

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROSOFT CORPORATION,
Petitioner,

v.

BRADIUM TECHNOLOGIES LLC,
Patent Owner.

Case IPR2015-01435
Patent 8,924,506 B2

Before BRYAN F. MOORE, BRIAN J. McNAMARA, and
MINN CHUNG, *Administrative Patent Judges*.

CHUNG, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Microsoft Corporation (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–21 (the “challenged claims”) of U.S. Patent No. 8,924,506 B2 (Ex. 1001, “the ’506 patent”). Bradium Technologies LLC (“Patent Owner”) filed a Preliminary Response (Paper 12, “Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314.

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless the information presented in the Petition “shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Upon consideration of the Petition and the Preliminary Response, we conclude that the information presented in the Petition does not establish a reasonable likelihood that Petitioner would prevail in showing the unpatentability of any of the challenged claims on the grounds set forth in the Petition. Accordingly, we deny Petitioner’s request to institute an *inter partes* review of claims 1–21.

A. Related Proceedings

According to Petitioner, the ’506 patent is the subject of the following pending patent infringement case: *Bradium Techs. LLC v. Microsoft Corp.*, No. 1:15-cv-00031-RGA (D. Del.). Pet. 1–2. Petitioner has also filed petitions for *inter partes* review in *Microsoft Corp. v. Bradium Techs. LLC*, Cases IPR2015-01432 and IPR2015-01434, challenging U.S. Patent Nos. 7,139,794 B2 (“the ’794 patent”) and 7,908,343 B2 (“the ’343 patent”), respectively. The ’506 patent issued from a continuation-in-part application

of the application that resulted in the '343 patent. The '794 patent discloses similar subject matter and claims the benefit of priority from the same set of provisional applications as the '343 and '506 patents.

B. The '506 Patent

The '506 patent describes an image distribution system for retrieving high-resolution or large-scale images from a network image server over a limited-bandwidth communications channel for display on client devices, where a user may navigate over the images displayed on the client device by controlling a viewing frustum placed over the displayed images. *See* Ex. 1001, Abstract; col. 1, ll. 29–34; col. 5, ll. 31–59. The retrieval of large-scale or high-resolution images is achieved by selecting, requesting, and receiving update image parcels relative to an operator or user controlled image viewpoint. *See id.* at Abstract; col. 3, ll. 50–59. In an embodiment, when the viewing frustum is changed by user navigation commands, the client device determines the priority of the image parcels to be requested from the server “to support the progressive rendering of the displayed image,” and the image parcel requests are placed in a request queue to be issued in priority order. *See id.* at col. 7, ll. 50–65.

On the server side, high-resolution source image data is pre-processed by the image server to create a series of derivative images of progressively lower resolution. *See id.* at col. 6, ll. 7–12. Figure 2 of the '506 patent is reproduced below.

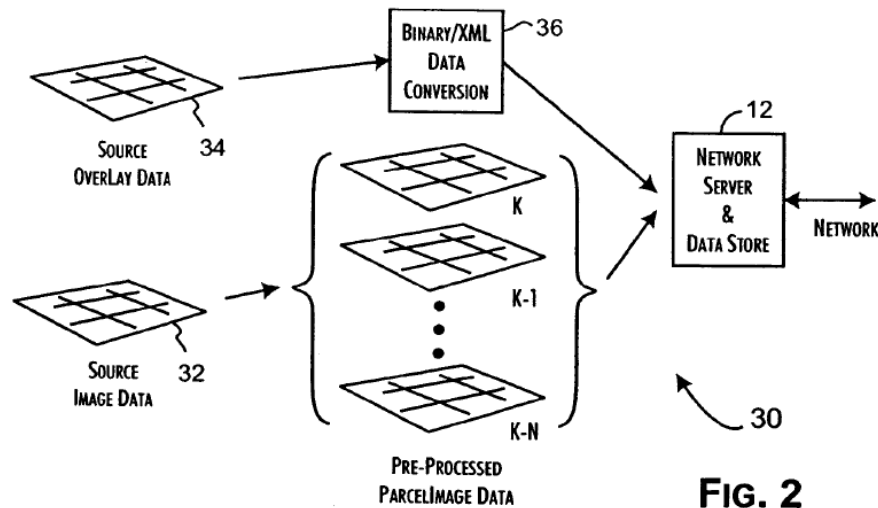


FIG. 2

Figure 2 depicts preparation of pre-processed image parcels at the network image server. *See id.* at col. 4, ll. 60–63; col. 5, ll. 60–63; col. 6, ll. 7–10. As illustrated in Figure 2, source image data 32 is pre-processed to obtain a series K_{1-N} of derivative images of progressively lower image resolution. *Id.* at col. 6, ll. 10–12. Initially, the source image data—i.e., the series image K_0 —is subdivided into a regular array of image parcels of a fixed byte size, e.g., 8K bytes. *Id.* at col. 6, ll. 12–17. In an embodiment, the resolution of a particular image in the series is related to the predecessor image by a factor of four while, at the same time, the array subdivision is also related by a factor of four, such that each image parcel of the series images has the same fixed byte size, e.g., 8K bytes. *Id.* at col. 6, ll. 17–22.

