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Paper 47
Entered: July 2, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC. and GOOGLE LLC[1],
Petitioner,

v.

SPACETIME3D, INC.,
Patent Owner.

IPR2023-00343
Patent 9,304,654 B2

Before DAVID C. McKONE, SHEILA F. McSHANE, and FREDERICK C. LANEY, *Administrative Patent Judges*.

McSHANE, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
*35 U.S.C. § 318(a)*

[1] Google LLC, which filed a petition in IPR2023-00579, has been joined as a petitioner in this proceeding. *See* Paper 14, 8.

# I. INTRODUCTION

## *A. Background*

Apple Inc. filed a Petition (Paper 2, "Pet.") requesting an *inter partes* review of claims 1–19 (the "challenged claims") of U.S. Patent No. 9,304,654 B2 (Ex. 1001, "the '654 patent"). SpaceTime3D, Inc. ("Patent Owner" or "SpaceTime3D") filed a Preliminary Response. Paper 6. Pursuant to our authorization (Ex. 3001), the parties filed briefs further addressing the issue of discretion under 35 U.S.C. § 325(d) and issues relating to the claim term "replacing." Paper 7; Paper 8.

The Board instituted an *inter partes* review of the challenged claims pursuant to 35 U.S.C. § 314. Paper 11 ("Dec."). We joined Google LLC as a party to the proceeding (collectively, with Apple Inc., "Petitioner") based on a petition and motion for joinder filed in IPR2023-00579. Paper 14.

After institution, Patent Owner filed a Patent Owner Response (Paper 19, "PO Resp."). Petitioner filed a Reply (Paper 26, "Pet. Reply") and Patent Owner filed a Sur-reply (Paper 33, "PO Sur-reply"). The parties then presented oral arguments at a hearing on March 18, 2024, and a transcript of it has been entered into the record (Paper 40, "Tr.").

For the reasons set forth in this Final Written Decision pursuant to 35 U.S.C. § 318(a), we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1–19 of the '654 patent are unpatentable.

## *B. Real Party-in-Interest*

Apple Inc. identifies itself as the sole real party-in-interest. Pet. 90. Google LLC identifies itself as the sole real party-in-interest. IPR2023-

00579, Paper 2, 90. Patent Owner identifies itself as the sole real party-in-interest. Paper 3, 2.

*C. Related Matters*

According to the parties, the '654 patent is the subject of the following district court litigation: *SpaceTime3D, Inc. v. LG Electronics Inc.*, No. 2:22-cv-00049 (E.D. Tex.) and *SpaceTime3D, Inc. v. Apple Inc.*, No. 6:22-cv-00149 (W.D. Tex.). Pet. 90; Paper 3, 2. The parties also indicate that the '654 patent was the subject of *SpaceTime3D, Inc. v. Samsung Electronics Co.*, No. 2:19-cv-00372 (E.D. Tex.) ("the Samsung case"), which has been terminated. Pet. 90; Paper 3, 2.

Petitioner indicates that the '654 patent was the subject of IPR2020-01419, whereas Patent Owner identifies IPR2020-01418 as a related matter. Pet. 90; Paper 3, 2. The '654 patent was involved in IPR2020-01418, in which the petition was dismissed prior to institution. *See* IPR2020-01418, Paper 12.

*D. The '654 Patent*

The '654 patent issued April 5, 2016, from U.S. Patent Application No. 14/503,142, filed September 30, 2014 ("the '142 application"). Ex. 1001, codes (21), (22), (45). The '142 application is a continuation of U.S. Patent Application No. 12/751,879, filed on March 31, 2010 (issued as U.S. Patent No. 8,881,048). *Id.* at code (63). The '654 patent also claims the benefit of U.S. Provisional Patent Application No. 60/717,019, filed on September 13, 2005. *Id.* at code (60).

The '654 patent, titled "System and Method for Displaying a Timeline Associated With a Plurality of Applications," relates to graphical user

interfaces for operating and accessing information on a computer, including a three-dimensional ("3D") interactive computing interface. Ex. 1001, 1:29–32, codes (54), (57). As background, the '654 patent describes that

> People currently compute within operating systems that present computer output, such as documents, applications, and operating system's interface in a 2D (two-dimensional) visual display. After initially being loaded into the computer by the boot program, the operating system controls all the other programs in a computer. Typically, the component of the operating system that summons the style in which this output is displayed is called the *GUI or graphical user interface*. A successful GUI will use screen presentations including metaphors that utilize graphic elements such as icons to make an operating system's input and output easier to manage. Most computer operating systems incorporate a GUI that utilizes two-dimensional graphics to capture, process, and output all input from an end user in a 2D form—having height and width only.

*Id.* at 1:56–2:3 (emphasis added). The '654 patent further describes

> We live in a 3D (three-dimensional) world where we see that objects not only have a horizontal position (x) and vertical position (y) but also have depth (z) that is *also known as time*, according to the three-dimensional coordinate system of mathematics. This notion of expressing *depth or time* in a visual computer metaphor is important for the creation of a visual history of the end user's computing sessions.

*Id.* at 2:14–20 (emphases added). According to the '654 patent,

> The navigation window of many desktop operating systems use controls and buttons to allow end users to navigate to other folders and windows in the hierarchical structure of the file system. Often, in navigating to new windows, the new windows replace the display of the current window. Accordingly, it would be very desirable to provide an improved graphical user interface that allows the user to efficiently navigate th[r]ough a *virtual space* wherein groups of windows can be easily organized, stored, and retrieved.

*Id.* at 2:35–43 (emphasis added).

Against this backdrop, the '654 patent describes embodiments of methods for generating a timeline that includes an icon for each object presented within a virtual space and displaying the timeline within the virtual space, wherein the icons are organized in a linear chronological order according to when the objects were presented within the virtual space. *Id.* at 3:5–10, code (57). In one embodiment,

> content output into the 3D GUI application's virtual space is generated by running a helper application, such as eBay Search or Yahoo Images Search. . . . . The output preferably comprises a linear map (e.g., drawn on the bottom margin of the virtual space), whereby the 3D GUI is adapted to express the map of stored searches as 3D icons with their names (should the end user mouse-over them) for specific search items expressed as a timeline.

*Id.* at 28:28–38.

Figure 9 of the ’654 patent is reproduced below.

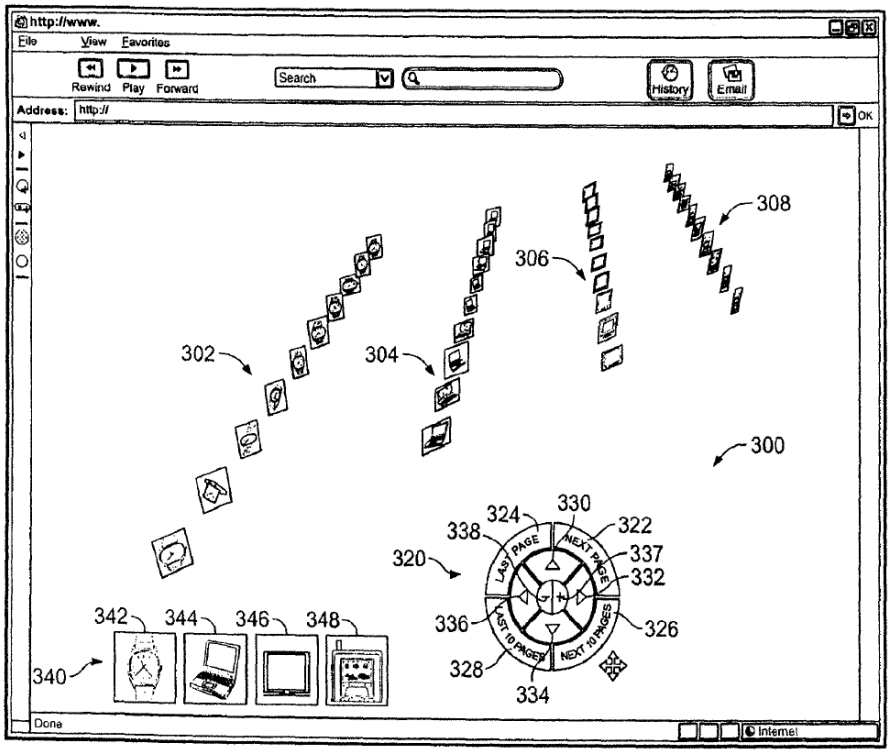



FIG. 9

Figure 9 illustrates an embodiment of a 3D GUI application window. *Id.* at 6:28–29.

The ’654 patent describes that

> in the embodiment of FIG. 9, one can see three 3D icons (**342**, **344**, **346**, **348**) in the timeline **340** representing four unique searches (i.e., rolex Daytona, ibm laptop, plasma tv, and treo **650**) done with the eBay Search helper application. Each unique search resulted in the creation of its own 3D stacks **302**, **304**, **306**, **308** (each stack showing ten items at a time in this embodiment) as well as their own unique 3D icons plotted in a timeline map **340** at the bottom margin of the 3D virtual space **300**. In this embodiment of the invention, should the end user click on any hyperlink or 3D icon, the 3D GUI would visually take the end user to the viewpoint of the first eBay search result item within its 3D stack.

*Id.* at 28:49–61.

*E. Illustrative Claim*

Of the challenged claims, claims 1, 10, and 19 are independent. Claim 1 is illustrative of the challenged claims and is reproduced below with bracketing used by Petitioner (Pet. v–vi).

> 1. A method for displaying a timeline associated with a plurality of applications and allowing a user to modify an output of one of said plurality of applications by interacting with said timeline, comprising:
>
> [1a] receiving a plurality of inputs from a user, said plurality of inputs comprising at least first, second, and third inputs;
>
> [1b] opening said plurality of applications in response to said plurality of inputs, said plurality of applications comprising at least first, second, and third applications, wherein each one of said plurality of applications is configured to (i) generate an object having application-specific data, (ii) display said object on a display device, and (iii) allow said user to modify at least a portion of said application-specific data by interacting with said object; and
>
> [1c] displaying on said display device said timeline associated with said plurality of applications, comprising;
>
> [1c-1] generating a plurality of images, said plurality of images comprising at least first, second, and third 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, said second image is an image of at least a portion of a second object generated by said second application and having second application-specific data, and said third image is an image of at least a portion of a third object generated by said third application and having third application-specific data; and
>
> [1c-2] displaying said plurality of images in a three-dimensional space on said display device in an order based on a last time that said user one of (i) opened said

first application and interacted with said first object, (ii) opened said second application and interacted with said second object, and (iii) opened said third application and interacted with said third object, such that a first one in said order is displayed in a foreground of said three-dimensional space, a second one in said order is displayed in a background of said three-dimensional space, behind at least said first one in said order, and a third one in said order is displayed in a background of said three-dimensional space, behind at least said second one in said order; and

[1d] allowing said user to modify at least a portion of one of said first, second, and third application-specific data, comprising:

[1d-1] receiving a first interaction from said user with one of said plurality of images corresponding to one of said plurality of applications;

[1d-2] 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 applications within a two-dimensional space in response to said first interaction;

[1d-3] receiving a second interaction by said user with said one of said first, second, and third objects within said two-dimensional space; and

[1d-4] modifying said one of said first, second, and third application-specific data in response to said second interaction.

Ex. 1001, 37:44–38:35.

*F. Prior Art and Declaration Evidence*

Petitioner cites the following references in its challenges to patentability:

U.S. Patent Application Publication No. 2005/0088447 A1, published Apr. 28, 2005 (Ex. 1006, "Hanggie");

U.S. Patent Application Publication No. 2005/0091596 A1, published Apr. 28, 2005 (Ex. 1007, "Anthony"); and

U.S. Patent Publication Application No. 2006/0107229 A1, published May 18, 2006 (Ex. 1008, "Matthews").

Petitioner supports its challenge with a declaration from Henry Fuchs, Ph.D. (Ex. 1003, "Fuchs Dec.") and a supplemental declaration (Ex. 1033, "Fuchs Supp. Dec."). Patent Owner has submitted a declaration from Mr. Eddie Bakhash (Ex. 2001, "Bakhash Dec.") in support of Patent Owner's Preliminary Response and declarations from Scott Schaefer, Ph.D. (Ex. 2015, "Schaefer Dec.") and from Mr. Todd Fitzsimmons (Ex. 2017) in support of Patent Owner's Response.

*G. Asserted Grounds of Unpatentability*

Petitioner asserts that the challenged claims are unpatentable based on the following grounds (Pet. 4).

| Claims Challenged | 35 U.S.C. § | References/Basis |
|---|---|---|
| 1–5, 7, 8, 10–13, 15–17, 19 | 103(a)[2] | Anthony, Hanggie |
| 6, 9, 14, 18 | 103(a) | Anthony, Hanggie, Matthews |
| 1–5, 7, 8, 10–13, 15–17, 19 | 103(a) | Hanggie, Anthony |

[2] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103 effective March 16, 2013. Because, based on the record presented, and absent dispute from Petitioner, we determine that the challenged claims of the '654 patent have an effective filing date prior to the effective date of the applicable AIA amendment, we refer to the pre-AIA version of § 103.

| Claims Challenged | 35 U.S.C. § | References/Basis |
|---|---|---|
| 6, 9, 14, 18 | 103(a) | Hanggie, Anthony, Matthews |

## II. ANALYSIS

### *A. Level of Ordinary Skill in the Art*

The level of ordinary skill in the pertinent art at the relevant time is a factor in how we construe patent claims. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). It is also one of the factors we consider when determining whether a patent claim would have been obvious over the prior art. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

To assess the level of ordinary skill, we construct a hypothetical "person of ordinary skill in the art," from whose vantage point we assess obviousness and claim interpretation. *See In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). This legal construct "presumes that all prior art references in the field of the invention are available to this hypothetical skilled artisan." *Id.* (citing *In re Carlson*, 983 F.2d 1032, 1038 (Fed. Cir. 1993)).

Citing testimony from Dr. Fuchs, Petitioner asserts that a person of ordinary skill in the art ("POSITA") as of September 13, 2005 (the earliest possible priority date of the '654 patent) would have had "at least a Bachelor's degree in electrical engineering, computer science, or a similar discipline, and at least two years of experience in the field working with 2D and 3D graphical user interfaces." Pet. 10 (citing Ex. 1003 ¶¶ 31–32). Petitioner further states that "[s]uperior education could compensate for a

deficiency in work experience, and vice-versa." *Id.* (citing Ex. 1003 ¶¶ 31–32).

In the Decision on Institution, we adopted and applied Petitioner's proposed definition of the level of ordinary skill in the art. Dec. 20. Patent Owner states that it "generally agrees" with the level of skill adopted in the Decision on Institution. PO Resp. 21. Patent Owner states that Dr. Schaefer and Mr. Bakhash meet the definition. *Id*.

Based on our review of the '654 patent, the types of problems and solutions described in the '654 patent, and the cited prior art, we adopt and apply Petitioner's definition of the level of ordinary skill in the art. *See In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995).

Petitioner argues that Patent Owner's expert, Dr. Schaefer, is not qualified to opine as a person of ordinary skill in the art because he does not meet the required qualifications as his work experience does not amount to two years. Pet. Reply 7 n.3 (citing Ex. 1031, 14:22–19:6). We do not find this assertion persuasive because, as Patent Owner points out (PO Sur-reply 5 n.3), Dr. Schaefer was working in the field of 2D and 3D user interfaces with the companies SensAble Technologies, Microsoft, and Mok3, and had also completed a Master of Science degree before the critical date of September 2005. *See* Ex. 2015 ¶¶ 5–11, 88; Ex. 1031, 14:22–17:17. In that time frame, Dr. Schaefer was also working towards a Doctoral degree, which he completed in 2006. *See id*. To the extent that Dr. Schaefer's work experience is short of two years, his additional education more than compensates for any deficiency in work experience.

*B. Claim Construction*

In an *inter partes* review, we construe a patent claim "using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." 37 C.F.R. § 42.100(b) (2022). In applying such standard, claim terms are generally given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the effective filing date of the patent application and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

*1. "3D space" and "two-dimensional (2D) space"*

The parties agree that the claim terms "3D space" and "two-dimensional (2D) space" should be construed as "a virtual space defined by a three-dimensional coordinate system" and "a finite graphical area defined by a two-dimensional coordinate system," respectively. Pet. 10–11 (citing Ex. 1005,[3] 6); PO Resp. 21–22 (citing Ex. 2011,[4] 16–17). The construction is based on the construction issued by the district court in the Samsung case. Ex. 2011, 19.

[3] Petitioner's Opening Claim Construction Brief, *SpaceTime3D, Inc. v. Apple Inc.*, No. 6:22-cv-00149 (W.D. Tex.).

[4] Claim Construction Order, *SpaceTime3D, Inc. v. Samsung Electronics Co.*, No. 2:19-cv-00372 (E.D. Tex.).

Although Patent Owner has agreed to the construction of these terms, Patent Owner contends that "these constructions should be viewed in light of the [Samsung] Court's attendant reasoning." PO Resp. 22. Patent Owner argues that because the district court differentiated "objects" and "spaces," "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 reside." *Id*. Patent Owner further asserts that for claim limitation [1d-2], "it is not the object (e.g., window) that is 2D but the space in which the object is presented." *Id*. at 55. We address this issue in the discussion of limitation [1d-2] below, *infra* Section II.D.3.c.ii.

In the discussion of the construction of the terms, the district court found that "[t]he specification describes the 3D space as a 'seemingly unlimited space' that creates the 'illusion of infinite space in three dimensions.' In contrast, the specification describes the 2D space as the 'finite working graphical area' of the desktop, and not as a virtual space." Ex. 2011, 17. The district court's constructions of "3D space" and "two-dimensional (2D) space" are supported by the description in the Specification. Accordingly, we accept the parties' agreement and adopt the district court's constructions of these terms.

*2. "image"*

An issue that arose during trial is related to the construction of the specific term "image." We also address this issue below in the discussion of limitation [1d-2], *infra* Section II.D.3.c.ii.

*3. Remaining claim terms*

Based on the record before us, we do not find it necessary to provide express claim constructions for any other terms. *See Nidec Motor Corp. v.*

*Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that "we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy'") (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

*C. Relevant Principles of Law*

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called secondary considerations. *Graham*, 383 U.S. at 17–18.

Additionally, the obviousness inquiry typically requires an analysis of "whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness")); *accord Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1366–67 (Fed. Cir. 2012) (holding that "some kind of motivation must be shown from some source, so that the [trier of fact] can understand why a person of ordinary skill would have thought of either combining two or more references or modifying one to achieve the patented [invention]")).

Petitioner cannot satisfy its burden of proving obviousness by employing "mere conclusory statements." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

We analyze the asserted grounds based on obviousness with the principles identified above in mind.

*D. Asserted Obviousness over Anthony and Hanggie*

Petitioner asserts that claims 1–5, 7, 8, 10–13, 15–17, and 19 are unpatentable under § 103(a) over the combination of Anthony and Hanggie. Pet. 11–75.

In the Petition, Petitioner identifies "Anthony in view of Hanggie" as a separate ground from "Hanggie in view of Anthony." Pet. 4. Nonetheless, Petitioner states that "both the combination of Hanggie and Anthony, and the combination of Anthony and Hanggie, would have resulted in the same features being combined in a similar manner to yield a combined system." *Id.* at 34–35 (citing Ex. 1003 ¶ 79). Petitioner further explains that "although separate combinations [based on Anthony and Hanggie] are identified in this Petition, the mapping of the prior art references to the Challenged Claims . . . is the same under both combinations." *Id.* at 35 (citing Ex. 1003 ¶ 79). Petitioner also presents its unpatentability contentions together for both grounds based on Anthony and Hanggie. *Id.* at 11–75. Patent Owner similarly addresses both grounds based on Anthony and Hanggie together. PO Resp. 37–60.

Based on the record presented, we consider both grounds based on Anthony and Hanggie together, as presented in the Petition. *See In re Mouttet*, 686 F.3d 1322, 1333 (Fed. Cir. 2012) ("where the relevant factual inquiries underlying an obviousness determination are otherwise clear,

characterization by the examiner of prior art as 'primary' and 'secondary' is merely a matter of presentation with no legal significance," although "there may be some cases in which relevant factual determinations inhere in such characterization of prior art references").[5]

*1. Overview of Anthony (Ex. 1007)*

Anthony describes a three-dimensional (3D) view of a data collection in a timeline to display files and folders. Ex. 1007, code (57).

[5] To be clear, to the extent there exist material differences between the two grounds based on Anthony and Hanggie, we do not modify Petitioner's grounds presented in the Petition. *See VLSI Tech. LLC v. Intel Corp.*, 53 F.4th 646, 654 (Fed. Cir. 2022) ("the petition defines the scope of the IPR proceeding and . . . the Board must base its decision on arguments that were advanced by a party and to which the opposing party was given a chance to respond") (citing *Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1336 (Fed. Cir. 2020); *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016)). Although we refer to the two grounds as a ground of obviousness based on Anthony and Hanggie in this Decision, this does not change Petitioner's grounds, as presented in the Petition. *See Sirona Dental Sys. GmbH v. Institut Straumann AG*, 892 F.3d 1349, 1356 (Fed. Cir. 2018) ("The Board did not change theories simply because the petition did not use the exact words [used by the Board to describe the unpatentability contentions].") (citing *Rambus Inc. v. Rea*, 731 F.3d 1248, 1255 (Fed. Cir. 2013).

Figure 4 of Anthony is reproduced below.

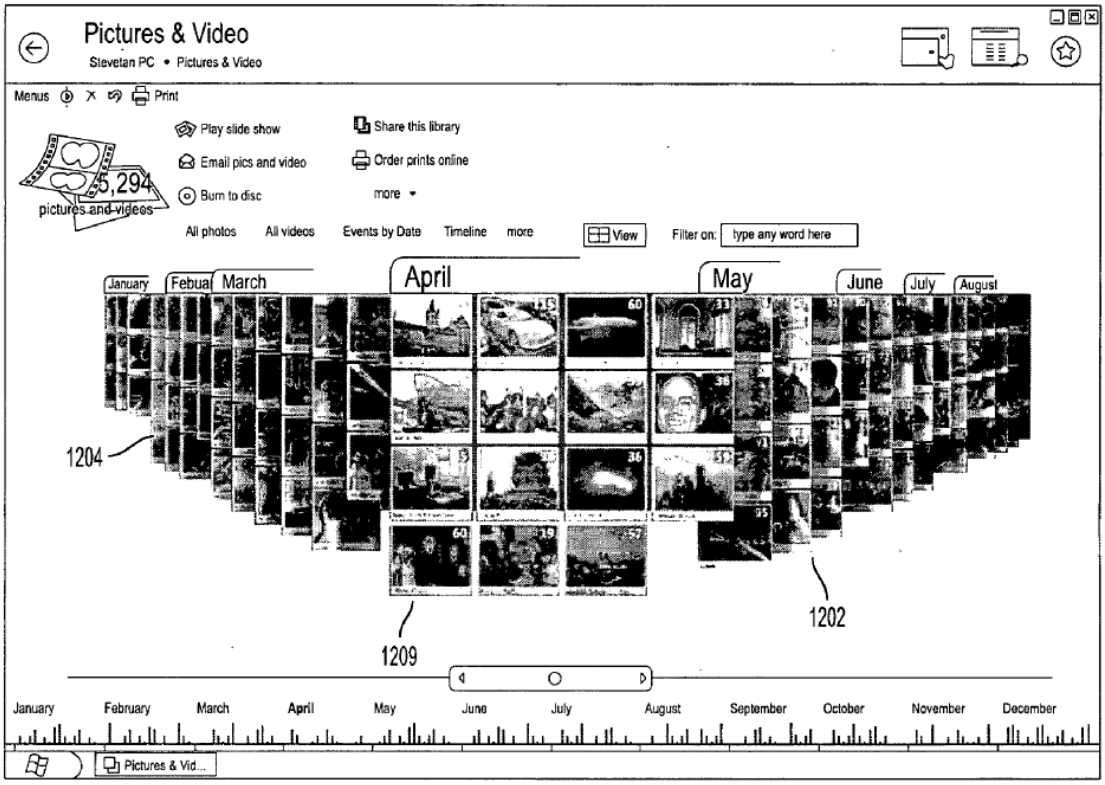



FIG. 4

Figure 4 of Anthony shows an exemplary dynamic timeline view of items stored on a computer. *Id.* ¶¶ 17, 42.

According to Anthony, a dynamic timeline view allows a user to view a set of items arranged chronologically and presented in a 3D GUI environment. Ex. 1007 ¶ 43. Anthony describes that the 3D dynamic timeline view "allow[s] a user to freely navigate documents, files, or other data objects in a chronological manner, and allow[s] the user to change the point of focus to an arbitrary location on a timeline." *Id.* ¶ 44. For example, "based on the number of items in a set on which the user is focused (e.g., the number of photographs taken in August 2003), the system may adjust the

dynamic timeline view in order to provide an improved browsing experience." *Id.*

Figure 6 of Anthony is reproduced below.

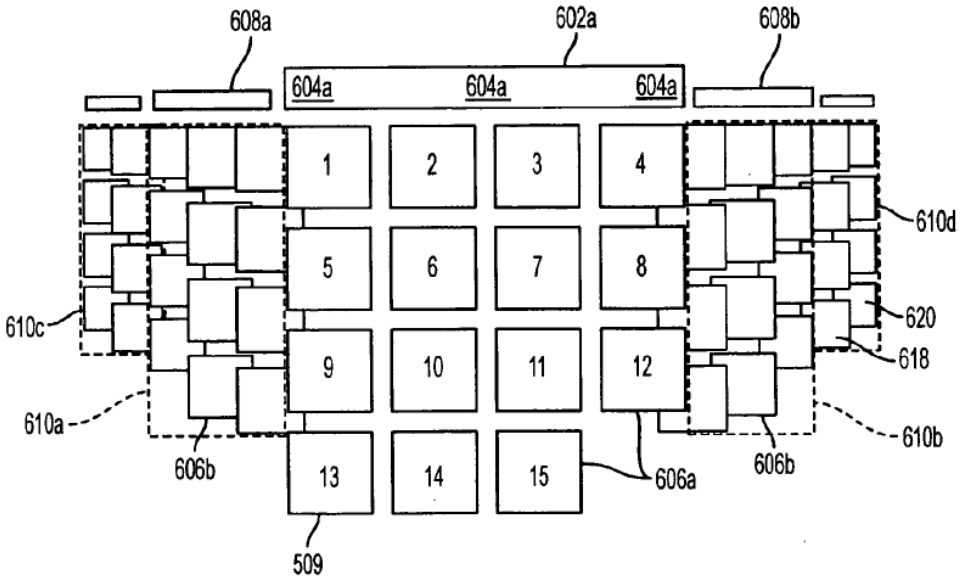



FIG. 6

Figure 6 illustrates a presentation of items in a focal group and various non-focal groups in an embodiment of Anthony. Ex. 1007 ¶ 46.

Referencing Figure 6, Anthony describes that focal group 509 "may be made up of an array of focal group icons 606a (the numbered rectangular boxes) that represent items in the focal group 509." Ex. 1007 ¶ 46. Anthony further describes that "[i]f an icon is a folder, double clicking on the folder will open the folder in a new dynamic timeline view . . . to show the items stored in it." *Id.* ¶ 47. According to Anthony,

> the views provided by the GUI are similar to what one would see if a conceptual camera moved along the files and folders placed in the timeline 500. In one aspect of the present invention, the conceptual camera is always positioned such that all of the items in the focal group 509 can be seen. Thus, the 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.

Ex. 1007 ¶ 50.

Anthony further describes that animation may be used to transition from one focal group to another, using various 3D graphics technologies, such as DirectX and/or DirectX3D technologies. Ex. 1007 ¶ 58. A user may change a focal group by using an actuating method, such as clicking on a non-focal group on the timeline or a new position in the histogram. *Id.* ¶ 59.

Figure 13 of Anthony is reproduced below.

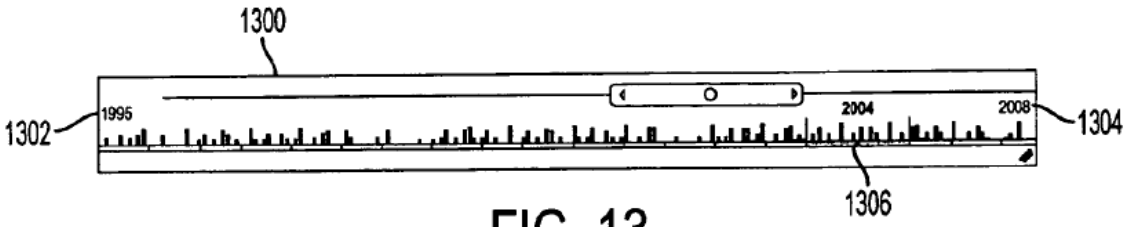



FIG. 13

Figure 13 illustrates histogram 1300 in an embodiment of Anthony. *Id.* ¶ 71.

