from one group of icons to another.”). If the user double-clicks on the focal group, then the item is presented in the 3D environment, either by “attempt[ing] to open the file” (e.g., if the item is a file) or presenting the item on a new timeline (e.g., if the item is a folder). See, e.g., *id.* at [0047]. Either way, all objects are presented in 3D space. In fact, the only mention of 2D GUIs in Anthony is in the prior art, all of which are criticized. See, e.g., *id.* at Figures 2 and 3 and [0004-0008].

Petitioner acknowledges the exclusive 3D nature of Anthony and only cites to this reference for its disclosure of a timeline in a 3D space, where items are displayed chronologically. However, in the claimed invention, it is the *applications* that are arranged based on the last time they were opened or interacted with. In Anthony, the timeline is *not for applications*, but *for files*. Anthony

points out that with the advent of digital cameras, hundreds if not thousands of digital photograph images may be stored on a computer and that it can be very difficult to view, find and select a particular image. *Id.* at [0003-0004].

Thus, while Anthony may allow a user to quickly find a file from thousands of files, the claimed invention allows a user to quickly switch from one application to another, where each *application* is (a) presented in the order in which *it was last opened or used* and (b) presented so that the user can see where they last left off (by capturing images of the application-specific data).

Petitioner argues that Anthony is not limited to images but can also be used to arrange other files chronologically, including “Excel spreadsheets.” Pet. at 12. While it is true that the timeline in Anthony can be used to display other files (*i.e.*, Excel files), it does so based on the last time the *file* was opened or edited—not the last time the *application* (*e.g.*, Excel) was opened or interacted with. In fact, as discussed by Dr. Schaefer, it would make no sense to present images of open application in Anthony’s 3D timeline. EX2016 at [70].

Support for this distinction can be found in Anthony, where files are presented in a 3D timeline and arranged based on an ordering attribute. The open applications, however, are identified on the taskbar. See, *e.g.*, APPLE1007 at

Figure 4 (bottom left corner). This is because the number of open applications is negligible compared to the number of files stored on the computer. EX2016 at [71]. As such, a POSITA would not have used the 3D timeline of Anthony to present open applications in the order in which they were last used. *Id.* Not only would this be duplicative of the taskbar, but Anthony itself teaches that for smaller groupings such as applications “[prior art] techniques are useful.” *Id.*; *see also* APPLE1007 at [0008].

B. Hanggie

Hanggie (APPLE1006) describes a “3D compositing desktop window manager” for presenting content in a 3D space, including content that was originally configured for presentation in a 2D space. *Id.* at [0001]. Hanggie *transforms* this content using a “3D compositing desktop windows manager” referred to as a “CDWM,” which “uses advanced textures, lighting, and 3D transformations” to present the content in a 3D environment. *Id.* at [0012] and [0025].

“In order to draw the window in 3D, the CDWM may define the window anatomy using various components, including a base content object and one or more child content objects.” *Id.* at [0057]. As shown in Figure 3 (reproduced

below), [t]he frame or base content 303 of the window 301 may host child content including buttons 305 (e.g., used to restore, maximize, minimize, close the window, etc.), and indicative icon 307, scrollbars 309, menu bar 311, and window caption text 313.” *Id.* at [0058].

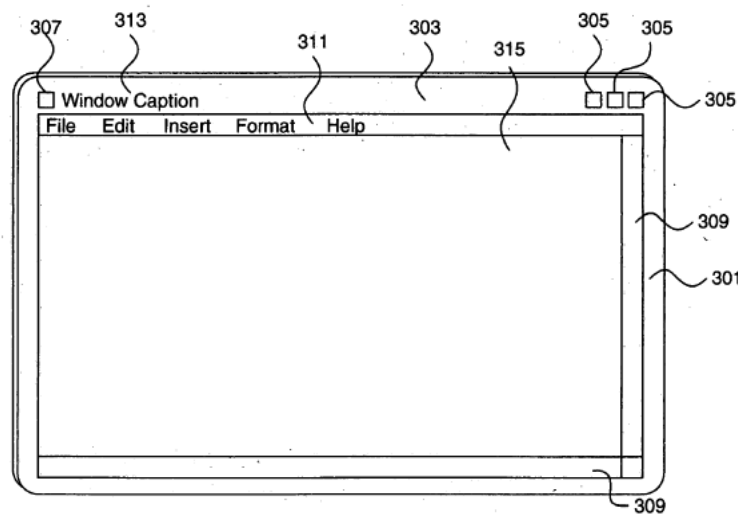


FIG. 3

Hanggie provides that both the window and its contents are active in 3D space. *See, e.g., id.* at [0060] (describing using a mouse to select frame buttons (e.g., minimize, close, etc.) and to alter application-specific data). Thus, not only can the window be interacted with in 3D space (e.g., to maximize the window, to minimize the window, to close the window, etc.), but so too can its contents (e.g., to alter text in a Word® document, to alter numeric entries in an Excel®

document, etc.).

Hanggie does provide that there are times when its CDWM (*i.e.*, 3D transformation) should not be used. First, “in systems that do not have the video hardware necessary to efficiently perform the processor intensive calculations required for desktop compositing (e.g., in systems with low video memory, or with no 3D acceleration hardware) the CDWM and/or the operating system may allow the user to select whether the composite or legacy drawing mode should be used.” *Id.* at [0092]. Second, legacy drawing mode may also be selected “based on power-conservation conditions. For example, when a portable device is disconnected from AC power source and switches to battery power, the operating system, may enforce legacy drawing mode.” *Id.*

Petitioner argues that because legacy drawing mode requires less power, and because windows in Hanggie may include “buttons 305 (e.g., used to restore, maximize, minimize, close the window, etc.)” (*see* APPLE1006 at [0058] and Pet. at 19), “a POSITA would have recognized that those same advantages [*i.e.*, reduced processor and power requirements] could be obtained by switching from a 3D to a 2D state upon user selection of a maximize control button.” Pet. at 26-27.

Dr. Schaefer explains that a POSITA would not be motivated to switch from

3D to 2D when the user maximizes a window. Hanggie discloses various lighting effects that are advantageous to rendering windows whether or not the window is maximized including the use of diffuse reflections (*Id.* at [77]), specular reflections (*Id.* at [78]), reflectivity (*Id.* at [79]), and refraction (*Id.* at [80]). Simply maximizing a window would not motivate a POSITA to disable the CDWM (3D rendering) and all of these effects.

Moreover, Hanggie describes at length the benefits of transparency (*Id.* at [93]) or simulated frosted glass, which “provides a rich user experience that makes a GUI of the present invention more desirable.” *Id.* at [94]. Moreover, the frosted glass “aids the user to understand window layer order in a multi-window environment.” *Id.* at [95]. “[T]he physically modeled distortion of the background” “allows the user to immediately distinguish between background and foreground content.” *Id.* at [95]. In addition, “frosted glass makes it easier for a user to read and/or view content on the screen.” *Id.* at [96]. Even a maximized window will have windows behind it in a multi-window environment and thus benefit from the frosted glass effect described by Hanggie as well as other rendering effects. Therefore, a POSITA would not be motivated to return to 2D rendering and thus a 2D space in the case of a maximized window and forego all of

the other benefits of 3D rendering described by Hanggie.

As explained below (*infra*, Section XX), even if a POSITA would have been motivated to switch from 3D to 2D as Petitioner contends, the claimed inventions require much more. For example, Claim 1 requires (1) the opening and displaying of active applications, *including objects and application-specific data*, (2) generating and displaying images of the *objects and application-specific data* in 3D space, and, in response to an interaction on a particular image, (3) replacing the images with the corresponding active application (*i.e.*, the object and application-specific data as previously presented) in 2D space, where the application-specific data can be further modified.

In Hanggie, regardless of whether the system is operating in CDWM or legacy drawing mode (3D or 2D), the windows are always active. As such, they are not images as claimed, but active applications where the user can interact with both the window (object) and its contents (application-specific data) in 3D space.

Petitioner argues that the “frame buttons” in Hanggie—specifically the “maximize” button—enables “selection between 2D and 3D viewing mode.” Pet. at 24. First, this is not true as maximizing a window merely results in the window being enlarged in 3D space—not switching from a 3D space to a 2D space as

Petitioner contends. Second, as discussed at length by Dr. Schaefer, there is no motivation for such a modification. EX2016 at [80]. Finally, even if a POSITA would have been motivated to switch from CDWM to legacy drawing mode in response to a window being maximized, this still would not result in the claimed “replacing” feature as Hanggie does not generate *images*, let alone images of *both objects and application-specific data*. *Id.* at [82].

Not only does Hanggie not disclose the claimed invention, but it actually teaches away. *Id.* at [84]. Hanggie provides that a reversion to legacy drawing mode may be accomplished automatically “based on power-conservation conditions.” APPLE1006 at [0092]. Thus, to reduce power consumption, Hanggie teaches disabling the CDWM (or 3D), whereas the claimed invention generates and displays images in 3D space because images are easier to manipulate, skew, etc., in 3D space than the actual active applications. EX2016 at [84]. In other words, Hanggie saves power by displaying active applications in 2D space, whereas the claimed invention saves power by displaying images of open applications in 3D space. *Id.* Petitioners’ argument that a POSITA would have been motivated to implement a different solution is a clear example of impermissible hindsight.

C. Matthews

In Ground 1B, 2B, 1C and 2C, Petitioner further relies on U.S. Patent Publication No. 2006/0107229 (“Matthews”) (APPLE1008), but only with respect to dependent Claims 6-8 and 15-17. Pet. 4. Matthews discloses a 3D GUI that “utilizes a three-dimensional transformation to move a presently displayed work area, for example a desktop with open windows, revealing a background presentation area behind it.” *Id.* at Abstract.

Importantly, Petitioner is only citing Matthews for its disclosure of a 3D space that includes a desktop (dependent Claims 6 and 15), a web browser (dependent Claims 7 and 16), and a second 3D immersive space (*i.e.*, 3D within 3D) (dependent Claims 8 and 17). While Patent Owner disagrees with Petitioner’s characterization of Matthews, because this reference is only being cited with respect to dependent claims, if Grounds 1A and 2A (involving Anthony and Haggie) are denied, then so too must Grounds 1B and 2B (further involving Matthews). *See, e.g., Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331, 1344 (Fed. Cir. 2009) (it is an “irreconcilable inconsistency” to find a dependent claim obvious when the claim from which it depends is found to be nonobvious).

D. Robertson

In Ground 1C and 2C, Petitioner further relies on U.S. Patent No. 6,414,677 (“Robertson”), but only with respect to dependent Claim 7. APPLE1009. Importantly, Petitioner is only citing Robertson for its disclosure of a 3D space that includes a web browser (dependent Claim 7). While Patent Owner disagrees with Petitioner’s characterization of Robertson, because this reference is only being cited with respect to a dependent claim, if Grounds 1A and 2A (involving Anthony and Hanggie) are denied, then so too must Grounds 1C and 2C (further involving Robertson). *See, e.g., Callaway Golf Co.*, 576 F.3d at 1344 (Fed. Cir. 2009).

V. PETITIONER FAILS TO ESTABLISH OBVIOUSNESS AS TO ANY CHALLENGED CLAIM

The references cited by Petitioners fail to disclose critical features of the claimed invention, lack support for the motivation to combine the cited prior art in the same manner as the claimed inventions, and actually teach away from the claimed invention.

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

1. Combining Anthony and Hanggie Does Not Disclose The Claimed Limitations (Grounds 1A and 2A)

Grounds 1A and 2A are Petitioners’ only challenge to the independent claims of the ‘868 Patent, *i.e.*, Claims 1, 10, and 19. Therein, Petitioners argue that

Haggie discloses the claimed “replacing” feature, and only relies on Anthony for its disclosure of arranging items chronologically in 3D space.

As discussed above, a critical feature of the invention is how open applications are presented to the user in 3D space and how the user then interacts with a particular application in 2D space. 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 ‘868, ‘654 and ‘048 Patents provide for a different sequence of events—events involving the opening and displaying a plurality of applications (objects and application-specific data), allowing the user to modify the application-specific data, displaying images of the open applications in 3D space, and replacing the plurality of images with a single, active application in 2D space, where the application is selected based on the interaction with one of the plurality of images in 3D space.

As Dr. Schaefer explains, it was customary in GUI design for everything to occur in one space. EX2016 at [91]. By way of example, in Microsoft Windows®, everything occurs on a single desktop GUI. The same is true for Anthony and Haggie, 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 was counterintuitive—going 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 applications 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 application. Not only does this require going from a 3D space to a 2D space, it also requires the actual, active application to “replace” the plurality of images.

It should be appreciated that the image that is displayed in 3D space is not just an image of the application but *an image of its associated object (e.g., a window) and application-specific data (e.g., the window's content)* as previously opened and displayed on the display device. That way *when the user is scrolling*

through the images in 3D space, the user can see both the open applications and where they last left off on each application. For example, Claim 1 provides “generating at least a plurality of images ... wherein said first image is an image of at least a portion of a first object generated by said first application and having first application-specific data.” APPLE1001 at 38:59-39:2.

The same is true for the corresponding application that is displayed in 2D space. The interaction with an image does not result in the corresponding application being opened but displaying the *previously* opened version of the application including the application-specific data, so that the user can resume where they last left off. To this end, Claim 1 provides “replacing said plurality of images within said 3D immersive space with one of said first, second, and third objects corresponding to said one of said plurality of applications within said 2D space ... receiving at least one interaction ... and modifying said one of said, first, second, and third application-specific data in response to said at least one interaction.” *Id.* at 39:40-50 (emphasis added).

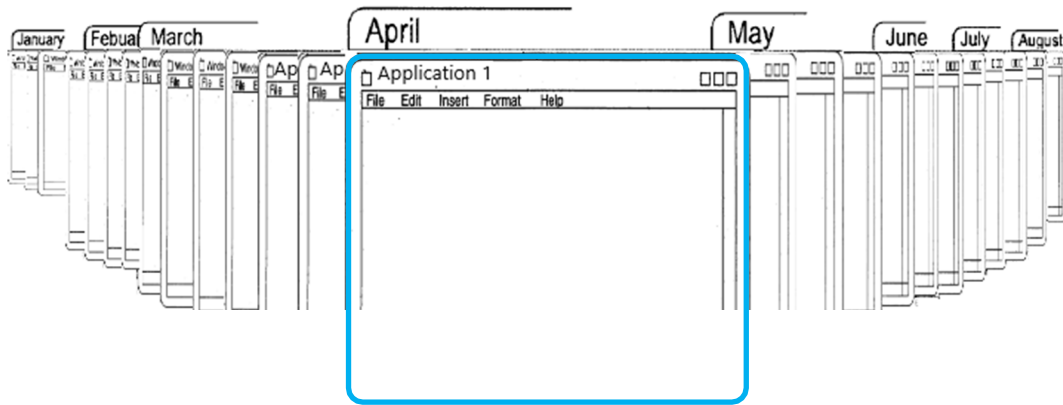
By displaying “said ... object” in 2D space and allowing the user to modify “said ... application-specific data” (*i.e.*, the object and application-specific data that was displayed on the display device prior to the image being generated), the

user can pick up where they last left off. As such, the claimed invention is not a way to open an application or a file but to switch from one open application to another to allow the user to resume “where the user last left off [with] the items that were output ... staged just as they were [prior to switching applications].” *Id.* at 21:5-11.

a) Anthony and Hanggie do not Disclose the Claimed Chronological Order Where Images are Displayed Based on When the Application was Opened or Interacted With

Petitioners rely on Anthony for its disclosure of displaying items in a 3D space based on an “ordering attribute.” In one embodiment, the selected “ordering attribute” is chronological, “e.g., by using a date of creation or date of edit attribute as the ordering attribute.” APPLE1007 at [0042]. However, as Petitioners point out, it is “*data objects*” (e.g., digital photograph images, etc.) that are arranged based on the ordering attribute, not applications. Pet. at 2-3.

Petitioners argue that “a POSITA would have understood and found it obvious that a plurality of application windows could be organized and represented within Anthony’s timeline” (Pet. at 23) and provided an *annotated* version of Figure 4 from Anthony, replacing the plurality of photographs from different time periods with individual applications (Pet. at 24) (reproduced below).

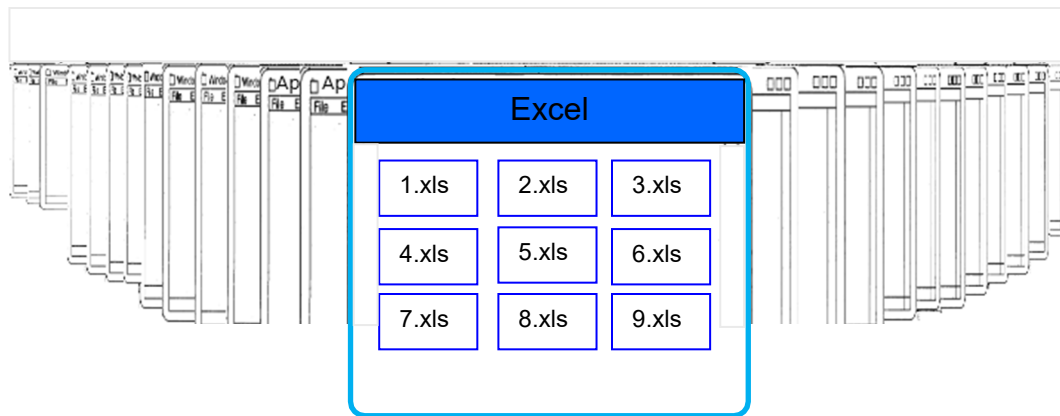


Petitioner's Annotated Version of Figure 4

As discussed above, the 3D timeline in Anthony is for “displaying files and folders.” APPLE1007 at Abstract. While Anthony does provide that “file type” can be an ordering attribute (*id.* at [0042] and [0049]), this attribute would allow the user to locate “files or folders” for a particular application. Thus, as Dr. Schaefer illustrates, a more accurate annotation of Figure 4 would be as follows, thereby allowing a user to more easily locate files or folders for a particular application. EX2016 at [98].



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Patent Owner's Annotated Version of Figure 4

While the individual files or folders (*e.g.*, 1.xls, 2.xls, etc.) within the application (*e.g.*, Excel, etc.) may be ordered by name, size, date, etc. (*see id.* at Figure 3), this would not result in the claimed invention where individual applications are displayed in an order based on a last time that each application was opened or interacted with by the user.

It would also not be an obvious modification. First, doing so would not “allow the user to more easily ... find a desired file or folder.” *Id.* at Abstract. Second, displaying an “application window,” as Petitioner suggests, would not allow the user to view the application where the user last left off. In Anthony, once a file is located, “double-clicking the file will cause the system to attempt to open the file.” *Id.* at [0047]. In the claimed invention, the applications are already

opened and populated with application-specific data. This is important as the user should be able to determine in 3D space which applications are open and where the user last left off.

Finally, Anthony teaches that the taskbar is sufficient to illustrate *open applications*. See, e.g., *Id.* at Figure 4 (bottom left corner). Thus, while a POSITA may have been motivated to use the 3D timeline to display stored files based on application type (as shown in Patent Owner's annotation version of Figure 4, above), the applications themselves would not be arranged in the order in which they were last used. EX2016 at [101]. Petitioner's argument to the contrary is but another example of impermissible hindsight.

As further explained by Dr. Schaefer, it would make no sense, nor would it be obvious, to use the 3D timeline to present open applications in an order in which they were last used. EX2016 at [102]. Support for this can be found in Anthony, where *saved files* are presented in a 3D timeline, whereas *open applications* are presented on the taskbar. See, e.g., APPLE1007 at Figure 4 (bottom left corner); EX2016 at [102]. This is due to the number of applications that are typically opened at one time (minuscule) versus the number of files that are stored on the computer (relatively large). *Id.* Not only would the modification

suggested by Petitioners be duplicative of the taskbar but, according to Anthony, “[prior art] techniques are [sufficient] in organizing smaller groupings of files and folders.” APPLE1007 at [0008].

Hanggie does not disclose any order for displaying items in 3D space, let alone the claimed order. As such, Hanggie cannot make up for this deficiency in Anthony. For this reason alone, the patentability of the Challenged Claims of the ‘868 Patent should be confirmed.

b) Anthony and Hanggie do not Disclose “Replacing” Images in 3D Space That Include Both Objects (e.g., Windows) and Application-Specific Data (e.g., the Windows’ Contents)

Anthony does not disclose or suggest a 2D space or going from a 3D space to a 2D space. Petitioner agrees but argues that this feature is disclosed in Hanggie. According to Petitioner, Hanggie teaches “control buttons, with the buttons for enabling selection between 2D and 3D viewing modes.” Pet. at 24. In particular, Petitioner argues that the “control buttons” allow the user to “close, minimize, maximize, or restore a window” and that clicking on the “maximize” button “would result in Anthony’s user interface switching from a 3D timeline view ... to a 2D view of the maximized window.” *Id.* at 26.

The claims, however, do not merely require going from 3D to 2D space but

“replacing” *a plurality of images* in 3D space with *an active application* in 2D space, where the images include *both objects and application-specific data*. In contradistinction, Hanggie does not generate images but displays active applications in 3D space. In fact, this is why the window shown in Figure 3 of Hanggie can be “maximized,” *i.e.*, it is active. But it is not just the window that is active—so too is the content (*e.g.*, application-specific data). Both experts agree on this point. EX2016 at [105]; EX2017 at 31:4-40:5, 40:7-42:18, 43:11-45:5, 47:12-51:13, and 70:5-71:16 (testifying regarding the functionality of control buttons 305 in context of Dr. Fuchs’ self-generated composite figure of Hanggie Fig. 3 and Anthony Fig. 4).

As discussed in Section IV(B), Hanggie describes a “3D compositing desktop window manager” for presenting content in a 3D environment. APPLE1006 at [0001]. “In order to draw the window in 3D, the [3D compositing desktop window manager] may define the window anatomy using various components, including a base content object and one or more child content objects.” *Id.* at [0057]. As shown in Figure 3 (reproduced below), “[t]he frame or base content 303 of the window 301 may host child content including buttons 305 (*e.g.*, used to restore, maximize, minimize, close the window, etc.), and indicative

icon 307, scrollbars 309, menu bar 311, and window caption text 313.” *Id.* at [0058].

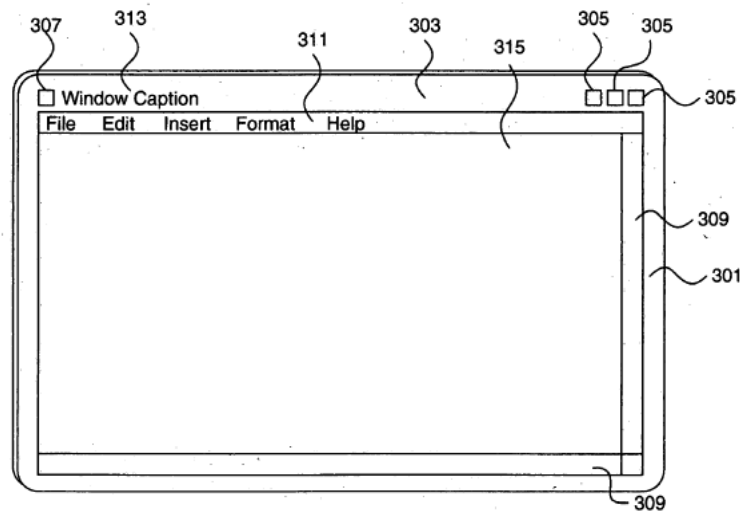


FIG. 3

Hanggie goes on to provide that not only can the window be interacted with in 3D space (*e.g.*, by minimizing, maximizing, scrolling, etc.), but so too can the contents of the window (*e.g.*, “text by a word processor, numeric grid by a spreadsheet, or images by a photo editing application”). *Id.* at [0060]. Petitioners’ expert agreed. EX2017 at 47:12-51:13; EX1003 at ¶[114] (“As is known in the art, in response to a user entering a key on a keyboard when interacting with a Microsoft® Word® application window, application-specific data, such as the text content in the window is modified to reflect the input key.”). This is accomplished

by “map[ping] mouse hit-test points relative to application-defined, content-local, 3D coordinates, and deliver[ing] mouse event notifications to the application.” *Id.* As such, Hanggie does not disclose presenting a plurality of images in 3D space, but a plurality of active windows.

While Hanggie teaches that a window can be “maximized” or enlarged, that does not constitute presenting an application in 2D space as Petitioners contend. Petitioners acknowledge this but argue that a POSITA would have been motivated to modified Hanggie as it would have been “beneficial to switch from a 3D mode to a 2D mode to reduce graphics processing and thereby conserve battery power.” Pet. at 26. This is not true because, as Dr. Schaefer explains below (*infra*, § (c)), images are much easier to manipulate in 3D space than active applications and therefore replacing the active applications with images would itself reduce power consumption, thereby eliminating Hanggie's reason (and motivation) to switch to 2D space.

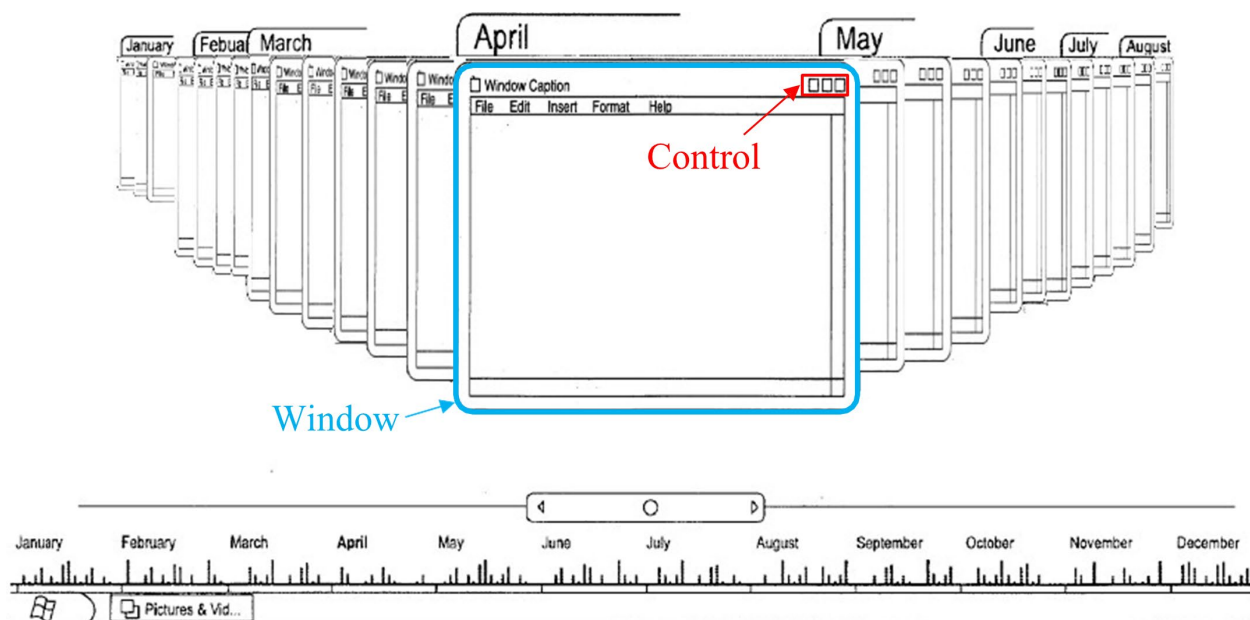
Even if there was motivation to combine, it would not have resulted in “replacing” a plurality of images with an active application as claimed, as Hanggie does not generate any images, and therefore there are no images in 3D space to replace. Dr. Fuchs confirmed this during his deposition. EX2017 at 31:4-40:5,