In another embodiment, the image parcels are compressed by a fixed ratio—for example, the 8K byte parcels are compressed by a 4-to-1 compression ratio such that each image parcel has a fixed 2K byte size. *Id.* at col. 6, ll. 23–28. This allows each image parcel to fit into a single network data packet, which improves data delivery and avoids the

transmission latency and processing overhead of managing image parcel data broken up over multiple network data packets. *See id.* at col. 8, ll. 15–22.

C. Illustrative Claim

Of the challenged claims, claims 1, 8, and 15 are independent. Claim 1 is illustrative of the challenged claims and is reproduced below:

1. A method of retrieving large-scale images over network communications channels for display on a limited communication bandwidth computer device, said method comprising:

issuing, from a limited communication bandwidth computer device to a remote computer, a request for an update data parcel wherein the update data parcel is selected based on an operator controlled image viewpoint on the computer device relative to a predetermined image and the update data parcel contains data that is used to generate a display on the limited communication bandwidth computer device;

processing, on the remote computer, source image data to obtain a series K_{1-N} of derivative images of progressively lower image resolution and wherein series image K_0 being subdivided into a regular array wherein each resulting image parcel of the array has a predetermined pixel resolution wherein image data has a color or bit per pixel depth representing a data parcel size of a predetermined number of bytes, resolution of the series K_{1-N} of derivative images being related to that of the source image data or predecessor image in the series by a factor of two, and said array subdivision being related by a factor of two such that each image parcel being of a fixed byte size;

receiving said update data parcel from the data parcel stored in the remote computer over a communications channel; and

displaying on the limited communication bandwidth computer device using the update data parcel that is a part of said predetermined image, an image wherein said update data parcel uniquely forms a discrete portion of said predetermined image.

D. Asserted Grounds of Unpatentability

Petitioner asserts the following three grounds of unpatentability (Pet. 13–59):

Claims Challenged	Statutory Basis	Ground
1–21	§ 103(a)	Potmesil, ¹ Hornbacker, ² and Lindstrom ³ (Pet. 13–34, Ground 1)
1–3, 5–10, 12–17, and 19–21	§ 103(a)	Rutledge, ⁴ Ligtenberg, ⁵ and Cooper ⁶ (Pet. 34–58, Ground 2)
4, 11, and 18	§ 103(a)	Rutledge, Ligtenberg, Cooper, and Hassan ⁷ (Pet. 58–59, Ground 3)

¹ Ex. 1002, Ex. A, Michael Potmesil, *Maps Alive: Viewing Geospatial Information on the WWW*, Computer Networks and ISDN Systems Vol. 29, No. 7, 1327–42 (Aug. 1997) (“Potmesil”).

² Ex. 1003, WO 99/41675 (Aug. 19, 1999) (“Hornbacker”).

³ Ex. 1004, Peter Lindstrom et al., *An Integrated Global GIS and Visual Simulation System* (“Lindstrom”).

⁴ Ex. 1006, U.S. Patent No. 6,650,998 B1 (Nov. 18, 2003) (“Rutledge”).

⁵ Ex. 1005, U.S. Patent No. 5,682,441 (Oct. 28, 1997) (“Ligtenberg”).

⁶ Ex. 1007, U.S. Patent No. 6,118,456 (Sept. 12, 2000) (“Cooper”).

⁷ Ex. 1008, U.S. Patent No. 5,940,117 (Aug. 17, 1999) (“Hassan”).

The Petition also mentions four additional grounds which are not discussed in the Petition but discussed only in the Declaration of William R. Michalson (“Michalson Decl.,” Ex. 1009). *See* Pet. 12 (citing Ex. 1009 ¶¶ 285–479). For the reasons discussed below in Section III.D, we will not consider these additional grounds not presented in the Petition.

II. CLAIM CONSTRUCTION

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see In re Cuozzo Speed Tech., LLC*, 793 F.3d 1268, 1275–79 (Fed. Cir. 2015), *reh’g en banc denied*, 793 F.3d 1297 (Fed. