UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC. and
GOOGLE LLC,

Petitioner,

v.

SPACETIME3D, INC.
Patent Owner

Case IPR2023-00344[1]
U.S. Patent No. 9,696,868

PATENT OWNER SPACETIME3D, INC.'S NOTICE OF APPEAL

---

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

Patent Owner Spacetime3D, Inc. ("Patent Owner") hereby provides notice of its appeal to the United States Court of Appeals for the Federal Circuit from the Final Written Decision of the Patent Trial and Appeal Board entered on July 2, 2024, in IPR2023-00344 (Paper No. 47) ("Final Written Decision"), the August 29 2024 Order denying Patent Owner's request for Director Review or rehearing (Paper No. 49), and all underlying findings, determinations, rulings, opinions, orders, issues, and decisions regarding the inter partes review of U.S. Patent No. 9,696,868 (the "'868 patent"). See 35 U.S.C. §§ 141, 142, and 319; 37 C.F.R. §§ 90.2–90.3; Federal Rule of Appellate Procedure 15, and Federal Circuit Rule 15. This Notice is timely under 37 C.F.R. § 90.3, having been filed no later than 63 days after the Order denying Patent Owner's request for Director Review or rehearing following the Final Written Decision.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Patent Owner states that the issues on appeal include, but are not limited to:

- Whether the Board erred in concluding that claims 1-5, 9-14, and 18-20 of the '868 Patent were shown to be unpatentable under 35 U.S.C. § 103 as obvious over the combination of Anthony (U.S. Pub. No. 2005/0091596) and Hanggie (U.S. Pub. No 2005/0088447);
- Whether the Board erred in concluding that claims 6-8 and 15-17 of the '868 Patent were shown to be unpatentable under 35 U.S.C. § 103

as obvious over the combination of Anthony (U.S. Pub. No. 2005/0091596), Hanggie (U.S. Pub. No. 2005/0088447), and Matthews (U.S. Pub. No. 2006/0107229);

- Whether the Board erred in concluding that claim 7 of the '868 Patent was shown to be unpatentable under 35 U.S.C. § 103 as obvious over the combination of Anthony (U.S. Pub. No. 2005/0091596), Hanggie (U.S. Pub. No. 2005/0088447), Matthews (U.S. Pub. No. 2006/0107229), and Robertson (U.S. Pat. No. 6,414,677);
- any further findings or determinations by the Director or the Board supporting or relating to the issues above, including the Board's consideration of expert testimony, prior art, and other evidence on record; the Board's claim constructions and applications thereof, including, but not limited to, the Board's construction of claim limitations [1c-2] and [1d-2]; and the Board's factual findings, conclusions of law, and other determinations supporting or related to issues listed above; and
- all other issued decided adversely to Patent Owner in any orders, decisions, rulings, or opinions underlying or supporting the Final Written Decision.

This Notice of Appeal is being e-filed with the Clerk's Office for the United States Court of Appeals for the Federal Circuit, along with the payment of required docketing fees. In addition, a true and correct copy of this Notice of Appeal is

being filed simultaneously with the Director of the United States Patent and Trademark Office.

Respectfully submitted,

Date: October 14, 2024

/Todd E. Fitzsimmons/
Todd E. Fitzsimmons, Reg. No. 44,683
Fitzsimmons IP Law, P.C.
P.O. Box 199
Gardena, CA 90248
(571) 210-8000

Attorney for Patent Owner

CERTIFICATE OF FILING

The undersigned certifies that on October 14, 2024, in addition to being filed electronically through the Patent Trial and Appeal Board's P-TACTS system, a true and correct copy of **PATENT OWNER SPACETIME3D, INC.'S NOTICE OF APPEAL** is being provided to the Director of the USPTO by electronic filing to the email address as follows:

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
efileSO@uspto.gov

The undersigned also certifies that on October 14, 2024, a true and correct copy of **PATENT OWNER SPACETIME3D, INC.'S NOTICE OF APPEAL** is being filed via the electronic filing system, CM/ECF, with the Clerk's Office of the U.S. Court of Appeals for the Federal Circuit.

Respectfully submitted,

Date: October 14, 2024

/Todd E. Fitzsimmons/
Todd E. Fitzsimmons, Reg. No. 44,683
Fitzsimmons IP Law, P.C.
P.O. Box 199
Gardena, CA 90248
(571) 210-8000

Attorney for Patent Owner

CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e))

The undersigned certifies service pursuant to 37 C.F.R. § 42.6(e) that on October 14, 2024, a complete copy of PATENT OWNER SPACETIME3D, INC.'S NOTICE OF APPEAL was served electronically via e-mail on the following counsel of record Petitioner:

Fish & Richardson P.C.
60 South Sixth St., Suite 3200
Minneapolis, MN 55402

W. Karl Renner, Reg. No. 41,265
Andrew B. Patrick, Reg. No. 63,471
Kenneth Wayne Darby, Jr., Reg. No. 65,068
Usman A. Khan, Reg. No. 70,439
Email: IPR50095-0110IP1@fr.com

Erika Arner, Reg. No. 57,540
Cory Bell, Reg. No. 75,096
Yanyi Liu, Reg. No. 71,046
Yinan Liu, Reg. No. 72,482
FINNEGAN, HENDERSON, FARABOW,
GARRETT, & DUNNER LLP
erika.arner@finnegan.com
cory.bell@finnegan.com
yanyi.liu@finnegan.com
yinan.liu@finnegan.com

Respectfully submitted,

Date: October 14, 2024

/Todd E. Fitzsimmons/
Todd E. Fitzsimmons, Reg. No. 44,683
Fitzsimmons IP Law, P.C.
P.O. Box 199
Gardena, CA 90248
(571) 210-8000

Attorney for Patent Owner

Trials@uspto.gov
571-272-7822

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.

IPR2023-00344
Patent 9,696,868 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 IPR2023-00578, 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 1–20 (the "challenged claims") of U.S. Patent No. 9,696,868 B2 (Ex. 1001, "the '868 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 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 IPR2023-00578. 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 1–20 of the '868 patent are unpatentable.

B. Real Party-in-Interest

Petitioner identifies itself as the sole real party-in-interest. Pet. 99. Patent Owner identifies itself as the sole real party-in-interest. Paper 3, 2.

C. Related Matters

According to the parties, the ’868 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. 99; Paper 3, 2. The parties also indicate that the ’868 patent was involved in *SpaceTime3D, Inc. v. Samsung Electronics Co.*, No. 2:19-cv-00372 (E.D. Tex.) (“the Samsung case”), which has been terminated, and IPR2020-01419, in which the petition was dismissed prior to institution. Pet. 99; Paper 3, 2.

D. The ’868 Patent

The ’868 patent issued July 4, 2017, from U.S. Patent Application No. 14/614,708, filed February 5, 2015 (“the ’708 application”). Ex. 1001, codes (21), (22), (45). The ’708 application is a continuation of U.S. Patent Application No. 14/503,142, filed September 30, 2014 (issued as U.S. Patent No. 9,304,654), which in turn 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 ’868 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 ’868 patent, titled “System and Method for Providing Three-Dimensional Graphical User Interface,” relates to graphical user interfaces for operating and accessing information on a computer, including a three-dimensional (“3D”) interactive computing interface. Ex. 1001, 1:31–34, codes (54), (57). As background, the ’868 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 1:58–2:6 (emphasis added). The '868 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 2:18–26 (emphases added). According to the '868 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 2:41–49.

Against this backdrop, the '868 patent describes embodiments of a graphical user interface that uses the 2D display of a user's computer to display 3D objects in a simulated real-time 3D immersive Cartesian space. *Id.* at 2:58–61. In one embodiment, a plurality of applications are opened in

response to receiving inputs from a user, where outputs from each application are displayed (e.g., individually) within a two-dimensional space. *Id.* at code (57). The graphical user interface allows the user to switch between the plurality of applications by generating images of each output and displaying those images (e.g., collectively) within a three-dimensional space. *Id.*

> The user can then interact with a particular application by selecting a corresponding one of the images displayed within the three-dimensional space. In one embodiment, the method further comprises replacing the output(s) in two-dimensional space with the images in three-dimensional space, and replacing the images in three-dimensional space with the output from the selected application in two-dimensional space.

Id.

Figure 9 of the '868 patent is reproduced below.

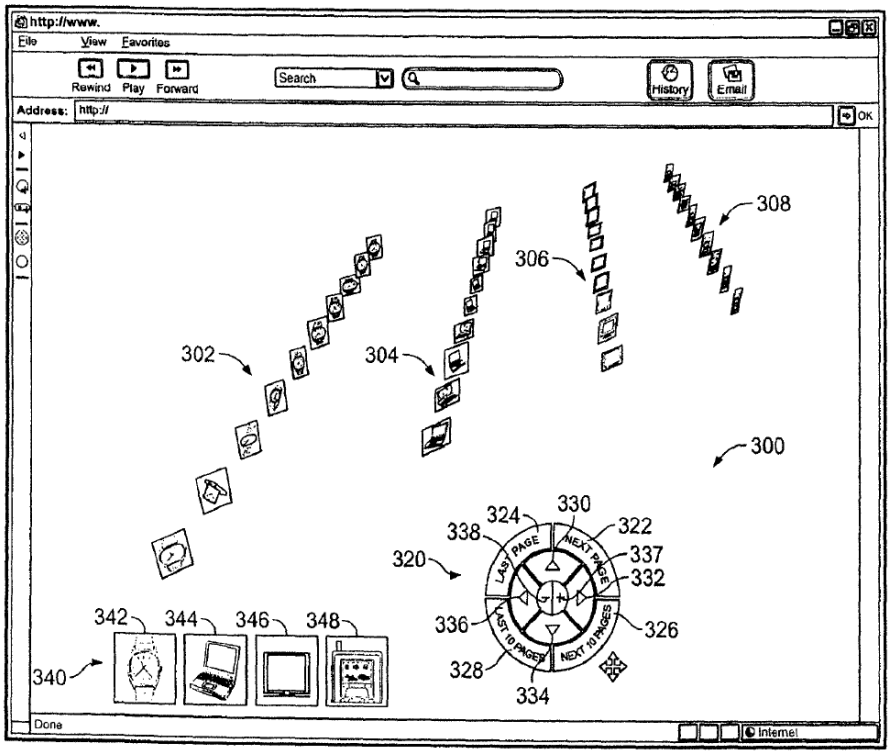


FIG. 9

Figure 9 illustrates an embodiment of a 3D GUI application window. *Id.* at 6:42–43.

The '868 patent describes that

> in the embodiment of FIG. 9, one can see [four] 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 29:38–50.

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–ix).

> 1. A method for using a two-dimensional (2D) space to selectively interact with a plurality of applications open on a device and a three-dimensional (3D) immersive space to switch between said plurality of application, said device having a fixed resolution display, 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 for each one of said plurality of applications (i) an object is generated having application-specific data, (ii) said object is displayed in said 2D space on said fixed

resolution display, and (iii) said user is allowed to modify at least a portion of said application-specific data by interacting with said object;

[1c] allowing a user to switch between said plurality of application, comprising;

[1c-1] generating at least 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;

[1c-2] replacing all objects corresponding to said plurality of applications that are visible in said 2D space with said plurality of images, said plurality of images being displayed in said 3D immersive space and 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, wherein 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;

[lc-3] allowing said user to move said plurality of images, wherein (i) movement of one of said plurality of images results in movement of all of said plurality of images, and [lc-4] (ii) continued movement in one direction of one of said plurality of images results in a perception

to said user that said one of said plurality of images is moved off of said fixed resolution display; and

[lc-5] allowing said user to delete at least one of said plurality of images from said 3D immersive space, wherein deletion of said second one in said order results in said third one in said order being moved to a location in said 3D immersive space where said second one in said order was located prior to said deletion; and

[1d] allowing said user to interact with one of said first, second, and third applications, comprising:

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

[1d-2] replacing said plurality of images within said 3D immersive space with one of said first, second, and third objects corresponding to said one of said plurality of applications within said 2D space in response to said selection;

[1d-3] receiving at least one interaction by said user with said one of said first, second, and third objects within said 2D space; and

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

Ex. 1001, 38:40–39:50.

F. Prior Art and Declaration Evidence

Petitioner cites the following references in its challenges to patentability:

U.S. Patent No. 6,414,677 B1, issued July 2, 2002 (Ex. 1009, "Robertson");

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 Declaration") and a supplemental declaration (Ex. 1033, "Fuchs Supp. Dec."). Patent Owner has submitted a declaration from Mr. Eddie Bakhash (Ex. 2001, "Bakhash Declaration") in support of Patent Owner's Preliminary Response and declarations from Scott Schaefer, Ph.D. (Ex. 2016, "Schaefer Dec.") and from Mr. Todd Fitzsimmons (Ex. 2018) 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, 9–14, 18–20	103(a)[2]	Anthony, Hanggie
6–8, 15–17	103(a)	Anthony, Hanggie, Matthews
7	103(a)	Anthony, Hanggie, Matthews, Robertson
1–5, 9–14, 18–20	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 '868 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
6–8, 15–17	103(a)	Hanggie, Anthony, Matthews
7	103(a)	Hanggie, Anthony, Matthews, Robertson

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 '868 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. 9 (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. 21. Patent Owner states that it "generally agrees" with the level of skill adopted in the Decision on Institution. PO Resp. 19. Patent Owner states that Dr. Schaefer and Mr. Bakhash meet the definition. *Id.*

On the complete record, based on our review of the '868 patent, the types of problems and solutions described in the '868 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. 2016 ¶¶ 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. 9 (citing Ex. 1005,[3] 6); PO Resp. 19–20 (citing Ex. 2012,[4] 16–17). The construction is based on the construction issued by the district court in the Samsung case. Ex. 2012, 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. 20. 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 are displayed." *Id*. (citing Ex. 2012, 16–17). 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 51. 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. 2012, 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, 9–14, and 18–20 are unpatentable under § 103(a) over the combination of Anthony and Hanggie. Pet. 10–77.

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 “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 33–34 (citing Ex. 1003 ¶ 72). 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 34 (citing Ex. 1003 ¶ 79). Petitioner also presents its unpatentability contentions together for both grounds based on Anthony and Hanggie. *Id.* at 10–77. Patent Owner similarly addresses both grounds based on Anthony and Hanggie together. PO Resp. 32–62.

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, 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)). Further, 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.

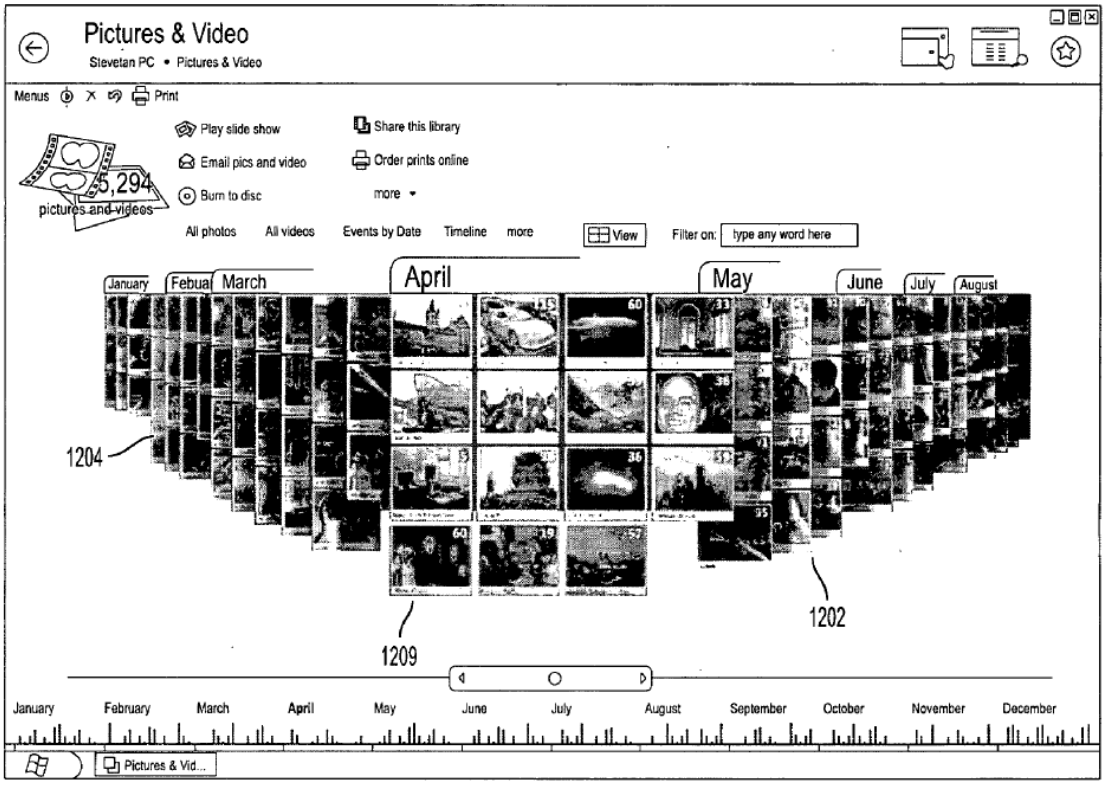


FIG. 4

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, "[b]ased 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.

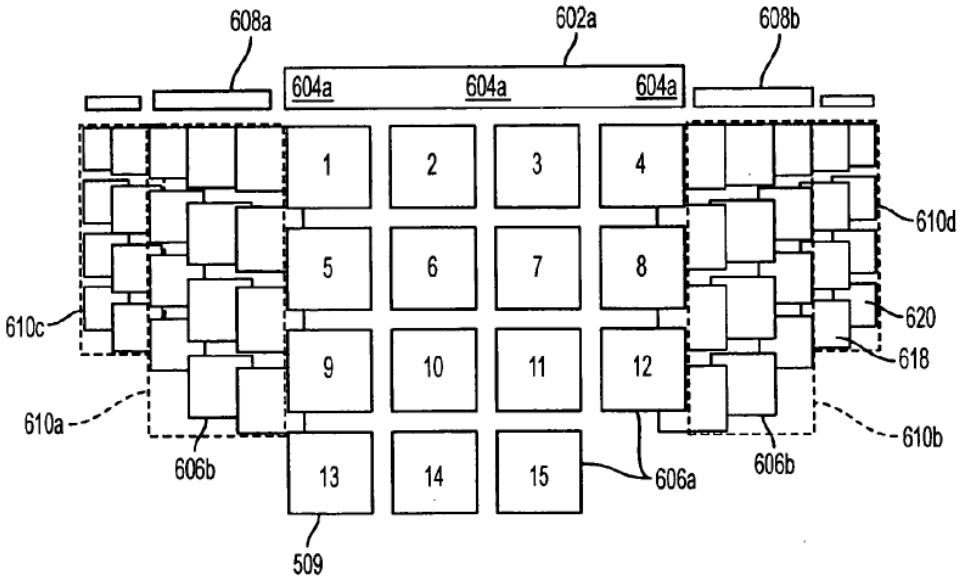


FIG. 6

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

Referencing Figure 6, Anthony describes that focal group 509 "may be made up of an array of focal group icons 606*a* (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.

Id. ¶ 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.

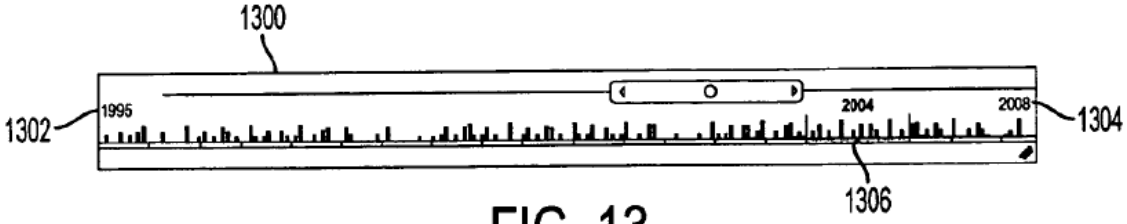


FIG. 13

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. 22–58; Pet. Reply 1–27. Patent Owner disputes Petitioner's contentions and asserts that objective indicia support the patentability of the claim. PO Resp. 32–56, 64–66; PO Sur-reply 3–24. Patent Owner's disputes mostly focus on limitations [1c-2] and [1d-2] of claim 1. *See id.*

a. Overview of Petitioner's Proposed Combinations 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. 22–23 (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. 33–34 (citing Ex. 1003 ¶ 72). 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 34 (citing Ex. 1003 ¶ 72). Thus, our discussion of Petitioner's combination of Anthony and Hanggie applies equally to the proposed combination of Hanggie and Anthony.

Figure 4 of Anthony is reproduced below.

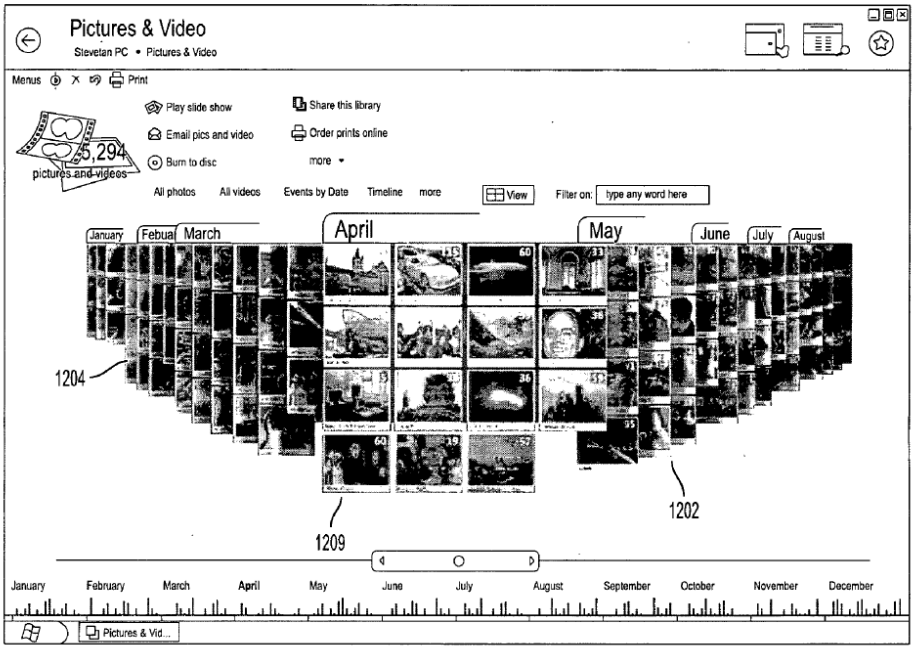


FIG. 4

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

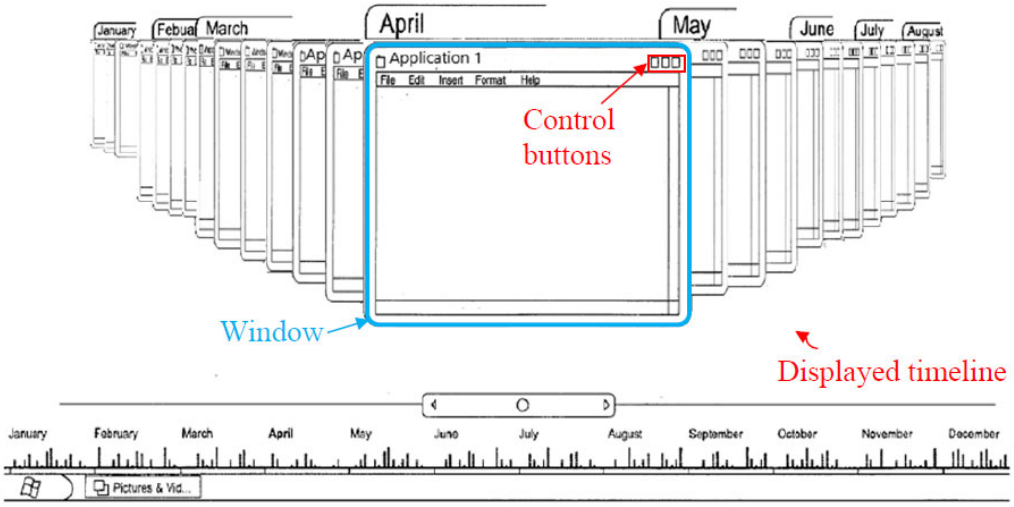
Referencing Figure 4 of Anthony, Petitioner asserts that

> as shown in Anthony's FIG. 4 . . ., Anthony's timeline depicts items in focal groups according to a logical order, and the depicted items 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. 22–23 (citing Ex. 1007 ¶¶ 42, 43, 11, Fig. 4, code (57); Ex. 1003 ¶ 60). 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 23 (emphasis added) (citing Ex. 1007 ¶ 42; Ex. 1003 ¶ 61).

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. 23 (citing Ex. 1003 ¶ 61).

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



Pet. 24. The figure reproduced above shows Dr. Fuchs's illustration of Petitioner's proposed combination of Anthony and Hanggie. Ex. 1003 ¶ 63; Pet. 23–24 (citing Ex. 1003 ¶ 61, p. 39 (¶ 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. 24 (citing Ex. 1007 ¶¶ 42, 43, 11, Fig. 4, code (57); Ex. 1006 ¶ 58, Fig. 3; Ex. 1003 ¶¶ 61–62). 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 22 (citing Ex. 1003 ¶ 59).

b. Petitioner's Assertions Regarding Elements of Claim 1

(i) Preamble

The preamble of claim 1 recites "[a] method for using a two-dimensional (2D) space to selectively interact with a plurality of applications open on a device and a three-dimensional (3D) immersive space to switch between said plurality of application, said device having a fixed resolution display." Addressing the preamble, 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 "in which a monitor with a fixed resolution displays a 2D space featuring windows that enable a user to selectively interact with a plurality of open applications, and in which

the same monitor displays a 3D immersive space enabling the user to switch between the plurality of applications." Pet. 34–38 (citing Pet. §§ VI.A.3–VI.A.4; Ex. 1006 ¶¶ 12, 15, 26, 39, 40, 41, 42, 58, 92, Fig. 3; Ex. 1007 ¶¶ 11, 42, 43, 50, code (57), Fig. 4; Ex. 1003 ¶¶ 86–88). We agree, and find that the combination of Anthony and Hanggie teaches the preamble.[8]

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

Turning next to limitation [1a], which recites "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. 38–39 (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 ¶¶ 89–91). We agree, and find that the combination of Anthony and Hanggie teaches limitation [1a].

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 will cause the system to attempt to open the file" (Pet. 39–40 (quoting

[8] 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.

Ex. 1007 ¶ 47)) and Hanggie discloses receiving requests to create a window and attach a content object (*id.* at 39 (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. 40 (citing Ex. 1006 ¶¶ 5, 15, 49–50, 60, code (57); Ex. 1003 ¶ 93). 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 40–41 (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 41–42 (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. 42 (citing Ex. 1003 ¶ 94). 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 ¶ 94).

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 for each one of said plurality of applications (i) an object is generated having application-specific data, (ii) said object is displayed in said 2D space on said fixed resolution display, and (iii) said user is allowed to modify at least a portion of said application-specific data by interacting with said object.

Pet. 40–43.

We agree, and find that Petitioner demonstrates that the combination of Anthony and Hanggie teaches limitation [1b].

(iii) Limitation [1c]

Addressing limitation [1c], which recites "allowing a user to switch between said plurality of application," Petitioner asserts that the combination of Anthony and Hanggie teaches limitation [1c] because Hanggie discloses that a user can interact with the 2D windows to switch between a plurality of applications and Anthony discloses that a user can "freely navigate documents, files, or other data objects in a chronological manner," and that the user can "change the point of focus to an arbitrary location on a timeline." Pet. 44 (citing Ex. 1006 ¶ 3 ("Windows can typically be interactively resized, moved around the display, and arranged in stacked order so as to fully or partially overlap one another."); Ex. 1007 ¶ 44; Ex. 1003 ¶ 96). We agree, and find that the combination of Anthony and Hanggie teaches limitation [1c].

(iv) Limitation [1c-1]

Turning next to limitation [1c-1], Petitioner asserts that the combination of Anthony and Hanggie teaches "generating at least a plurality

of images, said plurality of images comprising at least first, second, and third images," because 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. 44–45 (citing Ex. 1006 ¶¶ 26, 57, 58, 59, Fig. 3; Ex. 1003 ¶ 97). 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.* at 45 (citing Ex. 1006 ¶¶ 49–50, 87–92, Figs. 2, 4). 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 47 (emphasis added) (citing Ex. 1003 ¶ 100). Thus, Petitioner asserts that the combination of Anthony and Hanggie teaches

> generating at least 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;

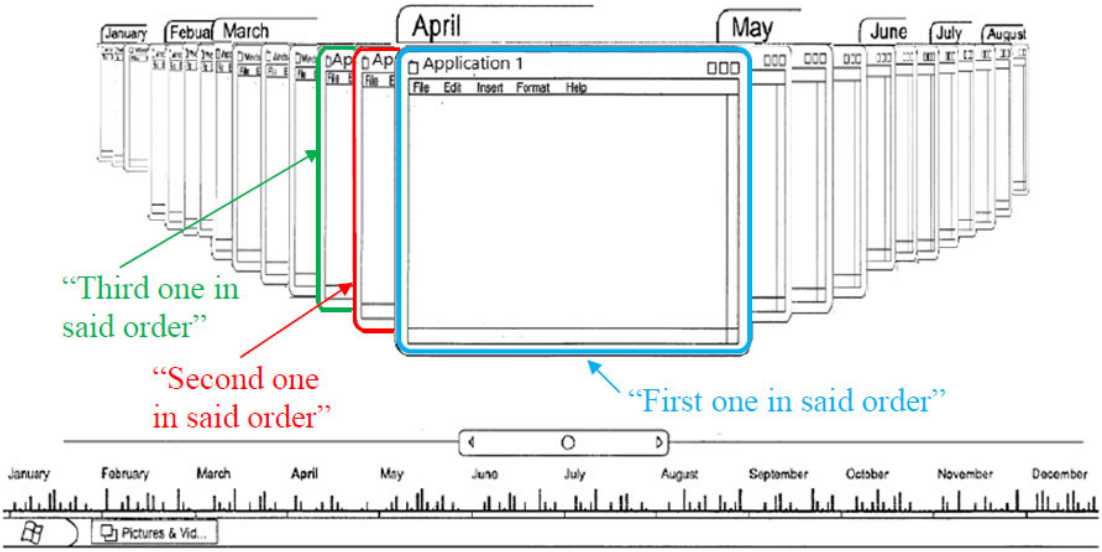
as recited in limitation [1c-1] of claim 1. *Id.* at 44–47.

Patent Owner presents arguments that the prior art does not teach "images," and we address that issue *infra* Section II.D.3.c.ii. As discussed in that section, we do not agree with Patent Owner's arguments on issues

related to "images," and also find, consistent with that discussion, that the evidence supports that the claimed "images" of this limitation are taught by the prior art. We also agree with Petitioner that the evidence supports that the combination of Anthony and Hanggie teaches the other recited elements of limitation [1c-1].

(v) Limitation [1c-2]

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



Pet. 49. The figure reproduced above shows Dr. Fuchs's second illustration of Petitioner's proposed combination of Anthony and Hanggie. Ex. 1003 ¶ 102; Pet. 48–49 (citing Ex. 1003 ¶ 102).

Referencing the second Dr. Fuchs-prepared figure reproduced above and citing the testimony of Dr. Fuchs, Petitioner asserts that "Anthony explains that the multiple windows 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. 47–48 (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 with the window associated with an application. Accordingly, each of HAC's[9] 3D windows ("***plurality of images***") are displayed in an order based on a last time that the user opened . . . *and* interacted with the window.

Id. at 48 (citing Ex. 1003 ¶ 102).

Referencing the second 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. 48 (emphasis added) (citing Ex. 1003 ¶ 102).

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

> replacing all objects corresponding to said plurality of applications that are visible in said 2D space with said plurality of images, said plurality of images being displayed in said 3D immersive space and 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, wherein a first

[9] Petitioner refers to the combination of Hanggie and Anthony as "HAC." Pet. 33–34.

> 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.

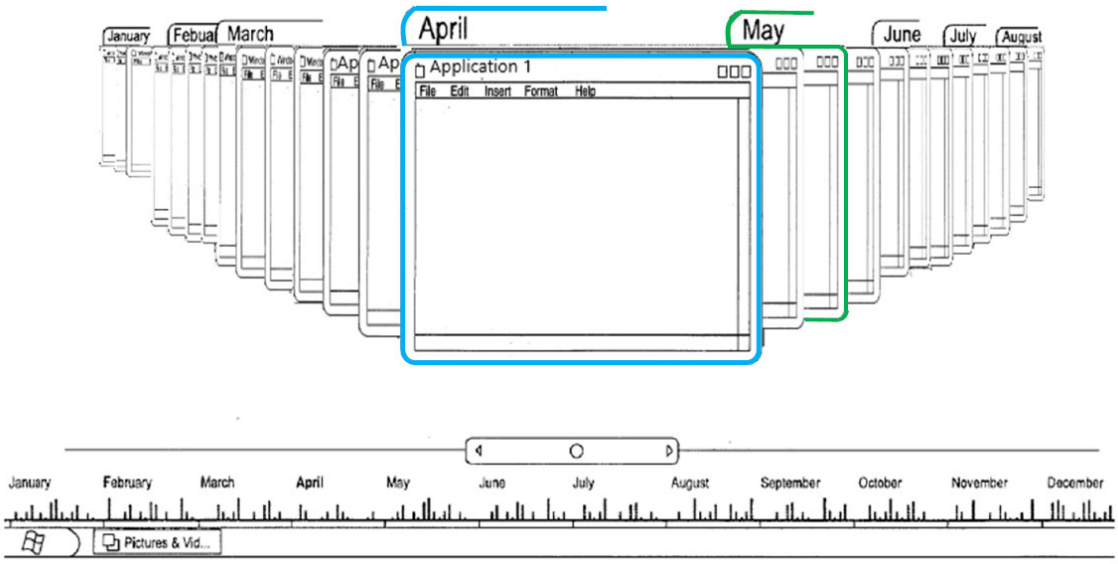
Pet. 47–49.

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.

(vi) Limitations [1c-3] and [1c-4]

Addressing limitation [1c-3], Petitioner asserts that the combination of Anthony and Hanggie teaches "allowing said user to move said plurality of images" because Anthony discloses that a user can freely navigate through the files, folders, and objects in the timeline to focus on any point in the timeline and "[w]hen a user manipulates the timeline to change the focus onto a different window or focal group, *all the windows in the timeline shift* so that the window that the user wants to view is at the focal point displayed in front of the user's view." Pet. 49 (emphasis added) (citing Ex. 1007 ¶¶ 44, 81, 84, Fig. 5; Ex. 1003 ¶ 103).

Petitioner presents another figure prepared by Dr. Fuchs illustrating Petitioner's proposed combination, which is reproduced below.



Pet. 51. The figure reproduced above shows Dr. Fuchs's third illustration of Petitioner's proposed combination of Anthony and Hanggie. Ex. 1003 ¶ 104; Pet. 50–51 (citing Ex. 1003 ¶ 104).

Referencing the third Dr. Fuchs-prepared figure reproduced above and citing the testimony of Dr. Fuchs, Petitioner asserts that, as illustrated in the combination figure,

> when a user wants to shift from viewing a window in April to a window in May, *all the windows shift to the left* such that the May window now occupies the center of the screen instead of the April window. June and latter months shift closer to the center of the screen and April and earlier months shift away from the center of the screen.

Pet. 50 (emphasis added) (citing Ex. 1003 ¶ 104).

Petitioner further argues that as depicted in Figure 11 of Anthony, "some windows are ***continuously moved in one direction*** so far from the focal point that they no longer appear in the visible area of the timeline and ***result in a perception that the windows have been moved off the display***

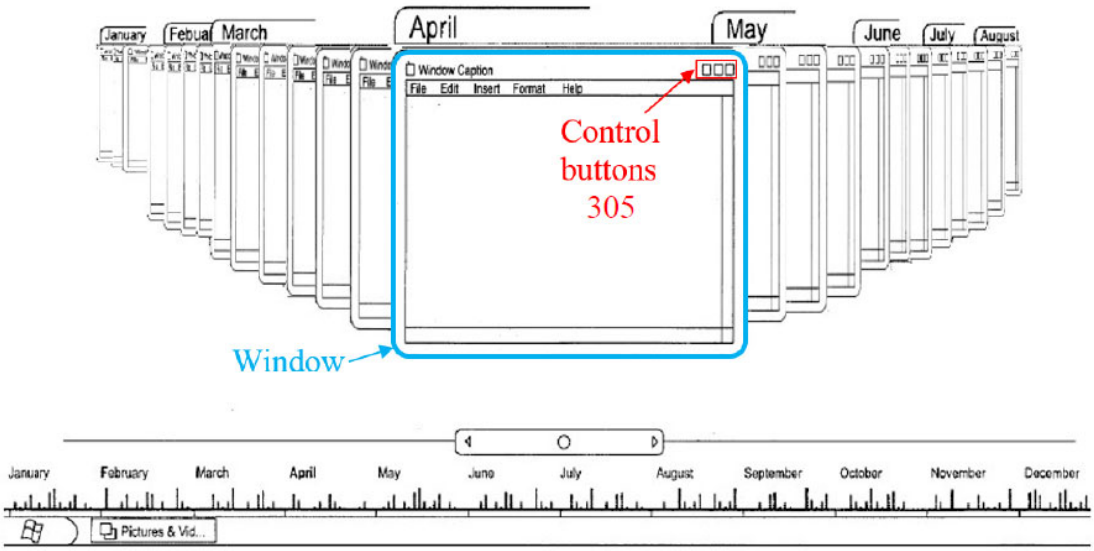
screen, which has a fixed resolution." Pet. 51–52 (citing Ex. 1007 ¶ 63, Fig. 11; Ex. 1003 ¶ 105).

Thus, Petitioner asserts that the combination of Anthony and Hanggie teaches or suggests limitation [1c-3] reciting "allowing said user to move said plurality of images, wherein (i) movement of one of said plurality of images results in movement of all of said plurality of images" and limitation [1c-4] reciting "(ii) continued movement in one direction of one of said plurality of images results in a perception to said user that said one of said plurality of images is moved off of said fixed resolution display." Pet. 49–52.

We agree with Petitioner, and find that the combination of Anthony and Hanggie teaches limitations [1c-3] and [1c-4].

(vii) Limitation [1c-5]

Addressing limitation [1c-5], Petitioner presents a fourth figure prepared by Dr. Fuchs illustrating Petitioner's proposed combination, which is reproduced below.



Pet. 53. The figure reproduced above shows Dr. Fuchs's fourth illustration of Petitioner's proposed combination of Anthony and Hanggie. Ex. 1003 ¶ 106; Pet. 52–53 (citing Ex. 1003 ¶ 106).

Referencing the fourth Dr. Fuchs-prepared figure reproduced above and citing the testimony of Dr. Fuchs, Petitioner asserts that the 3D windows of the Anthony-Hanggie combination include Hanggie's buttons 305 that can be "used to restore, maximize, minimize, close the window, etc." and that it would have been obvious to a person of ordinary skill in the art that a user would have been allowed "***to delete at least one of said plurality of images from said 3D immersive space***" by selecting a button that closes the window. Pet. 52 (citing Ex. 1006 ¶ 58; Ex. 1003 ¶ 106).

Petitioner further argues

> When such a deletion is performed in Anthony's dynamic timeline, it would have been obvious that other windows behind the deleted window would move towards the focal point. For example, . . . when a window (e.g., May window) behind and to the right of the April window (focal point) is deleted, a window (e.g., a June window) behind the deleted window (deleted May window) would then move closer to the focal point at the location previously occupied by the deleted window.

Pet. 54 (citing Ex. 1003 ¶ 107).

Thus, Petitioner asserts that the combination of Anthony and Hanggie teaches or suggests limitation [1c-5] reciting

> allowing said user to delete at least one of said plurality of images from said 3D immersive space, wherein deletion of said second one in said order results in said third one in said order being moved to a location in said 3D immersive space where said second one in said order was located prior to said deletion.

Pet. 52–54.

We agree with Petitioner, and find that the combination of Anthony and Hanggie teaches limitation [1c-5].

(viii) Limitation [1d]

Turning next to limitation [1d] reciting "allowing said user to interact with one of said first, second, and third applications," Petitioner contends that, as discussed above with respect to limitations [1c-3], [1c-4], and [1c-5], the combination of Anthony and Hanggie teaches or suggests several methods through which a user can interact with any one of the displayed application windows corresponding to various applications, e.g., "the windows can be moved, deleted, or minimized." Pet. 54–55 (citing Ex. 1003 ¶ 108). We agree, and find that the combination of Anthony and Hanggie teaches limitation [1d].

(ix) 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. 55 (citing Ex. 1006 ¶ 58, Fig. 3; Ex. 1003 ¶ 110). Petitioner asserts that the user selecting the maximize button for a 3D window in the combined GUI of Anthony and Hanggie teaches "receiving a selection from said user of 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 55–56 (citing Ex. 1003 ¶ 111). 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 a user to view the window in a 'maximum' capacity such that it occupies all or almost all parts of the computer display." Pet. 56 (citing Ex. 1003 ¶ 111); *see also id.* at 25–26 ("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 ¶¶ 61, 106)). Citing the testimony of Dr. Fuchs, Petitioner argues that it would been obvious to a person of ordinary skill in the art to display the maximized window *as a 2D window* to "allow a user to more intuitively and easily interact with the window." *Id.* at 56 (citing Ex. 1006 ¶ 92; Ex. 1003 ¶ 111).

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. 26–27 (citing Ex. 1003 ¶ 62). Thus, Petitioner asserts that "using the maximize button to switch to a 2D viewing of the window" would have been obvious. *Id.* at 57 (citing Ex. 1003 ¶ 111).

Petitioner further 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. 57 (citing Ex. 1003 ¶ 111). 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 ¶ 111).

Thus, Petitioner asserts that the combination of Anthony and Hanggie teaches or suggests "replacing said plurality of images within said 3D immersive space with one of said first, second, and third objects corresponding to said one of said plurality of applications within said 2D space in response to said selection," as recited in limitation [1d-2] of claim 1. Pet. 55–57.

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.

(x) Limitations [1d-3] and [1d-4]

Turning next to limitation [1d-3] that recites "receiving at least one interaction by said user with said one of said first, second, and third objects within said 2D 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. 57–58 (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.* at 58 (citing Ex. 1003 ¶ 114). 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 at

least one 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. 58 (citing Ex. 1003 ¶ 114). We agree, and find that the combination of Anthony and Hanggie teaches limitation [1d-4].

(xi) Rationale 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. 24 (citing Ex. 1007 ¶¶ 42, 43, 11, Fig. 4, code (57); Ex. 1006 ¶ 58, Fig. 3; Ex. 1003 ¶¶ 61–62). 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 22 (citing Ex. 1003 ¶ 59).

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. 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. 25 (citing Ex. 1006 ¶ 56, Fig. 3; Ex. 1003 ¶ 60).

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] a user to more intuitively and easily interact with the window" (Pet. 56 (citing Ex. 1006 ¶ 92; Ex. 1003 ¶ 111)) 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 26–27 (citing Ex. 1006 ¶ 92; Ex. 1003 ¶ 62)).

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. 27 (citing Ex. 1003 ¶ 64). 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 27–28 (citing Ex. 1003 ¶ 64). Petitioner further asserts that "the combination of Hanggie and Anthony 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 27 (citing Ex. 1003 ¶ 64).

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. 27 (citing Ex. 1003 ¶ 64).

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.

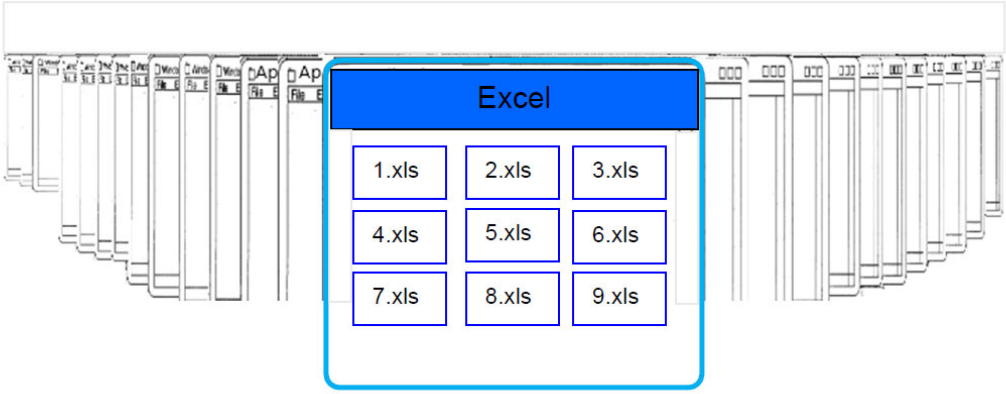
c. Patent Owner's Arguments Regarding Elements of Claim 1 and Rationale to Combine and Our Analysis

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. 32–56, 64–66; PO Sur-reply 3–24. 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. 47–51, 64–67. 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. 36–40; 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. 36–37 (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 37 (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*. (citing Ex. 2016 ¶ 98).



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. 38. 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. 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. 38–39 (citing Ex. 1007, Fig. 4 (bottom left corner); Ex. 2016 ¶ 101) (emphasis added). Patent Owner argues that it would not be 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. 2016 ¶ 102). 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 39.

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 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. 46–48 (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 order in Anthony to "allow the user to locate 'files or folders' for a particular application." PO Resp. 37. 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. 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. 37–40. 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. 30–32, 45, 47–48; *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. 38 (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* <u>*a specific application*</u>" 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 13; PO Sur-reply 5. 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 on 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 are 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. 19–20. 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 7. 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 3–7. 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 4).

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 a an ordering attribute in chronological order "by using a date of creation or date of edit attribute as the ordering attribute." Pet. 47–48 (citing Ex. 1007, ¶ 42). This disclosure teaches the claim limitation, even under Patent Owner's own interpretation wherein ordering is based on 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; 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 9 (emphasis omitted). Patent Owner appears to be adding further requirements to the claim limitation by arguing "the claims contemplates that a determination must be made as to when an application was opened and whether it was subsequently interacted with." *Id*. at 9–10 (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 10–11 (citing Ex. 1001, 38:48–56 (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*. at 11. 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 (emphasis omitted).

Patent Owner further alleges that "Petitioner's proposed combination does not make such a determination." PO Sur-reply 11. 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.[10] 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 ¶ 102. 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. 47–49. Further, we find persuasive Dr. Fuchs's testimony that attributes associated with editing suggests 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* Ex. 1003 ¶ 1002; PO Sur-reply 10–11.

Patent Owner also presents arguments on whether "images" are taught in the combination of the asserted prior art. *See* PO Resp. 40–47; PO Sur-reply 12–19. 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.

[10] 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.

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, "[t]here is no switching from one space to another" and that "everything occurs on a single 3D GUI." PO Resp. 33. 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 51. 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 51–52 (quoting Ex. 2012, 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 52 (quoting Ex. 2012, 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 independent claims recite "*replacing* said plurality of *images* within said 3D immersive space *with* one of said . . . *objects corresponding to said one of said plurality of applications* within said 2D space" in limitation [1d-2]. 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, 22:7–30 (emphases added).

The Specification, and its description of switching viewpoints, 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. 57 (citing Ex. 1001, 22:7–30).

We find Petitioner's argument 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, 22:10–20. 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 22:25–29. 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 being displayed in said 3D immersive space." Pet. 47–49. 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 said 2D space." *Id.* at 40–41, 56–57.

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.* at 56–57. 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. 40–41. 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. 40–41; 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 52–53 (citing Ex. 2016 ¶ 126). 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. 52–53. 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 8 (citing Pet. 40–42) (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. 40–47; PO Sur-reply 12–21. 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. 23, 47 (citing Ex. 1003 ¶¶ 61, 100). 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 a user to view the window in a 'maximum' capacity such that it occupies all or almost all parts of the computer display." *Id*. at 56 (citing Ex. 1003 ¶ 111); *see also id.* at 25–26.

Patent Owner argues that Hanggie does not generate the claimed images but displays active applications in 3D space. PO Resp. 41. 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. 2016 ¶ 105; Ex. 2017, 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 45 (citing Ex. 2016 ¶ 114).

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 '868 Patent." PO Resp. 46 (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. 2016 ¶ 115).

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. 41, 46. 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. 55–56. 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 ’868 patent support the claimed interactivity of the images in the 3D space. Pet. Reply 2–5. In particular, Petitioner refers to the ’868 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, 5:33–44, 21:12–28, 21:29–43; 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 12–19; 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 (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 14–15 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 14 (emphases omitted). Patent Owner argues that Petitioner refers to the '868 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 14. 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 15–17 (citing, *inter alia*, Ex. 1001, Fig. 3, steps 142, 146, 148, 152, 25:4–11). 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 17–18 (citing Ex. 1001, 22:14–20, 31:22–25). 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 18.

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. 40–47. 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 19, 40–47. 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 14–15 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 14.

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. 29, 46) 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")[11] 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 7–8), or "an optical counterpart of an object produced by . . . an electronic device" (PO Sur-reply 13–14), 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. 55–56), 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 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 '868 patent Specification, which allegedly provide support that "the imaged object . . . cannot be interacted with in 3D space, i.e., inactive images." PO Sur-reply 14–18.

---

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

Conversely, Petitioner points to the ’868 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 4–5 (citing Ex. 1001, 5:33–59). Further, the ’868 patent discloses, for instance, “a Microsoft Word document [] running in a window [] within a 3D virtual space” (Ex. 1001, 21:12–28) 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, 21:29–43). 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 ’868 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 18–19; Tr. 14:20–15:18. As Petitioner asserts, Hanggie discloses that an application can generate an application window and attaches content objects to that window. Pet. Reply 18–19 (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. 46. We do not agree. As Petitioner maps Hanggie to the claim element, the claimed object is the application window displayed in 2D space (Pet. 41) 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 45). 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 18–19 (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 is an image then it cannot be interacted with. PO Resp. 54. This argument is dependent on Patent Owner's claim construction, which we disagree with for the reasons 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. 48 (citing Ex. 2016 ¶ 118); *see also id*. at 43. 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*. (citing Ex. 2016 ¶ 119). 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. 2016 ¶ 119.

Patent Owner additionally argues that Hanggie teaches away from the claimed invention because the '868 patent "provides for a different solution

to reduce power, *i.e.*, display images of open applications in 3D space." PO Resp. 49 (citing Ex. 2001 ¶ 10). 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 50 (citing Ex. 1007 ¶ 6; Ex. 2016 ¶ 121). 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*. at 50–51.

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 ¶¶ 59–62. 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 '868 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. 57 (citing Ex. 1003 ¶ 111). 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. 64–67. 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.[12] *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 invention—as opposed to other economic and commercial factors unrelated to the quality of the patented subject matter.'" *SightSound Techs.,* 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

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

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 "Petitioner Fails To Address The Required 'Objective Indicia' Of Non-Obviousness." PO Resp. 64; *see also id.* at 66 ("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 28–29.

Patent Owner discusses, primarily, objective indicia in the form of industry praise reported in "technical journals and newspapers." PO Resp. 65 (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. 88–91 (Exhibit E). It simply describes "[a]n innovative three-dimensional search program," a "browser," with 3D browsing, and that a user could generally alternate between 2D and 3D views. *Id*. at pp. 88–91 (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. 69. 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 '868 patent, and argues that "[g]iven the nature of these licenses, they are strong indicators of commercial success." PO Resp. 65–66 (citing Ex. 2018 (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 28–29 (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. 65–66.

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 provides further evidence establishing the required nexus of the licenses to the claimed inventions, including that (i) the licenses are limited to the '868 patent and patents related thereto (e.g., patents at issue in IPR2023-00242 and 343), (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 26–27 (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 '868 patent. PO Resp. 67–74. 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)[13], it is not relevant in the proceedings at this time. At this stage in the proceeding, we do not consider

[13] The Decision on Institution considered arguments under its § 325(d) evaluation that are substantially similar to those presented in the Patent Owner Response. *Compare* Dec. 12–19 *with* PO Resp. 67–74. The Decision on Institution declined to exercise discretionary denial on the § 325(d) basis. Dec. 12–19.

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. 68–73. Petitioner similarly argues that the preamble of claim 10 is a system preamble corresponding to the method preamble of claim 1. *Id.* at 68. For the preamble and functions recited in claim 10, Petitioner cites to and relies on its analysis of claim 1 discussed above. *Id.* at 68, 72–73. As for the device recitations of claim 10, i.e., a "display device," an "input device," a "processor," and a "memory device," Petitioner provides detailed analysis showing where it contends each of these device limitations is taught in the combination of Anthony and Hanggie. *Id*. at 68–

72. Petitioner cites to and relies on its analysis of claim 1 discussed above for claim 19. *Id.* at 75–76.

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, 9, 11–14, 18 and 20

a. Claims 9, 18, and 20

Claim 9 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, 40:33–39. Claims 18 and 20 depend from claims 10 and 19, respectively, and each recites essentially the same limitations as claim 9. *Compare id.* at 40:33–39, *with id.* at 42:45–51, 44:25–32.

Regarding claim 9, 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. 67 (citing Ex. 1003 ¶ 134). As for claims 18 and 20, Petitioner cites to and relies on its analysis of claim 9 discussed above. *Id.* at 75, 77.

Patent Owner asserts Petitioner's argument is flawed because "it is not a *window* that is enlarged in Claim 9 (and Claims 18 and 20), but the *selected image*." PO Resp. 56. 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 56–57.

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. 23–24, 55–56. Addressing claim 9, 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 67 (emphasis added) (citing Ex. 1003 ¶ 134). 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 9, 18, and 20, 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 9, 18, and 20 would have been obvious over the combination of Hanggie and Anthony and the combination of Anthony and Hanggie.

b. Claims 2–5, 11, 12, and 14

Claims 2–5 depend from claim 1 and claims 11, 12, and 14 depend from claim 10. Petitioner provides detailed analysis showing where it contends each limitation of dependent claims 2–5, 11, 12, and 14 is taught in the combination of Anthony and Hanggie, which we find sufficiently supported by the evidence and argument presented. Pet. 58–67, 73–75.

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, 11, 12, and 14, 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, 11, 12, and 14 would have been obvious over the combination of Hanggie and Anthony and the combination of Anthony and Hanggie.

c. Claim 13

Claim 13 depends from claim 12 and recites

> [t]he system of claim 12, further comprising the step of receiving a request from said user to *switch from said 2D space to said 3D space*, wherein said step of replacing said object in said 2D space with said plurality of images further comprises replacing said object in said 2D space with said plurality of images in response to receiving said request to *switch from said 2D space to said 3D space*.

Ex. 1001, 42:4–10 (emphases added).

In the Petition, Petitioner cites to the teaching of limitation [1c-2] for support for the teaching of the limitations of claim 13. Pet. 75. Petition's discussion of limitation [1c-2] further states that the combination of Hanggie and Anthony "renders obvious 'replacing all objects corresponding to said plurality of applications that are visible in said 2D space with said plurality of images' for at least the reasons noted above in [1c-1]." *Id*. at 47 (citing *supra* [1c-1]; Ex. 1003 ¶ 101).

The Decision on Institution states that for claim 13 Petitioner relies on its analysis of only [1c-2] and "[l]imitation [1c-2], however, does not recite 'switch from said 2D space to said 3D space' and the cited portion of the Petition does not explain how the combination of Anthony and Hanggie teaches or suggests 'receiving a request from said user to switch from said 2D space to said 3D space,' as recited in claim 13." Dec. 62 (citing Pet. 75, 47–49).

Patent Owner asserts that the Decision on Institution is correct, and there is no switching from 2D space to 3D space taught in the asserted prior art. PO Resp. 58. Patent Owner argues that "to the extent it would have been obvious to go from the DWM [legacy desktop manager in 2D] mode to the CDWM [the 3D compositing desktop window manager] mode, as suggested by Petitioner (Pet. at 44–45), this would not involve switching from 2D to 3D space." *Id*. at 59 (citing Ex. 2016 at ¶ 140), 57–58 (citing Pet 44–45, 75). Patent Owner also contends that there is no motivation to switch from 2D to 3D space. *Id*. at 60. Patent Owner refers to Petitioner's motivation to go to from 3D to 2D mode to conserve power, but there is "no motivation to go from 3D to 2D and then 'switch' back from 2D to 3D." *Id*. at 60–61. Patent Owner further argues that even if there was a motivation to switch from 2D to 3D it would not be to present images of open applications in 3D space because the combination does not include an image as claimed and a person of ordinary skill in the art would not be motivated to provide "images of open application on a 3D timeline when the same information is presented on the taskbar in the combination." *Id*. at 61 (citing Ex. 1006 ¶ 143).

In its Reply, Petitioner refers to the use of the 3D compositing desktop window manager ("CDWM") of Hanggie that "enables 3D graphics and animation" (citing Pet. 14–17, 44–49), and that "may render the base portion of the application window 310 as a three-dimensional (3D) object." Pet. Reply 24 (citing Ex. 1006 ¶¶ 40, 43, 58, 65; Ex. 1003 ¶ 52; Ex. 1033 ¶¶ 52–53). Petitioner references Hanggie's disclosure that its "Legacy Graphics Device Interface 192b provides 2D graphics services to both legacy applications as well as the Legacy Window Manager," and asserts that the Petition explains that "multiple objects can be displayed in 2D space through the legacy mode using the Legacy Window Manager 192a." *Id*. at 25 (citing Pet. 40–44; Ex. 1006 ¶¶ 42, 87, Fig. 4; Ex. 1003 ¶ 53). Petitioner contends that "Hanggie's system supports 2D displays of legacy applications as well as 3D displays." *Id*. (citing Ex. 1003 ¶ 54). Petitioner argues that "Hanggie explicitly discloses that a user can request the CDWM mode (3D) mode or the legacy drawing mode (2D)." *Id*. at 26 (citing Ex. 1001 ¶ 55).

Petitioner contends that it would have been obvious to a person of ordinary skill in the art that when the combination of Hanggie and Anthony "is displaying one or more objects in 2D space in the legacy drawing mode, and the user selects the CDWM mode to be used, the HAC system 'receiv[es] a request from said user to switch from said 2D space to said 3D space' at least because the legacy drawing mode displays windows in 2D space and the CDWM mode displays images in 3D immersive space." Pet. Reply 26 (citing Ex. 1033 ¶ 56) (emphasis omitted). Petitioner asserts that a person of ordinary skill in the art would have understood that "in response to receiving this request," the system of the combination of Hanggie and Anthony "would have then generated corresponding windows (images) in

3D space and replaced the windows ('said objects') in 2D space with corresponding windows ('the plurality of images') in 3D space, as explained in the Petition." *Id*. (citing Pet. 44–49) (emphasis omitted). In support, Dr. Fuchs testifies that in the combined system there is a teaching in Hanggie of "'receiv[ing] a request from said user to switch from said 2D space to said 3D space' at least because the legacy drawing mode displays windows in 2D space and the CDWM mode displays images in 3D immersive space." Ex. 1033 ¶ 56.

Petitioner additionally asserts that Patent Owner's arguments on claim 13 are misplaced and "appear[] to import a requirement that the entire 2D space must be switched with the entire 3D space" and "no such requirement is present in the claims." Pet. 26 (citing Ex. 1033 ¶ 57) (emphasis omitted).

As discussed above, claim 13 relies on the support provided for limitation [1c-2], and limitation [1c-2] then relies on the evidence and argument provided in limitation [1c-1] for the teaching of "replacing all objects corresponding to said plurality of applications that are visible in said 2D space with said plurality of images." Pet. 47, 75. In the discussion of limitation [1c-1] in the Petition, it states that in the view of one of ordinary skill in the art, "when a user views the three 2D windows (as described above for [1b]) in the DWM mode and then *selects* the CDWM mode to interact and view the windows in 3D, HAC's computer would generate a plurality of images in the form of 3D windows that respectively correspond to the three 2D windows." Pet. 44–45 (citing Ex. 1003 ¶ 97). Accordingly, the Petition asserts, and we agree, that Hanggie teaches a step of selecting or requesting a change in modes to generate images in 3D corresponding to 2D windows. *See* Ex. 1006 ¶¶ 26, 57–59.

The Decision on Institution states that "[c]laim 13 shows that the patentee knew how to restrict the claim to 'switch from said 2D space to said 3D space." Dec. 52. We have, however, further considered the term in the context of the claim wherein there is "replacing said object in said 2D space with said plurality of images in response to receiving said request to switch from said 2D space to said 3D space." In this context, the request is intended to replace objects in 2D space with images in 3D space. Accordingly, we also agree with Petitioner that, although Patent Owner is trying to assert that the entire 2D space be switched with the entire 3D space, the claim recites only "replacing said object in said 2D space with said plurality of images." Pet. Reply 26; *see supra* Section II.D.3.c.ii. Accordingly, we determine that there is sufficient teaching in the prior art of "a request to switch from said 2D space to said 3D space" because we agree with Petitioner that in Hanggie the request to switch modes is a request to switch from 2D space to 3D space for the windows, where corresponding windows (images) are generated in 3D space that replace the windows (objects) in 2D space with corresponding windows. Pet. 44–45; Pet. Reply 26; *See* Ex. 1033 ¶ 56.

As noted, claim 13 relies on the support provided in the Petition for limitation [1c-2] (Pet. 75) and limitation [1c-1] (*id*. at 47). We find that the support in the Petition, as cited and discussed in Petitioner's Reply, is properly considered here because of the interrelationship of the limitations of claim 13 with those in claim 1. That is, the limitation of "replacing said object in said 2D space with said plurality of images" of claim 13 refers to the replacement of objects with images displayed in 3D of limitation [1c-2], and those images are generated in step [1c-1]. In view of these

interrelationships, Petitioner's reliance on different portions of the Petition by cross-referencing is acceptable.

Patent Owner's additional argument that there is "no motivation to go from 3D to 2D" ignores that a user may prefer view windows in 3D space, as discussed in both Hanggie and Anthony. *See* Pet. 30–32, 44–47. Patent Owner's further argument that the prior art does not present images of open applications in 3D space because the combination does not include an image is also unavailing for the reasons discussed above. *Supra* Section II.D.3.c.ii.

Accordingly, we have reviewed the record and find that the combination of Hanggie and Anthony teaches each limitation of claim 13, 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 claim 13 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 6–8 and 15–17 as obvious over the combination of Anthony, Hanggie, and Matthews. Pet. 75–84. Claim 8 depends from claim 7 and additionally recites:

> displaying at least fourth and fifth images in a second 3D immersive space, wherein said fourth image is an image of said

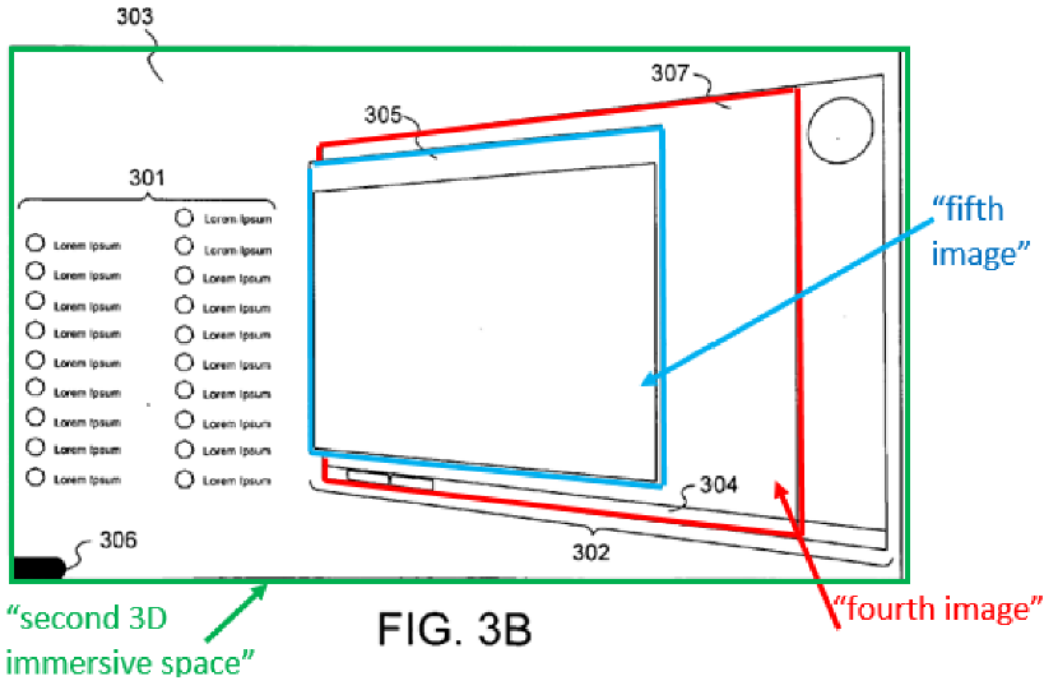
> plurality of images within said 3D immersive space and said fifth image is an image of at least a portion of a fourth object generated by a fourth application previously opened by said user; and
>
> allowing said user to interact with said one of said first, second, and third applications by selecting said fourth image, selecting said one of said plurality of images corresponding to said one of said plurality of applications, and interacting with said one of said first, second, and third objects corresponding to said one of said plurality of applications.

Ex. 1001, 40:19–33. Claim 17 includes similar limitations. *Id*. at 42:30–44.

Petitioner asserts that the combination of Anthony, Hanggie, and Matthews teaches or suggests the additionally recited limitations of claims 6–8 and 15–17. *Id.* at 77–89. Petitioner provides detailed analysis showing where it contends each limitation of dependent claims 6–8 and 15–17 is taught in Matthews alone or in combination with Anthony and Hanggie, with which we agree. *Id.* Citing the testimony of Dr. Fuchs, Petitioner also explains persuasively that a person of ordinary skill in the art would have combined Matthews with Anthony and Hanggie because doing so would merely involve combining prior art elements according to known methods to yield predictable results. *Id.* at 79–80 (citing Ex. 1003 ¶ 77).

Matthews describes a 3D graphical user interface where a work area of visual displays can be tilted away from the user in response to a user input. Ex. 1008 ¶¶ 49–52. In the tilted work area, all graphical items may ordinarily be displayed in a tilted virtual space. *Id*. ¶¶ 50–52.

Figure 3B of Matthews, as annotated by Petitioner, is reproduced below.



Pet. 86. The annotated figure reproduced above shows Petitioner's alleged identification of a second 3D immersive space, a fourth image, and a fifth image in Figure 3B of Matthews.

Referencing the annotated Figure 3B of Matthews reproduced above, Petitioner asserts that Matthews teaches a "second 3D immersive space" recited in claim 8 because Matthews discloses that work area 302 is "transformed" in presentation area 303 to display images and windows tilted away from the user. Pet. 85–87 (citing Ex. 1008 ¶¶ 49–50, 56, 60, Figs. 3A, 3B, 4A, 5A; Ex. 1003 ¶¶ 129, 130). Petitioner further argues that it would have been obvious to a person of ordinary skill in the art to display application windows (the recited "fourth and fifth images") in the tilted work area in a manner similar to the way windows 305 are displayed in Figure 3B

or windows 706a and 706b are displayed in Figures 7A and 7B of Matthews. *Id.* at 87 (citing Ex. 1008, Figs. 7A, 7B; Ex. 1003 ¶ 130).

Referencing another Dr. Fuchs-prepared figure (not reproduced herein) illustrating the combination of Anthony and Hanggie, Petitioner asserts that in the proposed combination of Anthony, Hanggie, and Matthews, the 3D timeline windows would have been tilted in the transformed display mode in the manner shown in Figure 7A of Matthews. Pet. 88 (citing Ex. 1008 ¶¶ 52, 54, 59). Petitioner further asserts that Matthews discloses that "[t]ransforming the presently displayed work area can be accomplished using a 3D graphics system," which uses "a 3D graphics video card . . . and X, Y, and Z coordinates to render a 3D scene." *Id.* at 88–89 (citing Ex. 1008 ¶¶ 52, 55; Ex. 1003 ¶ 132).

In its Response, Patent Owner asserts that

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

PO Resp. 63 (emphases added).

Patent Owner's argument is unavailing because none of the features argued by Patent Owner are recited in claims 8 and 17. On their faces, claims 8 and 17 do not recite any of the features argued by Patent Owner—"3D within 3D," "the 3D space is a first 3D space within a second 3D

space," "generating an image (fourth image) of the plurality of images in the first 3D space" which "is then presented in a second 3D space," or "first select[ing] the fourth image in the second 3D space, and then the first image in the first 3D space." Nor does Patent Owner explain why claims 8 and 17 require these features. *See* PO Resp. 62–64.

As discussed in the claim construction section above (Section II.B.1), the parties agree the claim term "3D space" means "a virtual space defined by a three-dimensional coordinate system." Pet. 9; PO Resp. 19–20. Under the agreed interpretation of "3D space," Petitioner demonstrates that Matthews teaches a "second 3D . . . space" recited in claims 8 and 17 because Matthews discloses that the work area (a virtual space) is "transformed" in X, Y, and Z coordinates to render a tilted 3D scene—e.g., a coordinate transformation of the work area for a rotational transformation in a three-dimensional Cartesian coordinate system to render a tilted 3D scene or tilted 3D Cartesian space. *See* Ex. 1008 ¶¶ 49–52, 54, 55.

Patent Owner also argues that Matthews does not teach the recited "fourth and fifth images in a second 3D immersive space" because "item 706a of [Matthews] is not an image, as Petitioner contends, but a window." PO Resp. 62, 64.

Patent Owner's argument is unavailing because Petitioner relies on the combination of Anthony, Hanggie, and Matthews—i.e., 3D timeline windows of the combination of Anthony and Hanggie, tilted as taught by Matthews—as teaching "fourth and fifth images in a second 3D immersive space" recited in claim 8 and similarly recited in claim 17. Pet. 88. As discussed above with respect to limitation [1d-2] of claim 1, Petitioner shows sufficiently that the 3D timeline windows of the combination of

Anthony and Hanggie teaches "images within said 3D immersive space," as recited in claim 1. Thus, for the reasons explained above for claim 1, Petitioner demonstrates that the tilted 3D timeline windows of the combination of Anthony, Hanggie, and Matthews teach or suggest "fourth and fifth images in a second 3D immersive space" recited in claim 8 and similarly recited in claim 17. Patent Owner's argument is also unpersuasive because a finding of obviousness cannot be overcome by attacking references individually where the rejection is based upon the teachings of a combination of references. *See In re Keller*, 642 F.2d at 426.

Additionally, Patent Owner more generally argues that Matthews does not make up for the deficiencies of the teachings of Hanggie and Anthony for claim 1. PO Resp. 62–63. We do not agree with the arguments Patent Owner advanced for claim 1 for the reasons discussed above.

Accordingly, we have reviewed the record and find that the combination of Hanggie, Anthony, and Matthews teaches each limitation of claims 6–8 and 15–17, 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 6–8 and 15–17 would have been obvious over the combination of Hanggie, Anthony, and Matthews and the combination of Anthony, Hanggie, and Matthews.

F. Asserted Obviousness over Anthony, Hanggie, Matthews, and Robertson

In this asserted ground of obviousness, Petitioner adds the teachings of Robertson to the combination of Anthony, Hanggie, and Matthews and challenges dependent claim 7 as obvious over the combination of Anthony, Hanggie, Matthews, and Robertson. Pet. 90–92.

Claim 7 depends from claim 1 and further recites "wherein each one of said plurality of applications comprises a web browser application, and each one of said first, second, and third objects comprises a web browser window." Ex. 1001, 40:15–18.

Robertson describes a graphical user interface in which thumbnails are rendered on a simulated three-dimensional surface. Ex. 1009, code (57). Robertson further describes that when a thumbnail is selected by a user, "the Internet Explorer browser may . . . render[] a web page, with the user interface of the present invention in the background." *Id.* at 13:55–14:4.

Petitioner asserts that the combination of Anthony, Hanggie, Matthews, and Robertson renders claim 7 obvious because Anthony, Hanggie, and Matthews render obvious multiple windows being displayed in a 3D environment and Robertson explains that, for a user interested in browsing the Internet, it would have been obvious to display the multiple windows as separate web browsers corresponding to web browser applications used to browse the Internet. Pet. 91–92 (citing Ex. 1009, Figs. 8A, 15A; Ex. 1003 ¶ 83). Citing the testimony of Dr. Fuchs, Petitioner also explains persuasively that person of ordinary skill in the art would have combined Robertson with Anthony, Hanggie, and Matthews because doing so would merely involve combining prior art elements according to known methods to yield predictable results. *Id.* at 92 (citing Ex. 1003 ¶ 84).

Patent Owner does not provide arguments specific to claim 7 beyond those advanced with respect to claim 1 discussed above. *See generally* PO Resp.

Accordingly, we have reviewed the record and find that the combination of Hanggie, Anthony, Matthews, and Robertson teaches each limitation of claim 7, 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 claim 7 would have been obvious over the combination of Hanggie, Anthony, Matthews, and Robertson and the combination of Anthony, Hanggie, Matthews, and Robertson.

III. CONCLUSION[14]

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

[14] 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, 9–14, 18–20	103(a)	Anthony, Hanggie	1–5, 9–14, 18–20	
6–8, 15–17	103(a)	Anthony, Hanggie, Matthews	6–8, 15–17	
7	103(a)	Anthony, Hanggie, Matthews, Robertson	7	
1–5, 9–14, 18–20	103(a)	Hanggie, Anthony	1–5, 9–14, 18–20	
6–8, 15–17	103(a)	Hanggie, Anthony, Matthews	6–8, 15–17	
7	103(a)	Hanggie, Anthony, Matthews, Robertson	7	
Overall Outcome			1–20	

IV. ORDER

It is hereby:

ORDERED that claims 1–20 of the ’868 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.

PETITIONER:

W. Karl Renner
Andrew Patrick
Usman Khan
Kenneth Darby
FISH & RICHARDSON P.C.
Axf-ptab@fr.com
patrick@fr.com
khan@fr.com
kdarby@fr.com

Matthew Satchwell
Brent Yamashita
Chris Duerden
DLA PIPER LLP (US)
matthew.satchwell@dlapiper.com
brent.yamashita@dlapiper.com
chris.duerden@us.dlapiper.com

Erika H. Arner
Cory C. Bell
Yanyi Liu
Yinan Liu
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, LLP
erika.arner@finnegan.com
cory.bell@finnegan.com
yanyi.liu@finnegan.com
yinan.liu@finnegan.com

PATENT OWNER:

Todd Fitzsimmons
FITZSIMMONS IP LAW, P.C.
todd@fitziplaw.com

Gregory Cordrey
JEFFER MANGELS BUTLER & MITCHELL LLP
gxc@jmbm.com