Anthony describes that

> the histogram may be laid out in a series of columns where there is a single column for each histogram interval. Each column may have a height associated with it, indicating an amount of data falling within that interval. In one embodiment, a series of bars 1306 are used to represent the number of files in the interval represented by the column relative to the number of files in other intervals.

Ex. 1007 ¶ 72.

Anthony describes that histogram 1300 may be used to change the focal group displayed in a dynamic timeline view. Ex. 1007 ¶ 78. According to Anthony, "[i]n the case of a dynamic timeline view, clicking a column may cause the system to change the focal group from the current focal group (if different from the newly selected focal group) to the new focal group, optionally using animation as described above." *Id.*

Anthony further describes that a jog control, shown as a scrolling bar in Figure 13 reproduced above, may also be used to scroll through the intervals of the dynamic timeline view. Ex. 1007 ¶ 81. According to Anthony, "[w]hen the jog control is moved in a direction, the system responds by causing the conceptual camera that is focused on the focal group to begin moving along the dynamic timeline view as described in the section on Focal Group Animation above." *Id.*

*2. Overview of Hanggie (Ex. 1006)*

Hanggie describes a 3D compositing desktop window manager ("CDWM") for managing and rendering the desktop onto a single or multiple computer displays. Ex. 1006 ¶¶ 1, 15, code (57). Hanggie describes that "[b]y taking advantage of the graphics rendering engine's advanced texturing, lighting, and 3D capabilities . . . , the CDWM can compose a window 501 . . . within the 3D desktop environment." *Id.* ¶ 83. Hanggie further describes that "[a]pplication window 301 may include various regions and components . . . including buttons 305 (e.g., used to restore, maximize, minimize, close the window, etc.), an indicative icon 307, scrollbars 309, menu bar 311, and window caption text 313." *Id.* ¶ 58.

*3. Analysis of Cited Art as Applied to Claim 1*

Petitioner contends that the combination of Anthony and Hanggie teaches or suggests all elements of claim 1 and that a person of ordinary skill in the art would have been motivated to combine Anthony and Hanggie to obtain the subject matter of claim 1. Pet. 23–54; Pet. Reply 1–25. Patent Owner disputes Petitioner's contentions. PO Resp. 37–55; PO Sur-reply 3–26. Patent Owner's disputes mostly focus on limitations [1c-2] and [1d-2] of claim 1. *See id.*

*a. Overview of Petitioner's Proposed Combination of Anthony and Hanggie*

In its proposed combination of Anthony and Hanggie, Petitioner relies on Anthony for its teaching of displaying a timeline depicting a plurality of items in focal groups. Pet. 23–24 (citing Ex. 1007, Fig. 4).[6]

[6] As discussed above, Petitioner states that "both the combination of Hanggie and Anthony, and the combination of Anthony and Hanggie, would have resulted in the same features being combined in a similar manner to yield a combined system." Pet. 34–35 (citing Ex. 1003 ¶ 79). Petitioner further explains that "although separate combinations [based on Anthony and Hanggie] are identified in this Petition, the mapping of the prior art references to the Challenged Claims . . . is the same under both combinations." *Id.* at 35 (citing Ex. 1003 ¶ 79). Thus, our discussion of Petitioner's combination of Anthony and Hanggie in this Decision applies equally to the proposed combination of Hanggie and Anthony.

Figure 4 of Anthony is reproduced below.

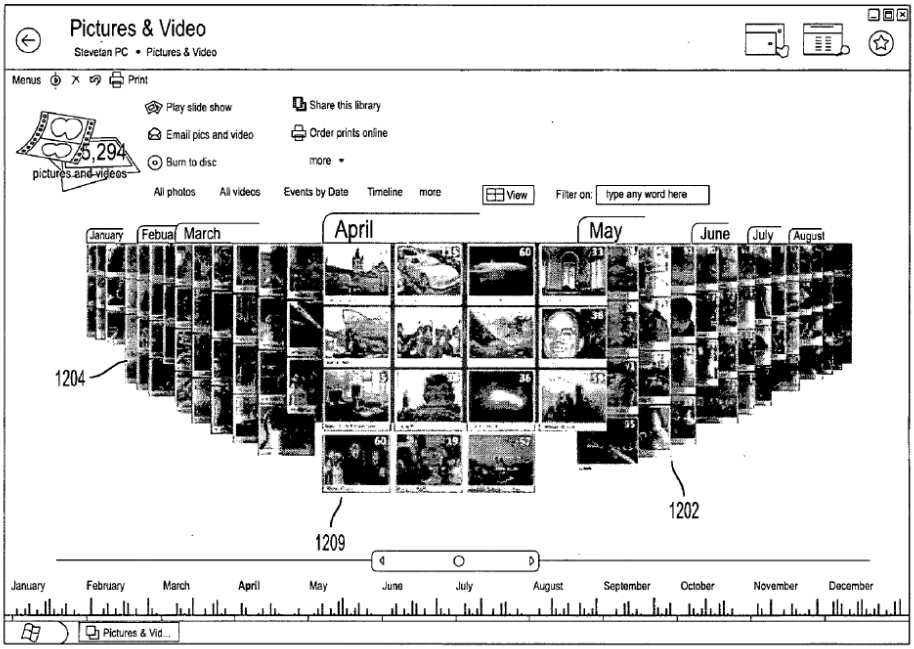



FIG. 4

Figure 4 of Anthony shows an exemplary dynamic timeline view of items stored on a computer. Ex. 1007 ¶¶ 17, 42.

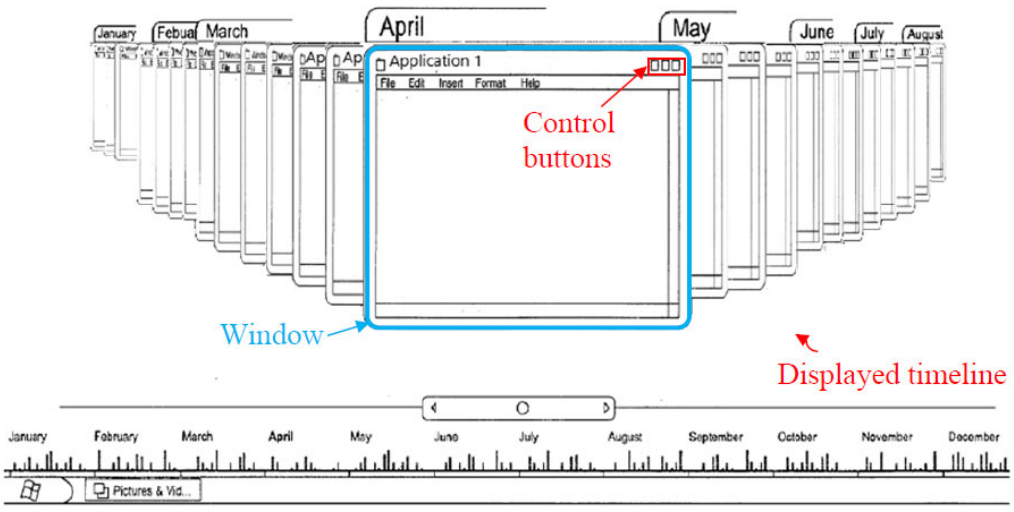
Referencing Figure 4 of Anthony, Petitioner asserts that

> as shown in Anthony's FIG. 4 . . ., Anthony's timeline depicts a plurality of items in focal groups according to a logical order, and the depicted items can visually represent "a file, folder, virtual folder, or **any other data object** that may be stored in an operating system and/or file system, for example, icons, thumbnails, and the like (emphasis added).

Pet. 23–24 (citing Ex. 1007 ¶¶ 42, 43, 11, Fig. 4, code (57); Ex. 1003 ¶ 62). Petitioner further contends that "[c]onsistent with Anthony's description of visually representing 'any . . . data object' in its dynamic timeline, a POSITA would have understood and found it obvious that a plurality of *application windows* could be organized and represented within Anthony's timeline." *Id.* at 24 (emphasis added) (citing Ex. 1007 ¶ 42; Ex. 1003 ¶ 63).

Petitioner therefore contends that it would have been obvious to combine the teachings of Anthony and Hanggie "such that the focal group windows depicted in Anthony's FIG. 4 are replaced by application windows that are similar to those shown in Hanggie's FIG. 3, and that incorporate several of the features described by Hanggie." Pet. 24 (citing Ex. 1003 ¶ 63).

A figure illustrating Petitioner's proposed combination is reproduced below.




Pet. 25. The figure reproduced above shows Dr. Fuchs's illustration of Petitioner's proposed combination of Anthony and Hanggie. Ex. 1003 ¶ 63; Pet. 24–25 (citing Ex. 1003 ¶ 63).[7]

Referencing the Dr. Fuchs-prepared figure reproduced above and citing the testimony of Dr. Fuchs, Petitioner asserts that

[7] Petitioner presents the same figure illustrating Petitioner's proposed combination of Hanggie and Anthony, relying on the combination of the same features as the combination of Anthony and Hanggie. Pet. 32–33.

> consistent with Anthony's teachings, the POSITA would have found it obvious to organize the plurality of application windows within a dynamic timeline and, consistent with Hanggie's teachings, each of the plurality of application windows would feature a window caption and control buttons, with the buttons enabling selection between 2D and 3D viewing modes.

Pet. 25 (citing Ex. 1007 ¶¶ 42, 43, 11, Fig. 4, code (57); Ex. 1006 ¶ 58, Fig. 3; Ex. 1003 ¶ 64). Petitioner further contends that a person of ordinary skill in the art would have found it obvious to combine the teachings of Anthony and Hanggie to:

> (1) implement one or more windows corresponding to one or more applications as displayed focal group windows in Anthony's timeline; (2) implement control buttons 305 on application windows within the timeline that would allow a user to restore, maximize, minimize, or close the windows; and (3) implement a control selection through which a user can switch between 2D and 3D viewing of the application windows.

*Id.* at 23 (citing Ex. 1003 ¶¶ 60–61).

*b. Petitioner's Assertions Regarding Elements of Claim 1*

*(i) Preamble and Limitation [1c]*

Addressing the preamble of claim 1, Petitioner cites to its discussion of the proposed combination of Anthony and Hanggie and argues that the combination of Anthony and Hanggie teaches a method for displaying a timeline of application windows. Pet. 35 (citing Pet. §§ V.A.1–V.A.4).[8] Petitioner further argues that the windows can be associated with a plurality of applications, such as Microsoft Word, Microsoft Excel, or Windows folders. *Id.* (citing Ex. 1007 ¶ 49; Ex. 1003 ¶ 85). Petitioner asserts,

[8] We understand Petitioner to cite to Sections VI.A.1–VI.A.4 of the Petition. *See* Pet. 11–31.

therefore, that the combination of Anthony and Hanggie teaches "[a] method for displaying a timeline associated with a plurality of applications," as recited in the preamble of claim 1. *Id.* We agree, and find that the combination of Anthony and Hanggie teaches the preamble.[9]

Petitioner also asserts that the combination of Anthony and Hanggie similarly teaches "displaying on said display device said timeline associated with said plurality of applications," as recited in claim 1 (limitation [1c]). Pet. 45 (citing Ex. 1003 ¶ 98). We agree, and find that the combination of Anthony and Hanggie teaches limitation [1c].

*(ii) Limitations [1a] and [1b]*

Turning next to limitation [1a] reciting "receiving a plurality of inputs from a user, said plurality of inputs comprising at least first, second, and third inputs," Petitioner asserts that the combination of Anthony and Hanggie teaches limitation [1a] because Anthony and Hanggie disclose that user inputs can be received through input devices such as a keyboard, a pointing device, or a stylus. Pet. 39–40 (citing Ex. 1007 ¶ 38 (describing input devices including keyboard 162, pointing device 161, and stylus input device 193), Fig. 1; Ex. 1006 ¶ 5, Fig. 1A; Ex. 1003 ¶ 91).

Addressing limitation [1b], Petitioner contends that the combination of Anthony and Hanggie teaches "opening said plurality of applications in response to said plurality of inputs" because Anthony discloses that "[i]f an icon 606a in the focal group 509 represents a file, double-clicking the file

[9] For purposes of this Decision, we need not determine whether the preamble is limiting, as Petitioner's evidence is sufficient to show that the prior art teaches the preamble.

will cause the system to attempt to open the file" (Pet. 40 (quoting Ex. 1007 ¶ 47)) and Hanggie discloses receiving requests to create a window and attach a content object (*id.* (citing Ex. 1006 ¶¶ 50, 51, 88)).

Petitioner further asserts that when a user double-clicks on an application file, Hanggie discloses generating an application window (the recited "object") "having content ('***application-specific data***') corresponding to the application file selected by the user." Pet. 41 (citing Ex. 1006 ¶¶ 5, 15, 49–50, 60, code (57); Ex. 1003 ¶ 95). Petitioner argues that in Hanggie "[a] user may choose to display the window in a legacy drawing mode, which is 2D, when desired (e.g., to preserve power) by making such a selection via a user control." *Id.* at 41–42 (citing Ex. 1006 ¶¶ 42, 92). 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." *Id.* at 42–43 (citing Ex. 1006 ¶ 60).

Citing the testimony of Dr. Fuchs, Petitioner contends that "[i]t would have been obvious to a POSITA and well known in the art, that a user can interact with 2D windows to modify at least a portion of the application content ('application-specific data')." Pet. 43 (citing Ex. 1003 ¶ 96). Petitioner argues that "[f]or instance, 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 using the computer's keyboard, mouse, and/or other input devices." *Id.* (citing Ex. 1003 ¶ 96).

Thus, Petitioner asserts that the combination of Anthony and Hanggie teaches or suggests limitation [1b] reciting

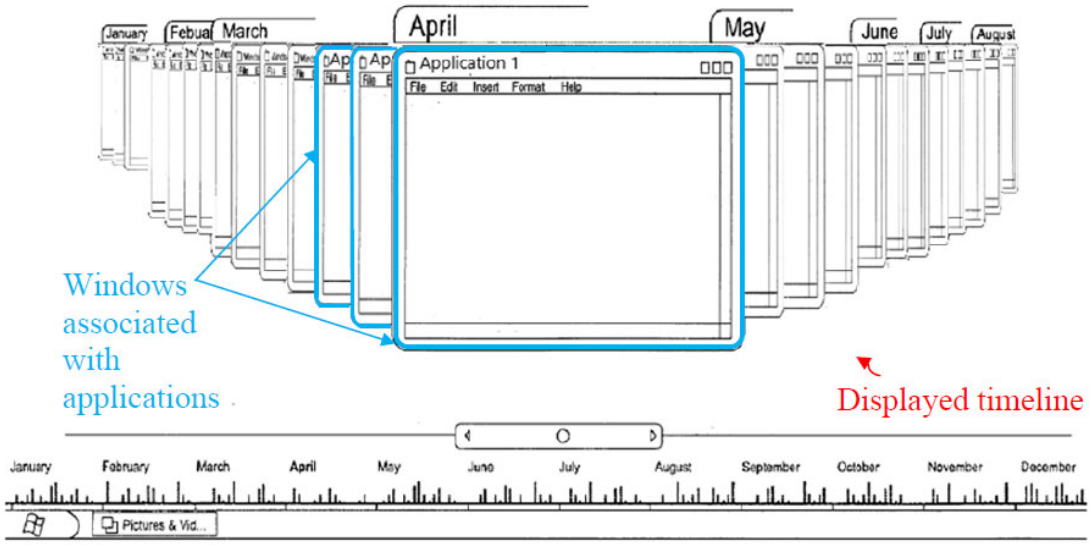
> opening said plurality of applications in response to said plurality of inputs, said plurality of applications comprising at least first, second, and third applications, wherein each one of said plurality of applications is configured to (i) generate an object having application-specific data, (ii) display said object on a display device, and (iii) allow said user to modify at least a portion of said application-specific data by interacting with said object.

Pet. 41–44.

We agree with Petitioner, and find that the combination of Anthony and Hanggie teaches limitations [1a] and [1b].

*(iii) Limitation [1c-1]*

A second figure illustrating Petitioner's proposed combination is reproduced below.




Pet. 45. The figure reproduced above shows Dr. Fuchs's second illustration of Petitioner's proposed combination of Anthony and Hanggie. Ex. 1003 ¶ 98; Pet. 45 (citing Ex. 1003 ¶ 98).

Referencing the second Dr. Fuchs-prepared figure reproduced above and citing the testimony of Dr. Fuchs, Petitioner contends that the

combination of Anthony and Hanggie teaches "generating a plurality of images, said plurality of images comprising at least first, second, and third images," as recited in claim 1, because, as illustrated in the second Dr. Fuchs-prepared figure reproduced above (three windows associated with applications, annotated in blue), the GUI of the combination "would ***generate a plurality of images in the form of 3D windows that respectively correspond to the three 2D windows***." Pet. 46 (citing Ex. 1006 ¶¶ 26, 57, 58, 59, Fig. 3; Ex. 1003 ¶ 99). Petitioner further asserts that Hanggie discloses that the application can generate an application window and attach any number of content objects to the application window. *Id.* (citing Ex. 1006 ¶¶ 49–50, 87–92). Citing the testimony of Dr. Fuchs, Petitioner argues that a person of ordinary skill would have understood that

> for each of the three 3D application windows that is generated and displayed, the respective first, second, or third *application window is an image of at least a portion of an object* (e.g., 2D window) generated by said the respective application and having respective application-specific data (e.g., application data, application content object).

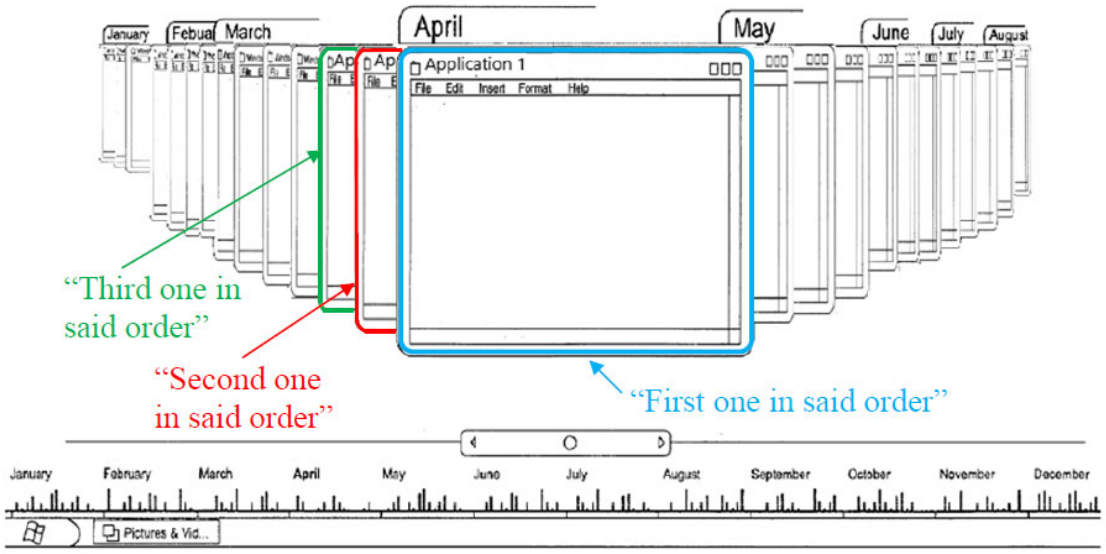
*Id.* at 48 (emphasis added) (citing Ex. 1003 ¶ 102). Thus, Petitioner asserts that the combination of Anthony and Hanggie teaches

> generating a plurality of images, said plurality of images comprising at least first, second, and third 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, said second image is an image of at least a portion of a second object generated by said second application and having second application-specific data, and said third image is an image of at least a portion of a third object generated by said third application and having third application-specific data;

as recited in limitation [1c-1] of claim 1. *Id.* at 45–48. We agree, and find that the combination of Anthony and Hanggie teaches limitation [1c-1].

*(iv) Limitation [1c-2]*

Next addressing limitation [1c-2], Petitioner presents another figure prepared by Dr. Fuchs illustrating Petitioner's proposed combination, which is reproduced below.




Pet. 50. The figure reproduced above shows Dr. Fuchs's third illustration of Petitioner's proposed combination of Anthony and Hanggie. Ex. 1003 ¶ 104; Pet. 49–50 (citing Ex. 1003 ¶ 104).

Referencing the third Dr. Fuchs-prepared figure reproduced above and citing the testimony of Dr. Fuchs, Petitioner asserts that "Anthony explains that the multiple windows ('**images**') can be arranged according to a particular 'ordering attribute,' which may be based on chronologically in time 'e.g., by using a date of creation or date of edit attribute as the ordering attribute.'" Pet. 48–49 (citing Ex. 1007 ¶ 42). Petitioner further contends that

> It would have been obvious to a POSITA that the last date of edit of a window, in some cases, corresponds to the last time a user opened and interacted the window associated with an application. Accordingly, each of HAC's[10] 3D windows ("***plurality of images***") are ***displayed in an order based on a last time that the user opened and interacted with the window associated with an application***.

*Id.* at 49 (citing Ex. 1003 ¶ 104).

Referencing the third Dr. Fuchs-prepared figure reproduced above, Petitioner further argues that

> As shown in the combination figure below, *the three windows can be displayed in an order from the foreground to behind the background* such that "a first one in said order is displayed in a foreground of said 3D immersive space, a second one in said order is displayed in a background of said 3D immersive space behind at least said first one in said order, and a third one in said order is displayed in said background of said 3D immersive space behind at least said second one in said order."

Pet. 49 (emphasis added) (citing Ex. 1003 ¶ 104).

Thus, Petitioner asserts that the combination of Anthony and Hanggie teaches or suggests limitation [1c-2] reciting

> displaying said plurality of images in a three-dimensional space on said display device in an order based on a last time that said user one of (i) opened said first application and interacted with said first object, (ii) opened said second application and interacted with said second object, and (iii) opened said third application and interacted with said third object, such that a first one in said order is displayed in a foreground of said three-dimensional space, a second one in said order is displayed in a background of said three-dimensional space, behind at least said first one in said order, and a third one in said order is displayed

[10] Petitioner refers to the combination of Hanggie and Anthony as "HAC." Pet. 34–35.

> in a background of said three-dimensional space, behind at least said second one in said order.

Pet. 48–50.

As discussed *infra* Section II.D.3.c.i, Patent Owner presents several arguments related to the prior art teaching of this limitation, which we address in that section.

*(v) Limitation [1d]*

Turning next to limitation [1d] reciting "allowing said user to modify at least a portion of one of said first, second, and third application-specific data," Petitioner contends Hanggie teaches that each "window may be comprised of a base content object (i.e., the frame) and a collection of one or more child content objects. Each content object may be defined by a unique set of content attributes, and can be configured to optionally receive keyboard and mouse events." Pet. 50 (citing Ex. 1006 ¶ 60). Citing the testimony of Dr. Fuchs, Petitioner further asserts that

> It was well known in the art that "content objects[] to which the application renders its primary visual output, e.g., text by a word processor, numeric grid by a spreadsheet application, or images by a photo editing application" were *modifiable by the user* through the input devices, e.g., *modifying text in a word processor application* through a user selection of a key on a keyboard.

*Id.* at 50–51 (emphases added) (citing Ex. 1006 ¶ 60; Ex. 1003 ¶ 105).

Thus, Petitioner asserts that the combination of Anthony and Hanggie teaches or suggests limitation [1d] of claim 1. Pet. 50–51. We agree with Petitioner, and find that the combination of Anthony and Hanggie teaches limitation [1d].

*(vi) Limitations [1d-1] and [1d-2]*

Addressing limitation [1d-1], Petitioner contends that Hanggie discloses 3D windows that include buttons 305 that can be "used to restore, maximize, minimize, close the window, etc." Pet. 51 (citing Ex. 1006 ¶ 58, Fig. 3; Ex. 1003 ¶ 107). Petitioner asserts that the user selecting the maximize button for a 3D window in the combined GUI of Anthony and Hanggie teaches "receiving a first interaction from said user with one of said plurality of images corresponding to one of said plurality of applications," as recited in limitation [1d-1] of claim 1. *Id.* at 51–52 (citing Ex. 1003 ¶ 108). We agree, and find that the combination of Anthony and Hanggie teaches limitation [1d-1].

Petitioner further contends that when a user selects the maximize button for a window, the combined GUI of Anthony and Hanggie "would have allowed the user to view the window in a 'maximum' capacity such that it occupies all or almost all parts of the computer display." Pet. 52 (citing Ex. 1003 ¶ 108); *see also id.* at 26–27 ("with expectations surrounding the Microsoft Windows environments described by each of Anthony and Hanggie, a POSITA would have understood and found it obvious that a maximized window would occupy all, or almost all, parts of a display" (citing Ex. 1003 ¶ 67)). Citing the testimony of Dr. Fuchs, Petitioner argues that it would have been obvious to a person of ordinary skill in the art to display the maximized window *as a 2D window* to "allow the user to more intuitively and easily interact with the window." *Id.* at 52–53 (citing Ex. 1006 ¶ 92; Ex. 1003 ¶ 108).

Petitioner argues that a person of ordinary skill in the art would have been motivated to implement the maximize control button in this manner

because "it would not be necessary to expend computing resources on rendering the 3D timeline while a window is in a maximized state" and switching from a 3D mode to a 2D mode would "reduce graphics processing and thereby conserve battery power." Pet. 27–28 (citing Ex. 1003 ¶ 69). Thus, Petitioner asserts that "using the maximize button to switch to a 2D viewing of the window" would have been obvious. *Id.* at 53 (citing Ex. 1003 ¶ 108).

Petitioner asserts that, in the proposed combination of Anthony and Hanggie, by selecting a maximize button on a 3D window in the timeline, "the window would be reconfigured in the legacy mode and displayed in 2D to occupy all or most parts of the screen in a 'maximum' capacity." Pet. 53 (citing Ex. 1003 ¶ 108). According to Petitioner, "[s]uch a maximized 2D window would then *replace* the display of the dynamic timeline and any windows within the timeline." *Id.* (emphasis added) (citing Ex. 1003 ¶ 108).

Thus, Petitioner asserts that the combination of Anthony and Hanggie teaches or suggests "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 applications within a two-dimensional space in response to said first interaction," as recited in limitation [1d-2] of claim 1. Pet. 51–53.

As discussed *infra* Section II.D.3.c.ii, Patent Owner presents several arguments related to the prior art teaching of limitation [1d-2], which we address in that section.

*(vii) Limitations [1d-3] and [1d-4]*

Turning next to limitation [1d-3] reciting "receiving a second interaction by said user with said one of said first, second, and third objects

within said two-dimensional space," Petitioner contends that the combination of Anthony and Hanggie teaches or suggests this limitation because Hanggie discloses receiving text input from a user with a maximized word processing application window. Pet. 54 (citing Ex. 1006 ¶ 88). Citing the testimony of Dr. Fuchs, Petitioner further argues "[i]t would also have been obvious to a POSITA that when a user would like to interact with multiple 2D windows, the computer would have received multiple user interactions for the user to interact with the multiple windows (e.g., second and third objects) in the 2D space." *Id.* (citing Ex. 1003 ¶ 111). We agree, and find that the combination of Anthony and Hanggie teaches limitation [1d-3].

Lastly, addressing limitation [1d-4] reciting "modifying said one of said first, second, and third application-specific data in response to said second interaction," Petitioner asserts that the combination of Anthony and Hanggie teaches or suggests this limitation because "[a]s 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" and application-specific data in the multiple 2D windows discussed above "would have been modified similar to the single window example." Pet. 54 (citing Ex. 1003 ¶ 111). We agree, and find that the combination of Anthony and Hanggie teaches limitation [1d-4].

*(viii) Reasons to Combine Anthony and Hanggie*

As discussed above in an overview of Petitioner's proposed combination of Anthony and Hanggie (Section II.D.3.a), Petitioner asserts,

referencing the Dr. Fuchs-prepared figure reproduced above in the discussion of the overview of the proposed combination, that

> consistent with Anthony's teachings, the POSITA would have found it obvious to organize the plurality of application windows within a dynamic timeline and, consistent with Hanggie's teachings, each of the plurality of application windows would feature a window caption and control buttons, with the buttons enabling selection between 2D and 3D viewing modes.

Pet. 25 (citing Ex. 1007 ¶¶ 42, 43, 11, Fig. 4, code (57); Ex. 1006 ¶ 58, Fig. 3; Ex. 1003 ¶ 64). Petitioner further contends that a person of ordinary skill in the art would have found it obvious to combine the teachings of Anthony and Hanggie to

> (1) implement one or more windows corresponding to one or more applications as displayed focal group windows in Anthony's timeline; (2) implement control buttons 305 on application windows within the timeline that would allow a user to restore, maximize, minimize, or close the windows; and (3) implement a control selection through which a user can switch between 2D and 3D viewing of the application windows.

*Id.* at 23 (citing Ex. 1003 ¶¶ 60–61).

Addressing the reasons to combine Anthony and Hanggie, Petitioner asserts that a person of ordinary skill in the art would have been motivated to organize and represent application windows in this manner because, among other reasons,

> A POSITA would . . . have recognized that implementing Hanggie's control buttons 305 in Anthony's focal group windows such that the user could close, minimize, maximize, or restore a window when desired by selecting a corresponding button would be consistent with user expectations, would be convenient to the user, and would assist the user in interacting with applications represented within the timeline. For example, control buttons of this nature would have been understood to

> provide a user with more control over the information displayed within the timeline and application windows, and to allow the user to view or interact with a particular window only when desired.

Pet. 26 (citing Ex. 1006 ¶ 56, Fig. 3; Ex. 1003 ¶ 66).

As discussed above, Petitioner also argues that a person of ordinary skill in the art would have been motivated to implement the maximize control button to display the maximized window as a 2D window—i.e., to switch to a 2D viewing of the maximized window—because doing so would have "allow[ed] the user to more intuitively and easily interact with the window" (Pet. 52–53 (citing Ex. 1006 ¶ 92; Ex. 1003 ¶ 108)) and because a person of ordinary skill in the art would have understood that switching from a 3D mode to a 2D mode would "reduce graphics processing and thereby conserve battery power" (*id.* at 27–28 (citing Ex. 1003 ¶ 69)).

Petitioner further contends that the combination would have been foreseeable and predictable because Anthony and Hanggie are directed to similar systems and use the same or similar software for rendering 3D graphics. Pet. 28 (citing Ex. 1003 ¶ 71). Petitioner explains

> For instance, . . . Anthony's computer system, as depicted in Anthony's FIG. 1, is highly similar to Hanggie's computer system shown in Hanggie's FIG.1A (e.g., compare Hanggie and Anthony's system memory 130, hard disk drive 141, processing unit 120, monitor 191/184). Further, Anthony and Hanggie both disclose using the same or similar 3D Graphics software such as Direct3D®, or OpenGL® to enable 3D viewing of objects (*see* Anthony's ¶[0043] ("The 3D environment may be implemented utilizing graphics technology such as DirectX®, Direct3D®, OpenGL®, GDI, a media integration layer, or some other presentation platform as is known in the art. In some embodiments, 3D objects (which contain 3D properties) may be utilized to provide the 3D effect") and Hanggie's ¶[0047] ("The

> 3D Graphics Interface 195 may include a . . . graphics service such as Direct3D®, OpenGL®, or the like.")[)].

*Id.* at 28–29 (citing Ex. 1003 ¶ 71). Petitioner further asserts that "the combination of Hanggie's teachings with Anthony's would yield the predictable results of Anthony's system providing standard captions and control buttons for application windows represented within its 3D timeline, and being able to switch between 3D and 2D interface modes." *Id.* at 28 (citing Ex. 1003 ¶ 70).

Petitioner argues, therefore, a person of ordinary skill in the art would have combined Anthony and Hanggie in the manner proposed with a reasonable expectation of success because "doing so would have involved nothing more than combining prior art elements according to known methods to yield predictable results." Pet. 28 (citing Ex. 1003 ¶ 70).

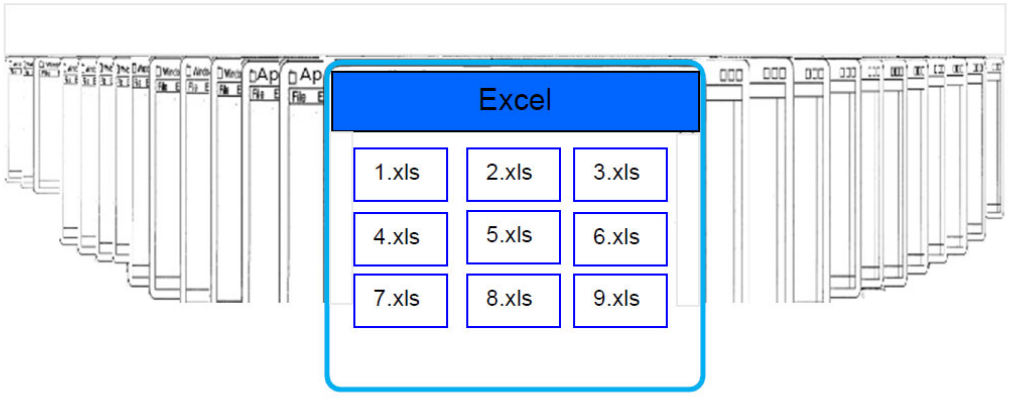
As discussed *infra* Section II.D.3.c.ii, Patent Owner presents several arguments related to the rationale to combine Anthony and Hanggie, which we address in that section.

*c. Patent Owner's Arguments Regarding Elements of Claim 1 and Rationale to Combine and Our Analysis*

Patent Owner presents several arguments asserting that the combination of Anthony and Hanggie does not teach all elements of claim 1. Patent Owner's arguments are directed to the limitations Petitioner identifies as limitations [1c-2] and [1d-2] of claim 1. *See* PO Resp. 37–51, 55–50; PO Sur-reply 3–23. Patent Owner also disputes the motivation to combine Anthony and Hanggie and asserts that objective indicia support the patentability of claim 1. *See* PO Resp. 51–55, 61–64. We address each of Patent Owner's arguments in turn.

*(i) Limitation [1c-2]*

Patent Owner asserts that the combination of Anthony and Hanggie does not disclose the claimed chronological order display of images as required in limitation [1c-1]. PO Resp. 37–51; PO Sur-reply 3–12. Patent Owner argues that Petitioner relies on Anthony for the display of items based on an ordering attribute, and provides an annotated version of Figure 4 from Anthony that shows photographs from different time periods with individual applications. PO Resp. 40 (citing Pet. 23–24). Patent Owner contends that "[w]hile Anthony does provide that 'file type' can be an ordering attribute. . ., this attribute would allow the user to locate 'files or folders' for a particular application." *Id*. at 41 (citing Ex. 1007 ¶¶ 42, 49). Patent Owner presents an alleged "more accurate annotation of Figure 4," reproduced below, that would "allow[] a user to more easily locate files or folders for a particular application." *Id*. at 41–42 (citing Ex. 2015 ¶ 95).




Patent Owner's Annotated Version of Figure 4

Patent Owner annotated version of Figure 4 of Anthony, above, shows individual files or folders within an application in a 3D view of Anthony. PO Resp. 42. Patent Owner asserts that the individual files and folders

shown in annotated Figure 4 above "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." *Id*.; PO Sur-reply 8–9. Patent Owner also argues that "Anthony teaches that the taskbar is sufficient to illustrate *open applications*," and while a person of ordinary skill in the art may have been motivated to use the 3D timeline to display files based on application types, the applications would not be arranged in the order last used, so Petitioner's argument to the contrary constitutes impermissible hindsight. PO Resp. 43–44 (citing Ex. 1007, Fig. 4 (bottom left corner); Ex. 2015 ¶ 98) (emphasis added). Patent Owner argues that it would not have been obvious to use the 3D timeline to present open applications in the order they were last used because, in Anthony, saved files are presented in a 3D timeline while open applications are presented on the taskbar. *Id*. (citing Ex. 2015 ¶ 99). Patent Owner also argues that Hanggie does not disclose any order for displaying items in 3D space and does not make up for the deficiencies of Anthony. *Id*. at 44.

We do not agree with Patent Owner's arguments. Patent Owner's contentions overlook Petitioner's assertions as to how the limitation is taught by the combination of Hanggie and Anthony; Patent Owner instead presents arguments based on its own alternative arrangement of the teachings of Hanggie and Anthony. More specifically, Petitioner relies on the use of Hanggie's application windows displayed in 3D under Anthony's disclosure that "multiple windows ('images') can be arranged according to a particular 'ordering attribute,' which may be based on chronologically in time 'e.g., by using a date of creation or date of edit attribute as the ordering attribute.'" Pet. 48–49 (quoting Ex. 1007 ¶ 42). Instead of addressing or acknowledging

Petitioner's assertions, Patent Owner bases its arguments on different disclosures of Anthony. Patent Owner asserts that *file types* would or should be used as the ordering attribute in Anthony in order to "allow the user to locate 'files or folders' for a particular application." PO Resp. 41. But Petitioner has relied on the specific teaching in Anthony that the date of creation, or of the last edit, may be the ordering attribute used for the 3D display. Pet. 48–49. Patent Owner's annotated version of Anthony's Figure 4, as well as its related arguments, are based on its alternative theory that file types are used as the ordering attribute. PO Resp. 40–44. Patent Owner's arguments are also directed to Anthony and Hanggie individually but, as discussed above, Petitioner relies upon the combination of Anthony and Hanggie for teaching this limitation. Pet. 31–34, 48–50; *see also In re Keller*, 642 F.2d 413, 426 (CCPA 1981) ("[O]ne cannot show non-obviousness by attacking references individually where, as here, the rejections are based on combinations of references.").

Patent Owner argues additionally that the individual files and folders shown in Patent Owner's annotated Figure 4 do not result in the claimed invention with individual applications displayed in an order based on a last time that each *application* was opened, or interacted with, by the user and would not allow the user to view the *application* where the user last left off. PO Resp. 39 (emphasis added). This alleged requirement is based on Patent Owner's assertion that "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*" and "***the claimed invention orders images in 3D space based on the most recently used applications—not the most recently used documents or files***." *Id*. at 14; PO Sur-reply 4. In

support, Patent Owner alleges that the invention is directed to generating and displaying images of open applications in 3D space such that the user can switch from one application to another to resume where they last left off, which makes it easier for the user to locate and select applications that are more frequently used. PO Resp. 1–2; *see also* PO Sur-reply 4.

Patent Owner's arguments appear to be based on an alleged requirement that the individual applications have to be displayed in an order based on a last time that each application was opened, or interacted with, by the user. PO Resp. 38. We address Patent Owner's interpretation of the claim language below, but we do not agree with Patent Owner that the claimed ordering must be based on the opening of, or the last interaction with, a specific application, rather than the creation, or editing, of application-specific data like a file or document. Dr. Schaefer testified that when a user wants to interact with an application, the user typically opens an application window. Ex. 1031, 67:22–68:3. Dr. Fuchs also testifies that, when a user interacts with an application file or window (such as a Word or Excel window generated by a Word or Excel application), one of ordinary skill would have understood that "an application executable file is executed in order to display an application window," and "such an interaction would be with both the application and application window because the software (executable file) running the application receives and provides instructions to display (and store) the character in the application window." Ex. 1033 ¶ 27. Dr. Schaefer's testimony is consistent with Dr. Fuchs's testimony, that is, when an application is run, an executable file is executed, and the application captures user input. Ex. 1031, 63:17–68:5. Accordingly, we do not find Patent Owner's arguments on this issue to be supported by the

record. Specifically, even if we accept Patent Owner's understanding of this term, we find that, in Petitioner's proposed combination, the individual applications (e.g., Word, Excel, etc.) are displayed in an order based on a last time that each application was opened or interacted with by the user (e.g., date of creation, date of edit, etc.).

Notably, in the Patent Owner Response, no interpretation of limitation [1c-2] is presented by Patent Owner. PO Resp. 21. In its Sur-reply, however, Patent Owner presents, for the first time, a specific interpretation of the language of claim [1c-2], asserting that "the phrase 'a last time that said user one of' is 'a last time that said user (i) opened said first application ***or*** interacted with said first object, (ii) opened said second application ***or*** interacted with said second object, ***and*** (iii) opened said third application ***or*** interacted with said third object.'" PO Sur-reply 8. Patent Owner contends that this reading of the claim limitation is consistent with the claim language, the Specification, and the legal interpretation of the term "one of" in the context of the claim language. *Id*. at 3–8. Apparently based on this reading, Patent Owner disagrees with Petitioner's assertion that limitation [1c-2] "would have been understood as encompassing the opening of an application and interacting with an object (for one of the first, second, third applications)." *Id*. at 6 (quoting Pet. Reply 12).

Petitioner asserts that Patent Owner's late-raised interpretation "drastically depart[s]" from the claim language and "eliminates the words 'one of' and several instances of 'and' from this limitation [and] more specific[ally], [Patent Owner] has actually replaced the word 'and' in each of the enumerated one, two, and three clauses with the word 'or.'" Tr. 18:14–17. Petitioner asserts that it did not have an opportunity to respond to

this late interpretation and Patent Owner's arguments have been forfeited. *Id*. at 18:20–24. Petitioner nonetheless contends that both under the plain language of the limitation, as well as Patent Owner's late-raised interpretation, the combination of Hanggie and Anthony teaches the claim limitation, so it is not necessary to reach a claim interpretation issue. *Id*. at 18:25–19:1.

We agree. As discussed above, Petitioner relies upon Anthony's teaching that multiple windows can be arranged according to an ordering attribute in chronological order "by using a date of creation or date of edit attribute as the ordering attribute." Pet. 48–49 (citing Ex. 1007, ¶ 42). This disclosure teaches the claim limitation, even under Patent Owner's own interpretation, wherein ordering is based on the last time a user "opened said first application *or* interacted with said first object," etc., because the ordering may be based on when a user either opened an application *or* interacted with an object. In other words, Patent Owner's use of the term "or" instead of the term "and" in the limitation serves to broaden the scope of the limitation. That is, a teaching directed to either the time of opening an application or interaction with an object in the application may be sufficient to disclose the limitation. Accordingly, we agree with Petitioner that Anthony's use of a date of creation or date of edit attribute as the ordering attribute teaches the claim limitation because editing would entail both opening an application corresponding to a window, as well as interacting with the window, and the using date of creation would entail opening an application. Pet. 48–49; Tr. 22:22–23:4.

Patent Owner disagrees, however, that the use of the term "or" broadens the claim limitation. *See* Tr. 61:1–10. Patent Owner's position is

that "the claimed order is not based solely on interactions, but 'on a last time that said user' opened or interacted with a specific application." PO Sur-reply 10 (emphasis omitted). Patent Owner appears to be adding further requirements to the claim limitation by arguing "the claim contemplates that a determination must be made as to when an application was opened and whether it was subsequently interacted with." *Id*. at 10 (emphasis omitted). Patent Owner asserts that the claim differentiates between opening an application and interacting with an object, and there is a time associated with the application opening. *Id*. at 11 (citing Ex. 1001, 37:50–58 (limitation [1b])). Patent Owner contends that because claim 1 recites that for each application an object is generated having application-specific data, a user is allowed to modify a portion of the application-specific data by interacting with said object, and that "a determination must be made as to whether this interaction actually took place, and if so, at what time." *Id*. Patent Owner argues that "two times (opening, interacting) are then taken into account in determining the claimed order in which the images are displayed in 3D space." *Id*. at 11–12 (emphasis omitted).

Patent Owner further alleges that "Petitioner's proposed combination does not take this determination into account." PO Sur-reply 10. By this, we take Patent Owner's arguments to mean that the claim requires determinations as to when an application was opened, whether it was subsequently interacted with, and the time of the interaction, and that the times of the opening and interaction have to be "taken into account" for displaying. These arguments are based on Patent Owner's attempt to introduce more limitations than would otherwise arise from its proposed interpretation of the "one of" term found in limitation [1c-2]. As discussed

above, the limitation of opening an application or interacting with an object, under Patent Owner's proposed language, allows for either the "opening" or "interacting" to be performed, where the last time of either action may be used for display ordering. We see no reason, and Patent Owner does not provide explanations, as to why the additional requirements of making a determination of whether the opening was subsequently followed by interaction, making a determination of the times of the opening and interacting, and accounting for these times in the ordering are required because of its substitution of the term "or" in the claim term.

Instead, Patent Owner's proposed construction of the claim limitation only requires that the display ordering be "based on [the] last time that said user (i) opened said first application or interacted with said first object, (ii) opened said second application or interacted with said second object, and (iii) opened said third application or interacted with said third object," which we find is taught by the combination of Hanggie and Anthony.[11] Further, for the editing attribute ordering, Dr. Fuchs explained that the date of edit of a given window corresponds to the last time that a user opened the corresponding application and interacted with the window object. Ex. 1003 ¶ 104. We therefore agree that the combination of Hanggie and Anthony teaches both the "open[ing] said first application" and "interact[ing] with said first object" with the use of the editing attribute and "open[ing] said first application" with the date of creation attribute. Pet. 48–50. Further, we find persuasive Dr. Fuchs's testimony that attributes associated with editing

[11] We need not reach the issue of whether Patent Owner's interpretation with the use of "or" is correct because we find that the combination of Hanggie and Anthony nonetheless teaches the limitation under this interpretation.

suggest opening an application and interacting with an object in sequence because editing would require opening an application prior to interacting (Ex. 1003 ¶ 104), to the extent that Patent Owner may be arguing that limitations [1b] and [1c-2] require the sequence of opening the application followed by interaction with the object. *See* PO Sur-reply 10–12.

Patent Owner also presents arguments on whether "images" are taught in the combination of the asserted prior art. *See* PO Resp. 44–51; PO Sur-reply 13–23. We address this issue below in the discussion of limitation [1d-2]. For the reasons discussed below, we do not find persuasive Patent Owner's arguments on the "images" issue.

Accordingly, we have reviewed the evidence and argument of record and find that Petitioner sufficiently demonstrates that the combination of Hanggie and Anthony teaches limitation [1c-2].

*(ii) Limitation [1d-2]*

First, Patent Owner argues in the disclosures of the asserted prior art, there is no teaching of "switching from a 3D space to a 2D space" and that "everything occurs on a single 3D GUI." PO Resp. 33, 36. Patent Owner asserts that "it is not the object (*e.g.*, window) that is 2D but the space in which the object is presented." *Id*. at 55. For this argument, Patent Owner appears to rely on the district court's statements 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.'" *Id*. at 55–56 (quoting Ex. 2011, 16). Patent Owner further refers to the district court's statements that "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" and "[t]he 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 56 (quoting Ex. 2011, 16–17). Patent Owner argues that Petitioner's assertion "that it would have been obvious to 'switch to a 2D viewing of the window' [by selecting the maximize button in the combined GUI of Anthony and Hanggie for the window to be reconfigured in the legacy mode and displayed in 2D] is not only irrelevant but misleading on the issue of obviousness." *Id*. Patent Owner contends that Petitioner's alleged "mischaracterization of the claimed invention" appears to be due to Dr. Fuchs not taking the district court's claim construction order into consideration in his opinion. *Id*. (citing Ex. 2017, 63:24–64:10; Ex. 1003 ¶ 34).

As discussed in the Decision on Institution, the "replacing" step of limitation [1d-2] recites "*replacing* said plurality of *images* within said three-dimensional space *with* one of said . . . *objects corresponding to said one of said plurality of applications* within a two-dimensional space." Ex. 1001, 39:40–43 (emphases added). The Specification states that:

> When the viewpoint of the end user within a virtual space has caused the webpage to be drawn in skew, there will often be a distortion in shape of the normal distribution toward one side or the other. In such a case, the 3D GUI system utilizes the Bind to the HUD feature whereby *clicking an icon* or bottom (*analogous to the minimize in windows* operating system environment) *triggers a change to the viewpoint* of the end user within the virtual space so that the webpage is directly in an end user's visual field, thereby making it easier to interact with. In one embodiment, this is *accomplished by revealing the 2D version of the webpage* that was initially hidden or drawn off screen and positioning it in a layer that is in front of the 3D virtual space

> such that the end user can interact with this layer in 2D. Furthermore, the end user has the freedom to unbind to the hud or hide the 2D webpage again that was initially hidden or drawn off screen by clicking the appropriate button (again, analogous to the minimize button in the windows operating system environment). As such*, an end user can toggle or switch between 2D and 3D for* any selectively captured computing output and information (*webpages*, applications, documents, desktops or anything that can be visualized on a computer*) that was drawn within a 3D virtual space* at will by using this technique.

Ex. 1001, 21:34–56 (emphases added).

The Specification and its description of switching viewpoints, but not switching 2D and 3D spaces, therefore provides support for switching between the display of the 2D and 3D versions of a webpage for limitation [1d-2].

Petitioner argues that the Specification "describes switching viewpoints" where clicking an icon or button triggers a change to the viewpoint of the user and, therefore, is consistent with Petitioner's position that the Anthony-Hanggie combination's switching from a 3D viewing mode to a 2D viewing mode to display the maximized window in a 2D mode meets the "replacing" limitation. Pet. 53 (citing Ex. 1001, 22:7–30).

We find Petitioner's arguments to be persuasive. The referenced portion of the Specification describes a user clicking on an icon (or a windows control) to "trigger[] a change to the viewpoint of the end user within the virtual space" and display "the 2D version of the webpage . . . such that the end user can interact with this layer in 2D." Ex. 1001, 21:38–43. Similarly, the cited paragraph describes that "an end user can toggle or switch between 2D and 3D for any . . . webpages, applications," etc., "that [were] drawn within a 3D virtual space." *Id.* at 21:51–56. In other words,

the cited paragraph of the Specification describes switching between the display of the 2D and 3D *versions of a webpage* or application.

Petitioner relies on the multiple 3D windows in the dynamic timeline of the combination of Anthony and Hanggie as teaching the recited "plurality of images within said three-dimensional space." Pet. 45–48. Petitioner also relies on the maximized window of an application displayed in a 2D mode in the combination of Anthony and Hanggie as teaching the recited "one of said . . . objects corresponding to said one of said plurality of applications within a two-dimensional space." *Id.* at 51–53. Further, Petitioner asserts that it would have been obvious to implement the maximize button of the combined GUI of Anthony and Hanggie to switch from a 3D viewing mode to a 2D viewing mode and display the maximized window in a 2D mode of the window. *Id.* Petitioner argues that selecting a maximize button on a 3D window in the combined GUI of Anthony and Hanggie teaches or suggests the "replacing" limitation because all or most parts of the display of the 3D windows in the timeline (the recited "plurality of images within said 3D immersive space") would be occupied or replaced (the recited "replacing said plurality of images within said 3D immersive space") with the maximized window displayed in 2D (the recited "one of said . . . objects corresponding to said one of said plurality of applications within said 2D space"). *Id.* Thus, Petitioner's mapping meets the claim language of the "replacing" limitation, in that the limitation requires only replacing images within said 3D immersive space with objects corresponding to applications within said 2D space.

Patent Owner also argues that "[t]he claims . . . 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." PO Resp. 45. We do not find this argument persuasive because the claim limitation does not require that the images be replaced with active applications; rather it requires that the images be replaced with objects corresponding to applications. *See also supra* Section II.D.3.c.i.

Patent Owner next argues that the combination of Anthony and Hanggie fails to teach replacing an image in 3D space that includes both objects, which are asserted to be windows, and application-specific data, which is asserted to be the window's contents. PO Resp. 44–45; PO Sur-reply 1. Patent Owner asserts that a person of ordinary skill in the art "would understand that the claimed object is akin to a window and the application-specific data is data (or content) that is displayed therein." *Id*. at 56–57 (citing Ex. 2015 ¶ 123). Patent Owner contends that "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.) . . . [and] [t]he application-specific data would be a particular Word document or file." PO Resp. 56–57. But Patent Owner acknowledges, and we agree, that in Petitioner's combination, "the claimed 'object' generated by the application is the 'application window' and the claimed application-specific data is the 'content' of the window." PO Sur-reply 9 (citing Pet. 41–42) (Petition asserting that Hanggie teaches generating a window having content corresponding to the application file selected by the user). Patent Owner's argument instead seems to be more directed to allegations that the combination of the prior art fails to teach the claimed replacement of *images* in the 3D space with objects corresponding

to one of the applications within the 2D space. *See* PO Resp. 56–60; PO Sur-reply 13–23. We address the related issues in turn.

As discussed above for limitation [1c-2], Petitioner asserts that windows depicted in Anthony's Figure 4 are replaced by application windows with features similar to those in Hanggie's Figure 3, and then when 3D application windows are generated and displayed, the respective application windows are images of at least a portion of an object (e.g., 2D window) generated by the respective application with respective application-specific data. Pet. 32–33, 48 (citing Ex. 1003 ¶¶ 75, 102). For limitation [1d-2], Petitioner contends that when a user selects the maximize button for a window, the combined GUI of Anthony and Hanggie "would have allowed the user to view the window in a 'maximum' capacity such that it occupies all or almost all parts of the computer display." *Id*. at 52 (citing Ex. 1003 ¶ 108).

Patent Owner argues that Hanggie does not generate the claimed images but displays active applications in 3D space. PO Resp. 45. More specifically, Patent Owner contends that in Hanggie, because the window shown in Figure 3 can be maximized, not only is the window active but so is the content (application-specific data). *Id*. Patent Owner asserts that both experts agree with this. *Id*. (citing Ex. 2015 ¶ 102; Ex. 2016, 31:4–40:5, 40:7–42:18, 43:11–45:5, 47:12–51:13, 70:5–71:16). Patent Owner argues that "if the window in Dr. Fuchs's 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." *Id*. at 49 (citing Ex. 2015 ¶ 111).

Patent Owner contends "[b]y 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 '654 Patent." PO Resp. 50 (emphasis omitted). Patent Owner asserts that claim 1 requires that the first image include "'the first object' (*e.g.*, the window) and 'the application-specific data.'" *Id*. Patent Owner argues that the window is the claimed object and the same window is an image. *Id*. Patent Owner asserts that "[i]f the user can interact with the maximize button, then the image does not include the object (window)," but "[i]f the image includes the object (window), then the user would not be able to maximize the window as argued by Petitioner[]." *Id*. (citing Ex. 2015 ¶ 112).

We do not find persuasive Patent Owner's argument that Hanggie does not generate the claimed images because it displays active applications in 3D space, where "the user can interact with the control buttons on the window, [thus] the window (object) is not an image." PO Resp. 45, 49–50. Both parties agree that the language of claim 1 (limitation [1d-1]) requires interacting with an image in order to prompt the replacement of the image in 3D space with objects within 2D space. *See* Tr. 46:25–47:3; Pet. 51–53. Accordingly, Patent Owner's argument that Hanggie cannot teach the claim limitation because there is interaction with an image runs contrary to the plain meaning of the claim language and Patent Owner's view of that language. Additionally, we agree with Petitioner's arguments that the disclosures of the '654 patent support the claimed interactivity of the images in the 3D space. Pet. Reply 2–5. In particular, Petitioner refers to the '654 patent's explanation that "the 3D GUI runs as an Active X control within the Internet Explorer web browser," and "once [a] file, document, application or

desktop is added to the virtual space 300, it is fully interactive and functional and appears no different from, or close to, the original way the program functions when it was not in the 3-D Cartesian space 300." *Id*. at 4 (citing Ex. 1001, 5:22–33, 20:39–55, 20:66–21:3; Ex. 1033 ¶¶ 11–12). Petitioner asserts, and we agree, that the Specification provides support that the images in 3D are interactive and function in a similar manner to those as corresponding objects in 2D. *Id*.

In its Sur-reply, Patent Owner raises claim construction issues related to the term "image." PO Sur-reply 13–20; Tr. 11:12–20. Patent Owner alleges that the term "image" should be given its plain and ordinary meaning in the context of computers, "e.g., bitmap, JPEG, screenshot, thumbnail, etc.—in essence 'an optical counterpart of an object produced by . . . an electronic device.'" PO Sur-reply 14–15 (citing Ex. 1029). Patent Owner, however, additionally appears to add a requirement that "an interaction with an image does not modify the object itself." PO Sur-reply 15 n.5. This proposed construction was further discussed during oral hearing (*see* Tr. 40:12–47:9), and Patent Owner's position appears to be that the meaning of "image" includes a limitation that it cannot be interactive such that its underlying content can be modified (*id*. at 42:24–25, 44:3–4, 46:12).

Patent Owner further argues that "Petitioner's erroneous construction of image to mean that 'the images in 3D are fully interactive and function the same or similar manner as the corresponding objects in 2D space' (Reply, 4) is not only contrary to the claim language but, by conflating 'images' with 'objects,' this violates the presumption that '[d]ifferent claim terms . . . have different meanings.'" PO Sur-reply 15 (emphases omitted). Patent Owner argues that Petitioner refers to the '654 patent Specification

where "the present invention displays graphics from the user's 2D finite desktop in 3D infinite space while retaining the functionality of the 2D programs and documents." *Id*. (citing Pet. Reply 3) (emphases omitted). Patent Owner argues, however, that Petitioner omits how the functionality is retained, and the Specification describes two ways of retaining functionality where "both involv[e] an imaged object that cannot be interacted with in 3D space, i.e., inactive images." PO Sur-reply 15. In support, Patent Owner first refers to the Specification's description of interactions on images that are "mapped" to the 2D computing output hidden off screen, where the captured image is the result of the "periodic[] capture [of] the on screen output of [a] window . . . as a bit map image." *Id*. at 16–18 (citing, *inter alia*, Ex. 1001, Fig. 3 (steps 142, 146, 148, 152), 23:5–23, 24:24–31). Patent Owner refers to the Specification's disclosure of "reveal[ing] the 2D version of the webpage that was initially hidden or drawn off screen and positioning it in a layer that is in front of the 3D virtual space such that the end user can interact with this layer in 2D." *Id*. at 18–19 (citing Ex. 1001, 21:43–47, 30:23–35). Patent Owner argues that "in either embodiment, the captured images of objects and the application-specific data are not the objects and data themselves." *Id*. at 19.