40:7-42:18, 43:11-45:5, 47:12-51:13, and 70:5-71:16 (testifying regarding the functionality of control buttons 305 in proposed combination). Thus, even if clicking on the maximize button resulted in the window being displayed in 2D space, there is no “replacing” images with an active application as claimed (*i.e.*, the fact that the user can interact with the window, or the title bar (maximize button) portion thereof, is evidence that the window is not an image but active).

This is true regardless of whether the claimed combination is Anthony in view of Hanggie (Ground 1A) or Hanggie in view of Anthony (Ground 2A) (collectively “HAC”), as *Petitioners are relying exclusively on Hanggie’s “maximizing” button for switching to from 3D to 2D.* See Pet. at 26 and 32.

With respect to the proposed combination, Dr. Fuchs provided illustrations, including “the combined figure shown below, [where] the focal group of windows in Anthony’s Fig. 4 are replaced by the window shown in Hanggie’s Fig. 3.” APPLE1003 at [63]. According to Dr. Fuchs, “each window has a window caption and control buttons, consistent with the Hanggie’s teachings.” *Id.* He confirmed during his deposition that these control buttons remain active in the proposed combination and could be interacted with to, for example, maximize the window, close the window, etc. EX2017 at 72:9-14 (“In a combination, Anthony-Hanggie's

system, which I refer to as "HAC," the control button 305 could well be used -- would have been used by a POSITA to do some form of maximize or minimize or delete, and I talk about that in a number of different places.").



Again, this alone illustrates that the proposed combination does not read on the claimed inventions. As explained by Dr. Schaefer, if the window in Dr. Fuchs' proposed combination is an image as claimed, then the user would not be able to maximize the window, minimize the window, close the window, etc., through the control buttons on the window, as the buttons would be images, not active. EX2016 at [114]. This is why the claimed invention switches from (inactive)

images of applications in 3D space to an (active) application in 2D space (*i.e.*, to allow the user to interact with the object and modify the application-specific data.

Id. **By definition, because the user can interact with the control buttons on the window, the window (object) is not an image as required by the claims of the '868 Patent.** *Id.*

For example, Claim 1 requires the first image to include “the first object” (*e.g.*, the window) and “the application-specific data.” Petitioners acknowledge that the window is the claimed object. *See, e.g.*, Pet. at 41. Petitioners then argue, however, that this same window is an image. *See, e.g.*, Pet. at 52. Petitioners cannot have it both ways. If the user can interact with the maximize button, then the image does not include the object (window). EX2016 at [115]. If the image includes the object (window), then the user would not be able to maximize the window as argued by Petitioners. *Id.*

The logic (or illogic) of Petitioner's argument stems from their expert, Dr. Fuchs, who opined that “[a] POSITA would have found it obvious to implement Hanggie's maximize control button such that manual user selection of that button would result in Hanggie's user interface switching from a 3D timeline view, to a 2D view of the maximized window.” APPLE1003 at [69]. Again, the mere fact

that the user can interact with the control buttons on the window illustrates that the window is not *an image* as required by the claims. EX2016 at [116].

This feature (imaging both objects and application-specific data) is not only required by the claims, but paramount to the purpose of the invention. Once an application has been opened and displayed, including generating an object (*e.g.*, a window) having application-specific data (*e.g.*, data), images of the same (*i.e.*, both the object and the application-specific data) are generated and displayed in 3D space. This allows the user to not only see which applications are open (hence the object), but where the user last left off (hence the application-specific data). The user can then interact with a particular image, resulting in the images being replaced with the previously opened application (*i.e.*, “the object” and “the application-specific data”). EX2016 at [117]. As such, to allow the user to identify open applications and to see where they last left off in 3D space, the image must include both the object (*e.g.*, the window) and the application-specific data (*e.g.*, its contents).

c) There is no Motivation to Combine Anthony and Hanggie as Suggested by Petitioners

There are other flaws with Petitioners' arguments, including motivation to combine. As Dr. Schaefer explains, it is the active nature of the applications in

Hanggie that requires increased processing and memory, which results in greater power consumption, and provides the motivation (as argued by Dr. Fuchs) to switch from 3D to 2D. *See, e.g.*, EX2016 at [118]; *see also* APPLE1006 at [0007] (describing the “CPU intensive calculations” for desktop compositing), [0009] (“desktop compositing is a memory intensive process”), and [0092] (by disabling CDWM “the video graphics processing unit (GPU) is less active and thus consumes less power.”). If HAC (as proposed) did result in the presentation of images in 3D space, then there would be no motivation to switch from 3D to 2D as Petitioners contend. EX2016 at [118].

In other words, active applications are extremely difficult to manipulate in 3D space, requiring additional power, more processing, etc. EX2001 at [10]. According to Dr. Fuchs, Hanggie teaches that in systems that do not have the necessary video hardware, or to reduce power consumption, the system should switch from active applications in 3D space to active applications in 2D space. APPLE1006 at [0092]. However, as images are much easier to manipulate in 3D space than active applications (EX2001 at [10]), replacing the active applications with images would itself reduce power consumption, thereby eliminating the need (or motivation) to switch to 2D space. EX2016 at [119]. As explained by Dr.

Schaefer, “[f]or applications with animations, images of the objects would not have to be sent continuously to the GPU, which is often a bottleneck in 3D graphics. For other applications, displaying images does not require mapping inputs to the object from 3D space, which would result in fewer computations, and, again, fewer images sent to the graphic processing unit ("GPU") when the application specific data is changed.” *Id.* As such, switching from active applications to images in 3D space would eliminate any motivation to switch from 3D to 2D.

Not only is there no motivation to combine, but Hanggie actually teaches away from the claimed invention in that the ‘868 Patent provides for a different solution to reduce power, *i.e.*, display images of open applications in 3D space. EX2001 at [10]. By proposing an alternate solution (*i.e.*, presenting active applications in 2D space), Hanggie actually teaches away from the claimed invention, which is evidence of non-obviousness. *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.”).

Anthony also teaches away from the claimed invention. First, Anthony criticizes the prior art, where items are presented in 2D space. *See, e.g.,* APPLE1007 at [0006] (“Although the use of thumbnails [in 2D space] provides the user with a visual indication of the contents of each file, in a folder that contains many files, it may still be difficult to locate a desired file.”). This alone would dissuade a POSITA from modifying or combining Anthony with any method of replacing items in 3D space with 2D space. EX2016 at [121]. Second, as discussed above, Anthony’s “thumbnail” approach does not suffer from the intensive processing and memory requirements as Hanggie, and thus provides no motivation (or need) to switch from 3D to 2D space. *Id.*

Anthony’s approach is also quite different from the claimed invention. For example, the claims require that if you interact with any image in 3D space (foreground or background), the images are replaced with a corresponding active application. In Anthony, however, if you interact with an item in the background (*e.g.*, a non-focal group), the item moves to the foreground (*e.g.*, becoming the

focal group). *See, e.g.*, APPLE1007 at [0059] (“When the user selects a new focal group, the system may initiate a series of steps to animate the process of changing focus from one group of icons to another.”). And if you interact with an item in the foreground, “the system [will] attempt to open the file” in 3D space. *Id.* at [0047]. In the claimed invention, however, the applications are already opened. As such, the images are replaced with “the object” and “the application-specific data” (as previously displayed). Plus, they are presented in 2D space, not 3D space as taught in Anthony.

d) Board’s Decision to Institute Relies on Petitioners’ Inaccurate Characterization of the Prior Art and the Claimed Invention

The Board relied on numerous incorrect and unsupported statements by Petitioners that it would have been obvious to convert the 3D window disclosed in Hanggie into a 2D window. *See, e.g.*, Decision at 44 (“Petitioner asserts that ‘using the maximize button to switch to a 2D viewing of the window’ would have been obvious.”) and 56 (same). .

However, it is not the object (*e.g.*, window) that is 2D but the space in which the object is presented. As the Court stated in the *Markman Order*, “[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.’” EX2012 at 16. In responds to the argument that Petitioner is making (*i.e.*, that a 2D window satisfies the claim language), the Court stated “Defendants’ construction improperly conflates ‘space’ with ‘objects by requiring that a ‘2D space’ is a virtual space in which displayed objects (not the space) have only height and width, while a ‘3D space’ is a virtual space in which displayed objects (again not the space) have height, width, and depth.” *Id.* “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 characteristics of the space.” *Id.* at 17.

Thus, Petitioner’s argument that it would have been obvious to “switch to a 2D viewing of the window” is not only irrelevant but misleading on the issue of obviousness. This mischaracterization of the of the claimed invention appears to stem from Petitioner’s expert, Dr. Fuchs, who admitted that he did not take into account the Court’s Markman Order in rendering his opinions. EX2017 at 63:24-64:10; APPLE1003 at [34].

Next, according to the claims, for each application, an object is generated having application-specific data. In the context of applications, a POSITA would understand that the claimed object is akin to a window and the application-specific

data is data (or content) that is displayed therein. EX2016 at [126]. Thus, for example, if a user were to open Microsoft Word®, the object would be the window, which includes a title bar (*e.g.*, maximize, minimize, close) and a menu bar (*e.g.*, file, edit, view, etc.). *Id.* The application-specific data would be a particular Word document or file. *Id.* The same would be true for Microsoft Excel, where the object would be the window (*e.g.*, title bar, menu bar, etc.) and the application-specific data would be a particular Excel file. *Id.* This is consistent with the claimed invention where the object (*e.g.*, window) is generated and displayed in response to opening an application and it includes application-specific data (*e.g.*, data) that can be modified by the user. *Id.*

On the one hand, Petitioners assert that both the window (the object) and its content (the application-specific data) are active and can be interacted with, with the user *interacting with the window* (or the title bar) to maximize the window and *interacting with its content*, thereby modifying the application-specific data. *See, e.g.*, Decision at 44 (“Petitioner asserts that ‘using the maximize button to switch to a 2D viewing of the window’ would have been obvious”); and 35 (“According to Petitioner, in Hanggie content related to the applications can include ‘*e.g.*, text by a word processor, numeric grid by a spreadsheet application, or images by a

photo editing application,”” and “when using a word processor application or spreadsheet application, it is well known that a user can interact with the application and edit text and images in the application window.”).

On the other hand, with respect to generating a plurality of images, Petitioners and their expert assert that a POSITA would have generated three windows, where each “window is *an image of at least a portion of an object* (e.g., 2D window) generated by the respective application and having respective application-specific data (e.g., application data, application content object.”).” Pet. at 47 (emphasis added).

Petitioners cannot have it both ways—if the window and its title bar (with maximize button) is active, then it is not an image. Alternatively, if the window and its title bar (with maximize button) is an image, then it cannot be interacted with by the user to maximize the window, as Petitioners contend. This is because those skilled in the art understand that an image of a window would lose all functionality—hence the reason the claims replace the images with the active application in response to the interaction, as this is the only way the user can then interact with the application (*e.g.*, to modify its application-specific data). EX2016 at [129].

Further, if only images of the object and the application-specific data are presented in 3D space, then there would be no motivation to switch to 2D space, as the motivation stems from the intensive processing and memory requirements associated with displaying active applications in 3D space. EX2016 at [130].

In addressing Patent Owner's arguments on this point, the Board stated "when Anthony's dynamic timeline displays inactive images in 3D in the form of *inactive* application windows with control buttons, it would have been obvious to a person of ordinary skill in the art that 'selection of a maximize button corresponding to a particular application window would cause that window to *replace* the [inactive] image previously displayed in 3D with a 2D window that is *active* to receive user inputs.'" Decision at 54 (emphasis in original).

There are several problems with this statement. First, the control buttons are part of the window. EX2016 at [132]. Thus, if the window is *inactive* (as it is merely an image), then so too are the buttons, thereby preventing "selection of a maximize button." Further, if the window and its contents are *inactive* (as it is merely an image), then there would be no motivation to switch from 3D to 2D space. *Id.* Finally, if the window is *active* (allowing selection of a maximize button) and only its contents are inactive (or imaged), then the image would not

include both the object and the application-specific data as claimed.

In light of the foregoing, Petitioners have failed to show that Anthony and Hanggie, either alone or in combination, discloses each and every feature of Independent Claims 1, 10 and 19. The same is true for Dependent Claims 2-5, 9, 11-14, 18, or 20, as they depend from the foregoing independent claims.

e) Anthony and Hanggie do not Disclose or Suggest the Elements Recited in Claims 9, 18, and 20

Claim 9 requires that, when replacing the plurality of images with an active application, further “enlarging a size of at least said one of said plurality of images before replacing said one of said plurality of images with said one of said first, second, and third objects, thereby simulating movement of said one of said plurality of images in a z-axis of said display.” Petitioners merely argue that this would be obvious because “maximizing a window involves enlarging the size of the window (image) until it covers most if not all the display area of the display screen.” Pet. at 67. Again, it is not a *window* that is enlarged in Claim 9 (and Claims 18 and 20), but the *selected image*.

With respect to Claim 9, Petitioners argue that in the proposed combination of Anthony and Hanggie, the 3D window in Anthony’s timeline (the recited ‘image’) would feature application windows with control buttons as taught by

Hanggie. Pet. 23-24, 55-56. Again, if the window (which includes a menu bar that includes a maximize button) is indeed an image, then the maximize button is not active, and if the maximize button is active, then the image does not include the claimed object. EX2016 at [135]. Also, if the application (object and application-specific data) in Hanggie is imaged and presented in the Anthony 3D timeline, then there is no motivation to conserve processing or power by presenting the application in 2D space. *Id.*

f) Anthony and Hanggie do not Disclose or Suggest the Elements Recited in Claim 13

Claim 13 further provides “receiving a request from said user to switch from said 2D space to said 3D space” and “replacing said object in said 2D space with said plurality of images in response to receiving said request to switch from said 2D space to said 3D space.” APPLE1001 at 42:4-10. Thus, *replacing* the objects having application-specific data in 2D space with images of the same in 3D space is *accomplished by “switch[ing] from said 2D space to said 3D space” and in response to a user request “to switch from said 2D space to said 3D space.”*

Petitioner argued that “[i]t would have been obvious to a POSITA that when a user views the three 2D windows (as described above for [1b]) in the DWM mode and then selects the CDWM mode to interact and view the windows in 3D,

HAC's computer would generate a plurality of images in the form of 3D windows that respectively correspond to the three 2D windows." Pet. at 44-45; *see also* Pet. at 75 ("See *supra* [1c-2]") and 47 (referencing [1c-1]).

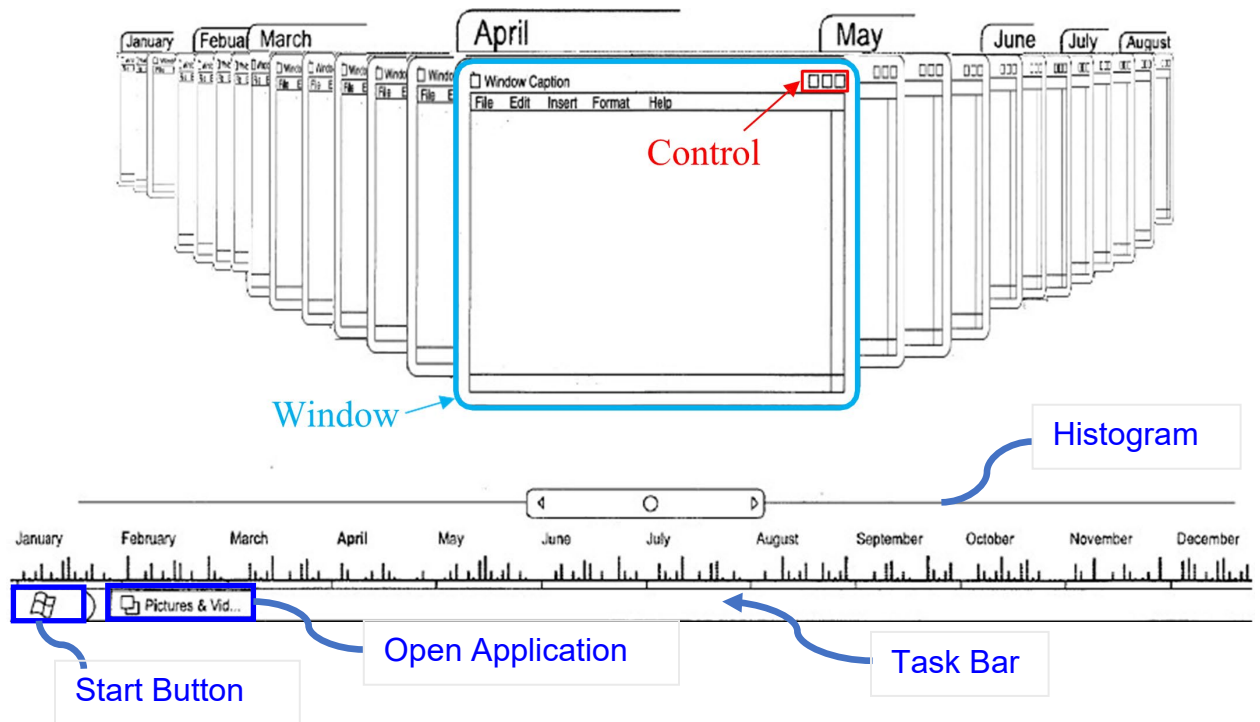
In its Decision, the Board found that "Petitioner, however, does not demonstrate a reasonable likelihood of prevailing in showing the subject matter of claim 13 would have been obvious over the combination of Anthony and Hanggie." Decision at 65. In particular, the Board stated that "Claim 13 shows that the patentee knew how to restrict the claim to 'switch from said 2D space to said 3D space' (*id.* at 52) and that "[the] Petition does not explain how the combination of Anthony and Hanggie teaches or suggests [this feature]" (*id.* at 62).

This is because the cited references, even when combined as suggested by Petitioners, do not teach or suggest the features recited in Claim 13. First, ***there is no switching from 2D space to 3D space*** as recited in Claim 13. In the proposed combination (reproduced below, with annotations), the 3D timeline is presented *together with* 2D objects (*e.g.*, histogram) *on top of* a 2D desktop. In other words, both 2D and 3D space can be seen (concurrently) in Petitioners' proposed combination. The taskbar portion of the 2D desktop, which a POSITA would understand to be a 2D space, can be seen at the bottom of the proposed

combination (reproduced below), having a Windows “start” button and an “open application” icon. EX2016 at [139].

Thus, to the extent it would have been obvious to go from the DWM mode to the CDWM mode, as suggested by Petitioner (Pet. at 44-45), this would *not* involve switching from 2D to 3D space. EX2016 at [140]. As the Board stated in its Institution Decision, while this feature is not recited in Claim 10, it is recited in Claim 13. *See, e.g.*, Decision at 49-50 (“Mr. Bakhsh opines that ‘[i]n Hanggie, everything is presented and active in 3D space. There is *no switching back-and-forth between 2D and 3D.*’ Claim 1, however, does not recite ‘switching from a 3D space to a 2D space’ or ‘switching between 3D space and 2D space.’ Instead, the ‘replacing’ limitation recites ‘*replacing* said plurality of *images* within said 3D immersive space *with* one of said ... *objects corresponding to said one of said plurality of applications* within said 2D space.’”) (emphasis in original) (internal citations omitted).

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Also, there is no motivation to switch from 2D to 3D space as claimed. First, Petitioners argue that Hanggie provides motivation to disable the CDWM (3D) mode (*i.e.*, go from 3D to 2D) in “systems that do not have the video hardware necessary” or “when a portable device is disconnected from an AC power source and switches to battery power.” APPLE1006 at [0092]; *see also* Pet. at 3 (“Hanggie [goes] between 2D and 3D drawing modes based on a number of factors including system capabilities and/or power conservation.”). According to Petitioners, “a user may want to [sic] the computer to operate in the legacy drawing mode when the computer has ‘low video memory’ or ‘no 3D acceleration

hardware.” Pet. at 21-22.

Again, Petitioners cannot have it both ways. The system either has sufficient memory or low memory. EX2016 at [142]. As such there would be no motivation to go from 3D to 2D and then “switch” back from 2D to 3D as claimed. *Id.* The same is true for system capabilities. Either the system has “the video hardware necessary to efficiently perform the processor intensive calculations required for desktop compositing” (APPLE1006 at [0092]) or it does not. *Id.*

Second, even if there was motivation to “switch” from 2D to 3D, it would not be to present images of open applications in 3D space. First, the proposed combination does not include an image of the object (*e.g.*, window) as claimed, as the window (or the title bar buttons) are not images but active. *Id.* at [143]. Second, the proposed combination includes a “taskbar” (*see* annotation above) that includes icons for open applications. A POSITA would not duplicate this by providing images of open application on a 3D timeline when the same information is presented on the taskbar in the combination proposed by Petitioners. *Id.*

Thus, not only is there no motivation to combine the references as recited in Claim 13, but the proposed combination does not render Claim 13 obvious as there is no “switching” from 2D to 3D as claimed. Instead, Petitioners’ proposed

combination presents both 2D and 3D spaces contemporaneously. *Id.* at [144].

2. Combining Anthony, Hanggie, and Matthews and/or Robertson Does Not Disclose The Claimed Limitations (Grounds 1B/C and 2B/C)

In Grounds 1Bb and 2B, Petitioners argue that Claims 6-8 and 15-17 are obvious over Anthony and Hanggie (HAC) in view of Matthews. First, it should be pointed out that Grounds 1B and 2B do not address any independent claim. As such, if the Board denies Grounds 1A and 2A, at least with respect to Claims 1, 10, and 19, then it must (as a matter of law) also deny Grounds 1B and 2B. *See, e.g.*, 37 C.F.R. § 1.75; *see also Callaway Golf Co.*, 576 F.3d at 1344.

Second, Matthews is only cited by Petitioners for its disclosure of three features: (1) “displaying a fourth image on said display device, said fourth image being an image of a desktop having at least one other application,” (2) “where each one of said plurality of applications comprises a web browser application,” and (3) “displaying at least fourth and fifth images in a second 3D immersive space.” While Patent Owner respectfully disagrees with Petitioners’ characterization of Matthews, it doesn’t make up for the deficiencies of Anthony and Hanggie, as discussed above with respect to Claim 1. In fact, Petitioners do not argue that it does, but only that it teaches the features of dependent Claims 6-8 and 15-17.

Because of this, and the serious flaws with HAC (*i.e.*, Grounds 1A and 2A), Grounds 1B and 2B must also be denied. The same is true for Grounds 1C and 2C further involving Robertson. If the Board confirms the validity of Claim 1, then the Board must confirm the validity of Claim 7, as Claim 7 depends from Claim 1.

At the very least, Matthews does not disclose the features of Claims 8 and 17, where the 3D space is a first 3D space within a second 3D space (*i.e.*, 3D within 3D). The claims provide that this is accomplished by generating an image (fourth image) of the plurality of images in the first 3D space. This (fourth) image is then presented in a second 3D space with at least one other image (*e.g.*, a fifth image, which is an image of a fourth application). To interact with the first application, the user would first select the fourth image in the second 3D space, and then the first image in the first 3D space. This 3D within 3D is not disclosed in Matthews.

Petitioners argue that these features are shown in Figure 7A (reproduced below along with Petitioners' annotated version of the same). In particular, Petitioners argue that "the presentation area [401 in Figure 7A] is a second 3D immersive space" and that item 706a is the fifth image and that an imaginary box (drawn by Petitioner) around items 704, 706a, and 760b is the fourth image.

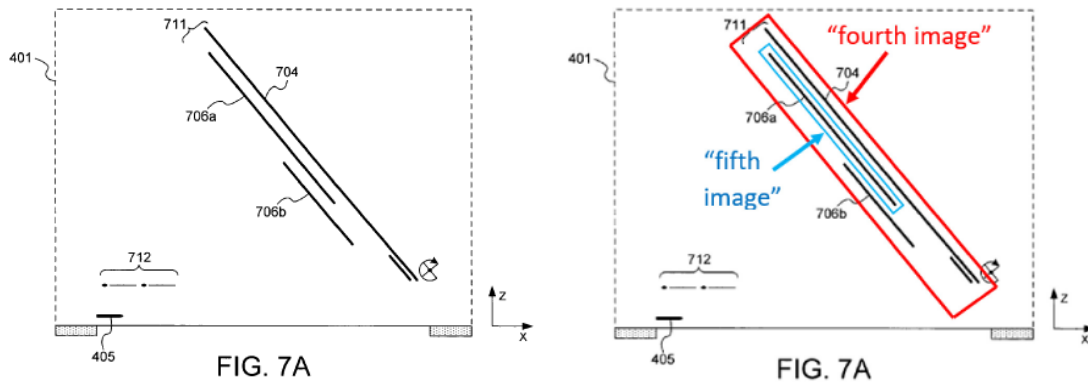


Figure 7A of Matthews

Petitioner's Annotations of Figure 7A

First of all, Matthews provides that “[t]he presentation area 401 is ... a virtual 3D space.” APPLE1008 at [0054]. Matthews does not disclose or suggest any other 3D space, let alone a second 3D space. Second, item 706a is not an image, as Petitioners contend, but a window. *See, e.g., id.* at [0069] (“Here, work area 711 comprises a desktop 704, and open windows 706a and 706b.”). As such, there is no fifth image. There is also no “fourth image” disclosed in Matthews. Petitioners try to invent one by drawing a box around the open windows in 3D space. However, as this “image” does not exist, there is no support in Matthews for “selecting said fourth image” to go from said second 3D space to said first 3D space, where said plurality of images are presented.