Petitioner argues, and we agree, that Patent Owner advanced a claim construction for the term "image" for the first time in its Sur-reply, and Patent Owner does not dispute that. *See* Tr. 13:12–20; 40:24–41:1. In its Response, and as discussed above, Patent Owner presented arguments on deficiencies of the prior art teachings of the replacement of "images," alleging Hanggie's failure to disclose the claim limitation. PO Resp. 44–51. But in the Response, Patent Owner did not present a claim construction for

the term "image"—instead, Patent Owner contended that this term, among others, "should be given [its] plain and ordinary meaning." *Id*. at 21, 44–51. In its Sur-reply, Patent Owner continued to allege that the term "image" should be given its plain and ordinary meaning, but appears to add a requirement that "an interaction with an image does not modify the object itself" and at oral hearing appeared to state that the meaning of "image" includes a limitation that it cannot be interactive such that its underlying content can be modified. PO Sur-reply 15 n.5; Tr. 42:24–25, 44:3–4, 46:12.

Patent Owner's proposed construction of the term "image" is not just what is alleged to be the ordinary meaning, but instead includes additional limitations that were not raised until its Sur-reply and which were further elaborated at oral hearing. Patent Owner argued at oral hearing that it first-presented the "image" construction issue in its Sur-reply because Petitioner's Reply "fleshed out their understanding of what they purported to characterize as the plain and ordinary meaning of 'image.'" Tr. 40:24–41:15. Patent Owner may be asserting that Petitioner presented claim construction for the term in its Reply. *Id*. at 41:5 (referring to "Petitioner's construction of 'image'"); PO Sur-reply 15.

We have reviewed Petitioner's Reply, and find that it asserts that the Patent Owner Response appears to argue limitations not appearing in the claims, including the argument that an object is not an image "by definition"—but Patent Owner did not provide a definition for "image" or provide any support from the Specification or secondary sources for its interpretation in the Response. Pet. Reply 2–9. In other words, Petitioner complains that Patent Owner should have presented support for claim construction of the term "image" in its Response because Patent Owner's

arguments appeared to rely on some alternate construction. We agree. The record reflects that Patent Owner initially raised arguments that relate to the prior art's teaching of "image" in its Response (*see, e.g.*, PO Resp. 32, 50) but, as Petitioner points out, underlying these arguments were potentially additional limitations on the term "image"— these limitations, however, were only identified by Patent Owner in its Sur-reply. The proper time for Patent Owner to raise those arguments would have been in the earlier Response. The Consolidated Trial Practice Guide ("CTPG")[12] states that "[g]enerally, a reply or sur-reply may only respond to arguments raised in the preceding brief." CTPG 74; *see also* 37 C.F.R. § 42.23. The CTPG further states "a reply or sur-reply that raises a new issue or belatedly presents evidence may not be considered." CTPG 74. Accordingly, under the circumstances here, Patent Owner's late-raised arguments on the construction of the term "image" have been forfeited.

In any case, even with the claim construction issue raised late, both parties agree that the plain and ordinary meaning for the term based on dictionary definitions is similarly "a tangible or visible representation" (Pet. Reply 8), or "an optical counterpart of an object produced by . . . an electronic device" (PO Sur-reply 14–15), for instance. As discussed above, both parties also agree that claim 1's language requires interacting with an image (Tr. 46:25–47:3; Pet. 51–53), in order to prompt the replacement of the image in 3D space with objects within 2D space. Patent Owner argues, however, that "Petitioner's construction of an 'image' as being something

[12] Available at https://www.uspto.gov/TrialPracticeGuideConsolidated.

that's fully interactive to the same extent as an application in 2D is simply not correct. It's far too broad." Tr. 44:23–25.

The point of disagreement between the parties is Patent Owner's additions to the proposed construction for the term "image" such that its underlying content cannot be modified in an interaction, as discussed above. Patent Owner points to two embodiments in the '654 patent Specification, which allegedly provide support that "the imaged object . . . cannot be interacted with in 3D space, i.e., inactive images." PO Sur-reply 15–19. Conversely, Petitioner points to the '654 patent that discloses that when graphics from the 2D desktop are displayed in 3D space, "the functionality of the 2D programs and documents" is retained and "the 3D GUI runs as an Active X control within the Internet Explorer web browser." Pet. Reply 3–5 (citing Ex. 1001, 5:22–33, 20:39–41). Further, the '654 patent discloses, for instance, "a Microsoft Word document [] running in a window [] within a 3D virtual space" (Ex. 1001, 20:56–57) where "once [a] file, document, application or desktop is added to the virtual space 300, it is fully interactive and functional and appears no different from, or close to, the original way the program functions when it was not in the 3-D Cartesian space 300" (Ex. 1001, 20:66–21:3). Pet. Reply 3–4. We agree with Petitioner that these disclosures provide support that the images in 3D are interactive and the functionality of the 3D images can be the same as objects in 2D. *Id*.

On this record, in light of the broader disclosures in the '654 patent, we decline to import an additional limitation into the term "image" to place a restriction on interactions to not include modifications, as proposed by Patent Owner. Further, Patent Owner does not cite to any supporting evidence to show that the patentee acted as its own lexicographer or

disavowed claim scope to restrict the construction of the term "image." *See Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (To act as its own lexicographer, a patentee must "clearly set forth a definition of the disputed claim term," and "'clearly express an intent' to redefine the term."). Thus, the Specification, as a whole, does not support Patent Owner's proffered construction of "image" that adds the limitation that its underlying content cannot be modified in an interaction.

Additionally, we agree with Petitioner that the combination of Hanggie and Anthony teaches the claim limitation under the plain meaning of the term proposed by Patent Owner. Pet. Reply 19–20; Tr. 14:20–15:18. As Petitioner asserts, Hanggie discloses that an application can generate an application window and attach content objects to that window. Pet. Reply 19–20 (citing *inter alia*, Ex. 1006 ¶ 50). Hanggie discloses that the object "consists of a raster surface of specified size and pixel format to be used as a diffuse texture mapped to an application- or system-defined mesh, along with optional accessory resources such as additional textures (light map, specular map, bump/normal map, etc)." Ex. 1006 ¶ 50. Further, for the application window, the "application program provides the scroll bar elements as custom child content objects so that they manifest an appearance and behavior peculiar to the application program . . . [and] an application may elect to remove or reposition one or more of the stock frame elements using the CDWM API [Application Programming Interface]." *Id*. ¶ 58. We agree with Petitioner that Hanggie's disclosure of textured optical counterparts to objects and application window elements represent an image under Patent Owner's proposed construction as "an optical counterpart of an object produced by . . . an electronic device" as displayed on a monitor.

Patent Owner also argues that Petitioner "cannot have it both ways" by asserting that Hanggie's window is an object and the same window is an image. PO Resp. 50. We do not agree. As Petitioner maps Hanggie to the claim element, the claimed object is the application window displayed in 2D space (Pet. 42) and images are in the form of 3D windows that correspond to 2D windows, which are produced by an application window that can attach objects to the application window (*id*. at 46). We agree with Petitioner that its mapping relies on images, which are windows in the 3D space, that differ from objects that are windows in the 2D space. Pet. Reply 20 (citing Ex. 1033 ¶ 41). As Dr. Fuchs testifies, in the "composited window in 3D space, the computer modifies various features of the (previous) window in 2D space such as the 'content size, window position or scale, or a change to the pixels of the contents diffuse texture." Ex. 1033 ¶ 41 (citing Ex. 1006 ¶ 50).

Patent Owner also argues Petitioner "cannot have it both ways" because if the window and its title bar are active in Hanggie, then it is not an image, but if the window and title bar are an image then it cannot be interacted with. PO Resp. 58. This argument is dependent on Patent Owner's claim construction, which we disagree with for the reasons as addressed above.

Patent Owner further argues that if the combination of Hanggie and Anthony "did result in the presentation of images in 3D space, then there would be no motivation to switch from 3D to 2D as Petitioner[] contend[s]." PO Resp. 52 (citing Ex. 2015 ¶ 115); *see also id*. at 47. Patent Owner asserts that, although Petitioner argues that Hanggie would switch from active applications in 3D space to those in 2D space to reduce power, "replacing the active applications with images would itself reduce power

consumption, thereby eliminating the need (or motivation) to switch to 2D space." *Id*. at 52–53 (citing Ex. 2015 ¶ 116). In support, Dr. Schaefer testifies that images are much easier to manipulate in 3D space than active applications and replacing the active applications with images would itself reduce power consumption. Ex. 2015 ¶ 116.

Patent Owner additionally argues that Hanggie teaches away from the claimed invention because the '654 patent "provides for a different solution to reduce power, i.e., display images of open applications in 3D space." PO Resp. 53–54 (citing Ex. 2001 ¶ 41). Patent Owner points to Hanggie's alleged alternative of presenting active applications in 2D space as the basis of the teaching away. *Id*. Patent Owner also contends that Anthony teaches away from the claimed invention because it criticizes use of items in 2D space, where "it may [] be difficult to locate a desired file," which would dissuade a person of ordinary skill in the art from modifying Anthony to replace items in 3D with those in 2D. *Id*. at 54–55 (citing Ex. 1007 ¶ 6; Ex. 2015 ¶ 118). Patent Owner argues that Anthony's approach is different from the claimed invention because the method it uses for presenting images in 3D is different. *Id*.

Dr. Fuchs testifies that the implementation of Hanggie in Anthony would allow the use of a maximized window in a 2D format that includes several advantages, including power conservation. Ex. 1003 ¶¶ 60–69. Hanggie itself discloses that 2D mode selection conserves power because "the video graphics processing unit (GPU) is less active and thus consumes less power." Ex. 1006 ¶ 92. We do not find that the power conservation advantage provided by Hanggie is negated by potential benefits of keeping a system operating in 3D. *See Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157,

1165 (Fed. Cir. 2006) ("[A] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine.").

We are also not persuaded by Patent Owner's arguments on teaching away. "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." *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). Here, even if the '654 patent is directed to a different solution for power reduction, "mere disclosure of more than one alternative does not amount to teaching away from one of the alternatives where the reference does not criticize, discredit, or otherwise discourage the solution." *SightSound Techs., LLC v. Apple Inc*., 809 F.3d 1307, 1320 (Fed. Cir. 2015) (internal quotation marks omitted).

As to the contention that Anthony teaches away because it criticizes use of items in 2D space and difficulties in finding files, this argument is based on Anthony's prior art discussion offered to identify the need for improvements that are solved by its 3D invention. *See* Ex. 1007 ¶¶ 6, 8. But the issue identified as the problem with 2D items, that is, difficulties in finding 2D files, is not at issue in the combination of the prior art that Petitioner proposes. As discussed, in the combination that Petitioner asserts, with the selection of a maximize button on a 3D window, the window would be displayed in 2D and would occupy all or most parts of the screen—so in that combination, difficulties in finding the 2D files would not be an issue. Pet. 52 (citing Ex. 1003 ¶ 108). Further, Petitioner offers the advantages that this presentation in 2D space would conserve power and allow certain

users to interact with an application in a 2D environment. Ex. 1003 ¶¶ 66, 69. Accordingly, we credit Dr. Fuchs's testimony that Petitioner's proposed "specific experience [of the combination] would not deter a user from replacing images in 3D space with an object in 2D space." Ex. 1033 ¶ 48. We also do not find persuasive Patent Owner's argument that Anthony's approach is different from the claimed invention because its method for presenting images is different—that argument is unavailing because the disputed features are not recited in the claims.

Accordingly, we have reviewed the evidence and argument of record and find that Petitioner sufficiently demonstrates that the combination of Hanggie and Anthony teaches limitation [1d-2] and that a skilled artisan would have combined the references, with a reasonable expectation of success.

*d. Objective Indicia of Nonobviousness*

Patent Owner presents arguments and evidence related to objective indicia of non-obviousness. PO Resp. 61–64. In support, Patent Owner relies on the Bakhash Declaration. *Id*. (citing Ex. 2001 ¶¶ 13–23).

Notwithstanding what the teachings of the prior art would have suggested to one skilled in the art, objective evidence of nonobviousness (so called "secondary considerations") may lead to a conclusion that the challenged claims would not have been obvious. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). "[E]vidence of secondary considerations may often be the most probative and cogent evidence in the record." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983). "[T]o be accorded substantial weight in the obviousness analysis, the

evidence of secondary considerations must have a 'nexus' to the claims, *i.e.*, there must be 'a legally and factually sufficient connection' between the evidence and the patented invention." *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019) (quoting *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988)). "The patentee bears the burden of showing that a nexus exists." *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1359 (Fed. Cir. 1999). Patent Owner may "prove nexus by showing that the evidence of secondary considerations is the 'direct result of the unique characteristics of the claimed invention'" or by presumption if a product both embodies the claimed features and is coextensive with the claims at issue.[13] *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373–74 (Fed. Cir. 2019) (quoting *In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996)).

According to the Federal Circuit,

> Commercial success is relevant because the law presumes an idea would successfully have been brought to market sooner, in response to market forces, had the idea been obvious to persons skilled in the art. Thus, the law deems evidence of (1) commercial success, and (2) some causal relation or "nexus" between an invention and commercial success of a product embodying that invention, probative of whether an invention was non-obvious.

*Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1376 (Fed. Cir. 2005). "To establish a proper nexus between a claimed invention and the commercial success of a product, a patent owner must offer 'proof that the sales were a direct result of the unique characteristics of the claimed

[13] As discussed below, Patent Owner argues secondary consideration issues, but does not argue that the presumption applies. *See* PO Rep. 60–64.

invention—as opposed to other economic and commercial factors unrelated to the quality of the patented subject matter.'" *SightSound*, 809 F.3d at 1319 (quoting *Huang*, 100 F.3d at 140).

"Evidence that the industry praised a claimed invention or a product that embodies the patent claims weighs against an assertion that the same claimed invention would have been obvious." *Apple Inc. v. Samsung Electronics Co., Ltd.*, 839 F.3d 1034, 1053 (Fed. Cir. 2016).

Patent Owner initially states that "Petitioners Fails To Address The Required 'Objective Indicia' Of Non-Obviousness." PO Resp. 61–62; *see also id.* at 63 ("Petitioners fail to adequately address these secondary considerations of non-obviousness and instead rely on improper hindsight"). Petitioner, however, has responded to Patent Owner's evidence of secondary indicia at its first opportunity to do so, that is, in Petitioner's Reply. Pet. Reply 26–29.

Patent Owner discusses, primarily, objective indicia in the form of industry praise reported in "technical journals and newspapers." PO Resp. 62 (citing Ex. 2001 ¶¶ 13–23). Although the Patent Owner Response does not allege a nexus between the industry praise and the claimed invention, Mr. Bakhash testifies that *TechNewsWorld* stated that Patent Owner's browser product, SpaceTime, "'lets me map out my browsing progress in a visual time line, treating each Web site as an object that I can manipulate and rearrange within the 3-D environment'" and "'[w]ith SpaceTime, I have an unlimited 3-D space . . . [that] lets me alternate between 3-D and 2-D perspectives.'" Ex. 2001 ¶ 16. However, *TechNewsWorld* (Exhibit E to Exhibit 2001) does not clearly identify the claimed invention or any of its features. *See* Ex. 2001 ¶ 16, pp. 82–85 (Exhibit E). It simply describes

"[a]n innovative three-dimensional search program," a "browser," with 3D browsing, and that a user generally could alternate between 2D and 3D views. *Id*. at pp. 82–85 (Exhibit E). Thus, Patent Owner's evidence does not show a nexus between the claimed invention and the industry praise, and Patent Owner's evidence of industry praise is entitled to little weight.

Similarly, Mr. Bakhash testifies that Samsung sent emails to SpaceTime3D expressing interest in its technology and inviting SpaceTime3D to present its technology at Samsung's headquarters. Ex. 2001 ¶¶ 17–23; PO Resp. 62–63. However, Patent Owner does not allege a nexus between these emails and the claimed invention and it is unclear from reading the emails (Exhibits F–J to Exhibit 2001) that they are referring to the claimed invention. All they mention is SpaceTime3D's "technology and solutions." *See* Ex. 2001 ¶¶ 17–23, pp. 91–103 (Exhibits F–J). Thus, Patent Owner's evidence does not show a nexus between the claimed invention and the Samsung emails.

Finally, Patent Owner contends that Samsung and LG licensed the '654 patent, and argues that "[g]iven the nature of these licenses, they are strong indicators of commercial success." PO Resp. 63 (citing Ex. 2017 (Declaration of Patent Owner's attorney, Todd Fitzsimmons (filed under seal)). Petitioner argues that merely alleging the existence of licenses does not prove nexus, and that Patent Owner's cursory reference to the nature of the licenses lacks sufficient explanation and analysis. Pet. Reply 27 (citing *In re Antor Media Corp.*, 689 F.3d 1282, 1293–94 (Fed. Cir. 2012)). We observe that "[Federal Circuit] cases specifically require affirmative evidence of nexus where the evidence of commercial success presented is a license, because it is often 'cheaper to take licenses than to defend

infringement suits.'" *Bosch Auto. Serv. Sols., LLC v. Matal*, 878 F.3d 1027, 1038 (Fed. Cir. 2017), *as amended on reh'g in part* (Mar. 15, 2018) (quoting *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1324 (Fed. Cir. 2004)). Patent Owner does not allege, with particularity, what about these licenses are strong indicators of commercial success, or allege any nexus between the licenses and the claimed invention. PO Resp. 62–64.

In response to Petitioner's argument that alleging the existence of licenses does not show the requisite nexus, Patent Owner argues:

> The licenses themselves have been submitted as evidence along with a declaration that further evidence establishing the required nexus of the licenses to the claimed inventions, including that (i) the licenses are limited to the '654 patent and patents that are related thereto (e.g., patents that are at issue in IPR2023-00242 and 344), (ii) licensees (Samsung and LG) are two of the three largest smartphone manufactures in the United States, and (iii) and the amounts paid for the licenses.

PO Sur-reply 27 (citing *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1353 (Fed. Cir. 2012)). If it is Patent Owner's position that the Declaration of its attorney, Mr. Fitzsimmons, includes the arguments missing from the Patent Owner Response that would show a nexus between the alleged commercial success and the claimed invention, it is improper, under our rules, to incorporate such arguments by reference from the Declaration into the Patent Owner Response. *See* 37 C.F.R. § 42.6(a)(3) ("Arguments must not be incorporated by reference from one document into another document."). Thus, those arguments are forfeited and will be disregarded.

In any case, even if we were to consider the Fitzsimmons Declaration, we see no persuasive argument in the Fitzsimmons Declaration or persuasive evidence in the attached licenses, to support Patent Owner's allegation of

commercial success and corresponding nexus. As Patent Owner has not shown a nexus between the alleged commercial success and the claimed invention, we find that Patent Owner's evidence of commercial success is entitled to little weight. *See Bosch*, 878 F.3d at 1038 ("Given the lack of evidence that these licenses were entered into out of respect for the [challenged] patent, it was reasonable for the Board to assign less credit to the licensing evidence."). The *Transocean* case does not help Patent Owner. Even if "the royalties paid under the licenses exceed any litigation costs, and thus are an accurate reflection of the value of the claimed invention" in this case, which Patent Owner has not alleged specifically, "[t]he jury [in *Transocean*] found that Transocean established that its licenses to customers and competitors were due to the merits of the claimed invention and thus support nonobviousness." 699 F.3d at 1353. Here, Patent Owner does not allege in its briefs, and Patent Owner's evidence does not show, that its licenses were due to the merits of the claimed invention.

In sum, we have considered Patent Owner's evidence of industry praise and commercial success, but, on the complete record, we find it unpersuasive and entitled to little weight.

*e. Other Arguments*

Patent Owner additionally argues that the prior art relied on by Petitioner is very similar to prior art considered during the prosecution of the '654 patent. PO Resp. 64–73. While consideration of the same or similar prior art during prosecution may be a consideration of potential discretionary denial of institution under 35 U.S.C. § 325(d)[14], it is not relevant in the

[14] The Decision on Institution considered arguments under its § 325(d)

proceedings at this time. At this stage in the proceeding, we do not consider nor do we accord deference to previous Patent Office evaluations. *See Cuozzo Speed Techn. LLC v. Lee*, 579 U.S. 261, 279 (the "basic purpose" of *inter partes* review is "to reexamine an earlier agency decision").

*f. Conclusion for Claim 1*

As discussed above, Petitioner's proposed combination of Hanggie and Anthony teaches each limitation of claim 1. A skilled artisan would have had reasons, with rational underpinning, to combine the teachings of Hanggie and Anthony, with a reasonable expectation of success. Patent Owner's objective indicia of nonobviousness are unpersuasive and entitled to little weight. Upon consideration of all the evidence, we conclude that Petitioner has proved by a preponderance of the evidence that claim 1 would have been obvious over the combination of Hanggie and Anthony and the combination of Anthony and Hanggie.

*4. Analysis of Cited Art as Applied to Independent Claims 10 and 19*

Petitioner asserts that independent claim 10 is a system claim that recites device components performing the same or similar functions recited in claim 1. Pet. 66–72. Petitioner similarly argues that the preamble of claim 10 is a system preamble corresponding to the method preamble of claim 1. *Id.* at 66. For the preamble and functions recited in claim 10,

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evaluation that are substantially similar to those presented in the Patent Owner Response. *Compare* Dec. 13–15 *with* PO Resp. 64–73. The Decision on Institution declined to exercise discretionary denial on the § 325(d) basis. Dec. 11–18.

Petitioner cites to and relies on its analysis of claim 1 discussed above. *Id.* at 66, 71–72. Petitioner cites to and relies on its analysis of claim 1 discussed above for claim 19. *Id.* at 73–75.

Patent Owner does not present any argument specific to independent to claims 10 and 19 beyond Patent Owner's arguments advanced with respect to claim 1 discussed above. *See generally* PO Resp.

We have reviewed the record and find that the combination of Hanggie and Anthony teaches each limitation of claims 10 and 19, and a skilled artisan would have had reasons, with rational underpinning, to combine the teachings of the prior art, with a reasonable expectation of success. For the reasons discussed for claim 1, Patent Owner's objective indicia of nonobviousness are unpersuasive and entitled to little weight. Upon consideration of all the evidence, we conclude that Petitioner has proved by a preponderance of the evidence that claims 10 and 19 would have been obvious over the combination of Hanggie and Anthony and the combination of Anthony and Hanggie.

*5. Analysis of Cited Art as Applied to Dependent Claims 2–5, 7, 8, 11–13, and 15–17*

*a. Claims 8 and 17*

Claim 8 depends from claim 1 and recites

> The method of claim 1, wherein said step of replacing said plurality of images with one of said first, second, and third objects, further comprises 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 device.

Ex. 1001, 39:9–16. Claim 17 depends from claim 10 and recites essentially the same limitations as claim 8. *Compare id.* at 39:9–16, *with id.* at 40:64–41:3.

Regarding claim 8, Petitioner contends that "[i]t would have been obvious to a POSITA that 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" and that "[i]n gradually increasing its size to cover the display area, the computer simulates movement of said one (window whose maximize button has been selected) of said plurality of images in a z-axis of said display device." Pet. 65–66 (citing Ex. 1003 ¶ 129). As for claim 17, Petitioner cites to and relies on its analysis of claim 8 discussed above. *Id.* at 73.

Patent Owner asserts Petitioner's argument is flawed because "it is not a *window* that is enlarged in Claim 8 (and Claim 17), but the *selected image*." PO Resp. 60. Patent Owner repeats similar arguments to those presented for claim 1 as to the prior art teaching of an "image" and the motivation to combine the references. *Id*. at 58–60.

Petitioner argues that the combination of Anthony and Hanggie teaches enlarging the size of the recited "image" when a maximize button is selected. As discussed above, in the proposed combination of Anthony and Hanggie, the 3D windows in Anthony's timeline (the recited "image") would feature application windows with control buttons as taught by Hanggie. Pet. 24–25, 51–52. Addressing claim 8, Petitioner states "[a]s explained in [1d-1], a maximize button is included on each window (*image*) corresponding to the first, second, and third applications." *Id.* at 65 (emphasis added) (citing Ex. 1006 ¶ 56, Fig. 3). Petitioner further argues

that "[i]t would have been obvious to a POSITA that 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." *Id.* (emphasis added). We do not agree with Patent Owner's arguments that an "image" is not taught by the prior art for the reasons discussed above for claim 1.

Accordingly, we have reviewed the record and find that the combination of Hanggie and Anthony teaches each limitation of claims 8 and 17, and a skilled artisan would have had reasons, with rational underpinning, to combine the teachings of the prior art, with a reasonable expectation of success. For the reasons discussed for claim 1, Patent Owner's objective indicia of nonobviousness are unpersuasive and entitled to little weight. Upon consideration of all the evidence, we conclude that Petitioner has proved by a preponderance of the evidence that claims 8 and 17 would have been obvious over the combination of Hanggie and Anthony and the combination of Anthony and Hanggie.

*b. Claims 2–5, 7, 11–13, 15, and 16*

Claims 2–5 and 7 depend from claim 1 and claims 11–13, 15, and 16 depend from claim 10. Petitioner provides detailed analysis showing where it contends each limitation of dependent claims 2–5, 7, 11–13, 15, and 16 is taught in the combination of Anthony and Hanggie, which we find sufficiently supported by the evidence and argument presented. Pet. 55–65, 72–73.

Patent Owner does not present arguments specific to Petitioner's challenge to these dependent claims beyond Patent Owner's arguments advanced with respect to independent claim 1, and which we do not agree with for the reasons discussed above. *See generally* PO Resp.

Accordingly, we have reviewed the record and find that the combination of Hanggie and Anthony teaches each limitation of claims 2–5, 7, 11–13, 15, and 16 and a skilled artisan would have had reasons, with rational underpinning, to combine the teachings of the prior art, with a reasonable expectation of success. For the reasons discussed for claim 1, Patent Owner's objective indicia of nonobviousness are unpersuasive and entitled to little weight. Upon consideration of all the evidence, we conclude that Petitioner has proved by a preponderance of the evidence that claims 2–5, 7, 11–13, 15, and 16 would have been obvious over the combination of Hanggie and Anthony and the combination of Anthony and Hanggie.

*E. Asserted Obviousness over Anthony, Hanggie, and Matthews*

In this asserted ground of obviousness, Petitioner adds the teachings of Matthews to the combination of Anthony and Hanggie and challenges dependent claims 6, 9, 14, and 18 as obvious over the combination of Anthony, Hanggie, and Matthews. Pet. 75–84. We have reviewed the evidence presented and find that Petitioner has sufficiently demonstrated that the combination of Anthony, Hanggie, and Matthews teaches the limitations of the claims and there is rationale to combine the references.

Patent Owner argues that because the independent claims should not be found obvious, the same should apply to their dependent claims. PO Resp. 61. Patent Owner also argues that Matthews does not make up for the deficiencies of the teachings of Hanggie and Anthony for claim 1. *Id*. We do not agree with these arguments for the reasons discussed above for claim 1.

Accordingly, we have reviewed the record and find that the combination of Hanggie, Anthony, and Matthews teaches each limitation of

claims 6, 9, 14, and 18, and a skilled artisan would have had reasons, with rational underpinning, to combine the teachings of the prior art, with a reasonable expectation of success. For the reasons discussed for claim 1, Patent Owner's objective indicia of nonobviousness are unpersuasive and entitled to little weight. Upon consideration of all the evidence, we conclude that Petitioner has proved by a preponderance of the evidence that claims 6, 9, 14, and 18 would have been obvious over the combination of Hanggie, Anthony, and Matthews and the combination of Anthony, Hanggie, and Matthews.

## III. CONCLUSION[15]

The outcome for the challenged claims of this Final Written Decision follows. In summary:

| Claims | 35 U.S.C. § | References/ Basis | Claims Shown Unpatentable | Claims Not Shown Unpatentable |
|---|---|---|---|---|
| 1–5, 7, 8, 10–13, 15–17, 19 | 103(a) | Anthony, Hanggie | 1–5, 7, 8, 10–13, 15–17, 19 | |
| 6, 9, 14, 18 | 103(a) | Anthony, Hanggie, Matthews | 6, 9, 14, 18 | |

[15] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

| Claims | 35 U.S.C. § | References/ Basis | Claims Shown Unpatentable | Claims Not Shown Unpatentable |
|---|---|---|---|---|
| 1–5, 7, 8, 10–13, 15–17, 19 | 103(a) | Hanggie, Anthony | 1–5, 7, 8, 10–13, 15–17, 19 | |
| 6, 9, 14, 18 | 103(a) | Hanggie, Anthony, Matthews | 6, 9, 14, 18 | |
| **Overall Outcome** | | | 1–19 | |

## IV. ORDER

It is hereby:

ORDERED that claims 1–19 of the '654 patent are unpatentable; and

FURTHER ORDERED that because this is a Final Written Decision, parties to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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