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). Secondary considerations, such as commercial success, 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).

In 2007, SpaceTime3D released a product that incorporated features of the claimed invention. EX2001 at [13]. The product received praise by technical journals and newspapers. *Id.* at [14-16]. Manufacturers, such as Samsung, were also impressed by SpaceTime3D's technology. *Id.* at [17-23]. To protect its technology, SpaceTime3D filed a provisional patent application, which resulted in five patents, including the '868 Patent.

In March 2021, Samsung Electronics Co., Ltd. licensed the '868 Patent

(“Samsung License”), and in May 2023, LG Electronics, Inc. licensed the ‘868 Patent (“LG License”). The terms of the Samsung and LG Licenses are provided in the Declaration of Todd Fitzsimmons, filed herewith under seal. EX2018. Given the nature of these licenses, they are strong indicators of commercial success and therefore non-obviousness. *See, e.g., Statoflex Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983) (“evidence of secondary considerations may often be the most probative and cogent evidence in the record”).

“[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.*

Petitioners fail to adequately address these secondary considerations of non-obviousness and instead rely on improper hindsight. Secondary indicia of non-obviousness, such as commercial success “are powerful tools for courts faced with the difficult tasks of avoiding subconscious reliance on hindsight.” *Mintz*, 679

F.3d at 1378.

B. The Prior Art Relied Upon by Petitioners, Including the Combinations Thereof, are Very Similar to Prior Art Considered During Prosecution

Further evidence of non-obviousness can be found in the prosecution histories of the '018, '048, '654 and '868 Patents. During prosecution, SpaceTime3D distinguished its invention from several prior art references, including Sciammarella, Freeman, Prager, Kamiwada, and Iida.

Petitioners argue that the '868 Patent is invalid over Anthony and Hanggie (Grounds 1A and 2A) (*i.e.*, the only grounds that address the independent claims). But the Patent Office already considered and allowed the '868 Patent over references that are virtually identical to these references.

For example, Petitioner is citing Anthony for its disclosure of a 3D space having a plurality of items, where each item is arranged chronologically (*i.e.*, based in time). The same was disclosed in Sciammarella, Freeman, and Prager, where items are chronologically arranged in 3D space.

For example, compare Figure 4 of Anthony to Figure 2 of Sciammarella (both reproduced below). Sciammarella, like Anthony, provides for a 3D GUI that presents a plurality of items in a “selected layout and order.” *See, e.g.*, EX2009 at

Figure 1 at 28d. In particular, Sciammarella provides that “[t]he order interface 28 is for *selecting one of four different sequence orders* that determine arrangement of the thumbnails 23 in the selected layout. *The four orders include:* name of data object, type of data object, size of the data file, and *time the file was stored.*” *Id.* at [0053] (emphasis added).

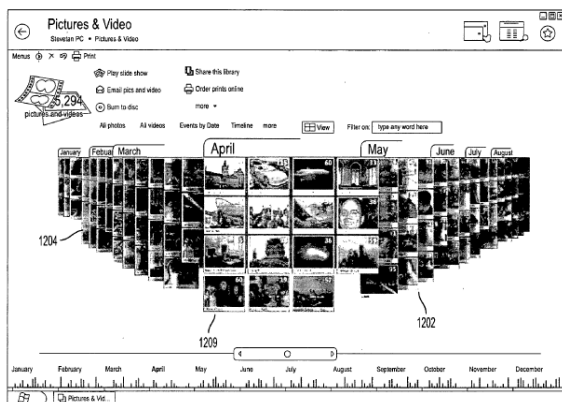


FIG. 4

Figure 4 of Anthony

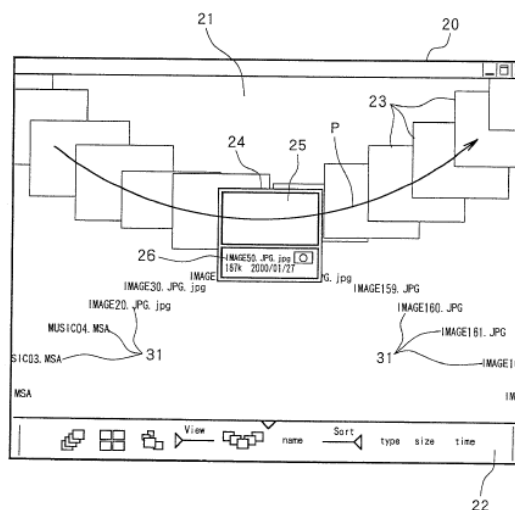


Figure 2 of Sciammarella

The same is true for Freeman and Prager, both of which are reproduced below. In Freeman, the documents are “stored in one or more chronological ordered streams.” EX2006 at Abstract; *see also id.* at Figure 1 and 4:24 (“A ‘stream’ according to the present invention is *a time-ordered sequence of documents* that functions as a diary of a person or an entity’s electronic life.”)

(emphasis added). 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. *See, e.g.*, EX2008 at Figure 1 and 2:23-34.

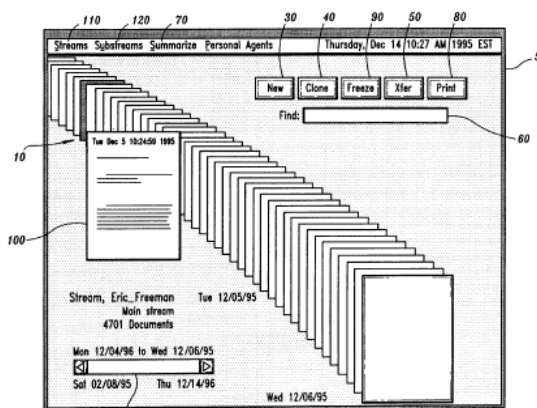


Figure 1 of Freeman

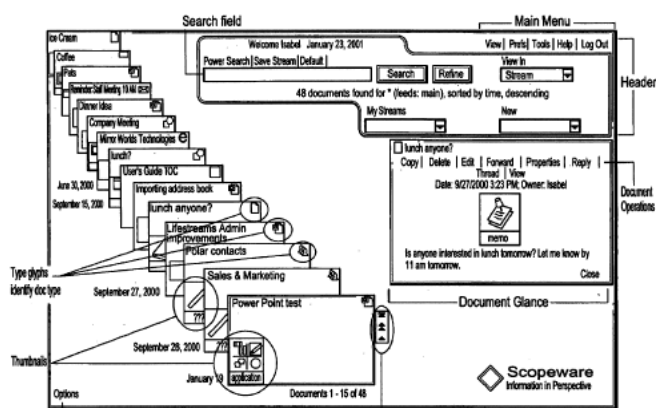


Figure 1 of Prager

Both Freeman and Prager were cited several times by the Examiner in rejecting claims in the parent patent applications. *See, e.g.*, EX2003 at 87-123 and EX2004 at 69-87, 124-143, and 174-192. However, the claims of the '868 Patent were ultimately allowed over these references.

The Examiner also considered prior art that is very similar to Hanggie, where individual items can be maximized or enlarged (*e.g.*, to be viewed better, etc.). For example, U.S. Patent Publication No. 2001/0050687 (“Iida”) was cited

by the Examiner during prosecution. EX2001 at [27]. In Iida, to better view the merchandise, “[i]f there is input from the instruction input unit 21 to change the vantage point by for example advancing into or retreating from the three-dimensional space displayed, then the three-dimensional space data display unit 20 displays the three-dimensional space data from the new vantage point.” *Id.* at [0050].

Iida provides that “space 68 can also be enlarged/reduced as needed.” *Id.* at [0083]. This can be seen, for example, in Figures 13 and 14 (reproduced below), where “[t]he vantage point can be moved along the Z-axis by using buttons 75 and 76, so that the vantage point moves toward the front when the button 75 is depressed and the vantage point moves to the rear when the button 76 is depressed.” *Id.* at [0090]. In Figure 14, “the vantage point movement button 75 has been pressed,” thereby zooming out. *Id.* at [0092]. Zooming in can also be accomplished by depressing the vantage point movement button 76.

FIG.13

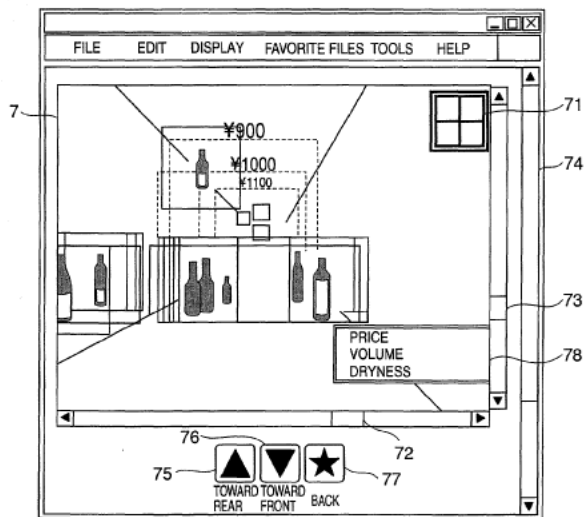


Figure 13 of Iida

FIG.14

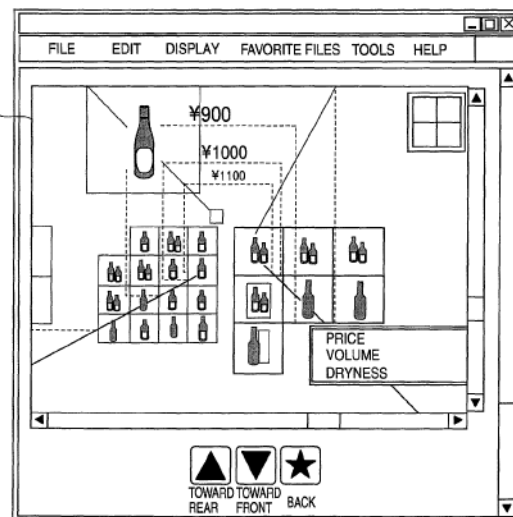


Figure 14 of Iida

Figure 15 (reproduced below) “shows a case in which the product in the center of the three-dimensional space screen 7 is selected and the product detail screen 8 is displayed.” *Id.* at [0083]. As shown, the product detail page includes the same “frame buttons” that are present in Hanggie (*i.e.*, minimize, maximize, close). Thus, the Examiner was aware of prior art that disclosed enlarging (or maximizing) a window in 3D space.

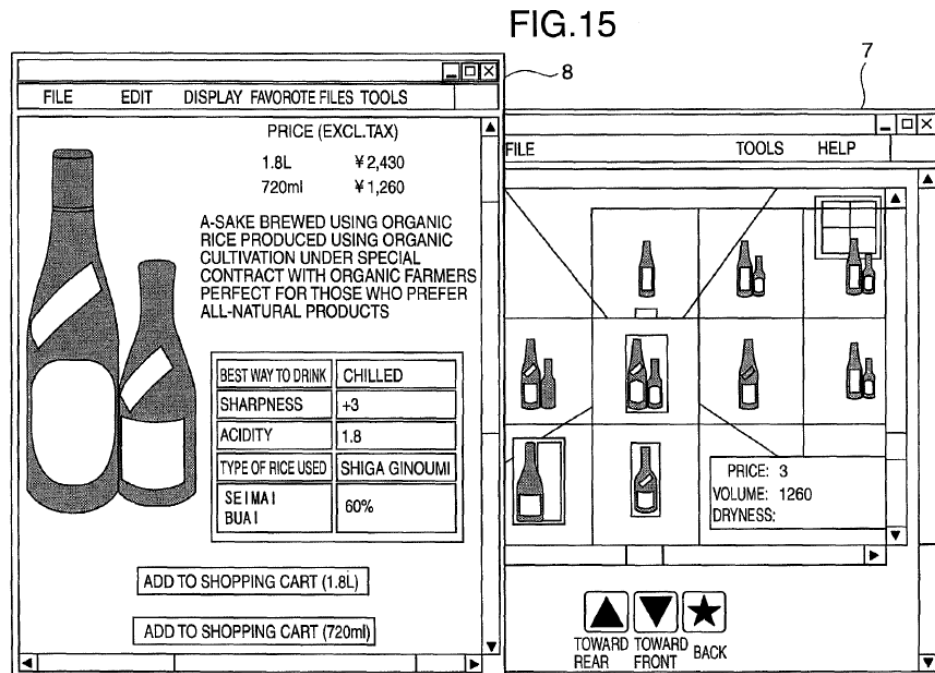
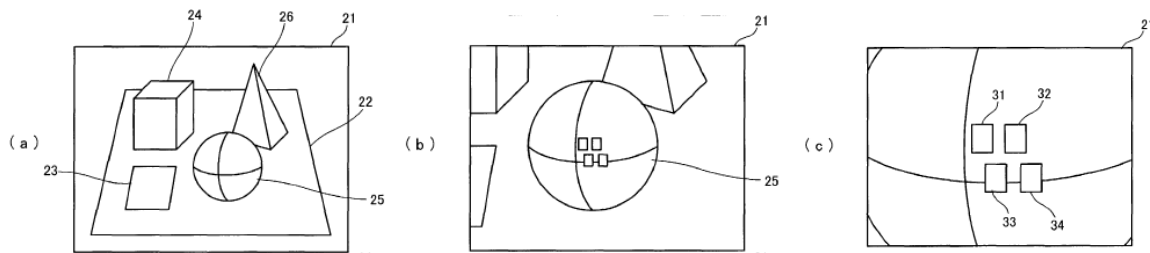


Figure 15 of Iida

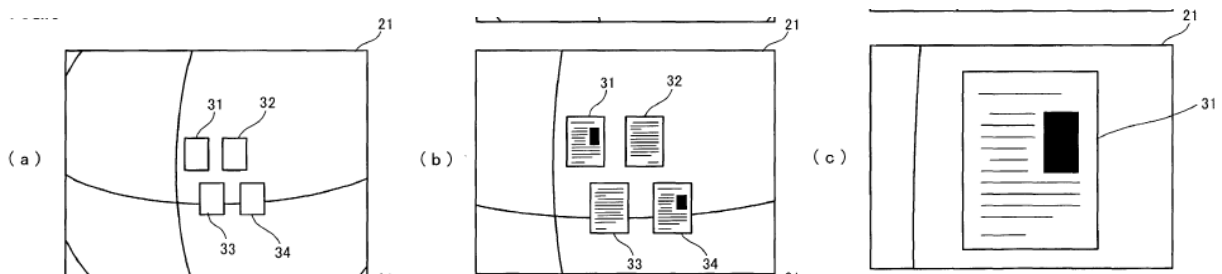
The same features were disclosed in U.S. Patent Publication No. 2003/0179231 (“Kamiwada”), which was cited by the Examiner during prosecution. EX2001 at 27. In Figures 4a-c (reproduced below), Kamiwada shows an example of “[w]hen the user conducts operation of the input device ... so as to approach the sphere information object 25, the display screen alters as shown in (a) through (c) of FIG. 4. Namely, the sphere information object 25 is enlarged (zoomed in), and the four information objects 31-34 located on the surface of the sphere become visible gradually.” *Id.* at [0042]; *see also id.* at [0044] (“In the display shown in (c) of FIG. 4, the four information objects 31-34 are further

enlarged (zoomed in), so that contents of their text are displayed.”).



Figures 4a-c of Kamiwada

“FIG. 5 shows an example of change in display when the viewpoint further approaches from the display 21 shown in (c) of FIG. 4 to one information object on the sphere information object 25.” *Id.* at 0045; *see also id.* at Figures 5a-c, reproduced below. Kamiwada provides that this is an “example of change in display when user conducts operation approaching (zooming in) a specific information object using a point device (the input device 2) such as a mouse.” *Id.* at [0046].



Figures 5a-c of Kamiwada

While the *Becton, Dickinson* factors may not have justified discretionary denial under 35 U.S.C. § 325(d) (*see* Decision at 12-19), the prosecution history is evidence that (1) the Examiner was aware of prior art that was similar to both Anthony and Hanggie and (2) despite these references, allowed the claims of the '868 Patent.

After years of prosecution, with numerous prior art rejections, several telephonic interviews, and several amendments (some of which were Examiner Amendments), the Examiner allowed claims that she believed were distinguishable over prior art that is substantially similar to the prior art relied upon in the Petition. This in and of itself is evidence of non-obviousness. *See, e.g., Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 986 (Fed. Cir. 1995) (“***Patent applications, unlike contracts, are reviewed by patent examiners, quasi-judicial officials trained in the law and presumed to ‘have some expertise in interpreting the [prior art] references and to be familiar from their work with the level of skill in the art and whose duty it is to issue only valid patents.’***”) (emphasis added).

VI. CONCLUSION

Petitioners failed to show that Claims 1-20 are rendered obvious. Because the Petition failed to establish unpatentability by a preponderance of the evidence,

Patent Owner's Response
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the patentability of the Challenged Claims of the '868 Patent should be confirmed.

Respectfully submitted,

Date: October 19, 2023

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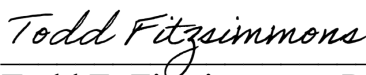
Attorney for Patent Owner

CERTIFICATE OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. §42.24(b)(2) that the foregoing Patent Owner's Response Under 37 C.F.R. §42.120 to Petition for *Inter Partes* Review of U.S. Patent No. 9,696,868, excluding any table of contents, table of authorities, certificates of service, word count, or appendix of exhibits, contains 13,926 words according to the word-processing program used to prepare this paper (Microsoft Word).

Respectfully submitted,

Date: October 19, 2023



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CERTIFICATE OF SERVICE

The undersigned certifies that on October 19, 2023, a true and correct copy of this Response Under 37 C.F.R. §42.120 to Petition for *Inter Partes* Review of U.S. Patent No. 9,696,868 and all supporting exhibits were provided by email to Petitioner by serving the email correspondence address of record as follows:

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Patent Owner's Response
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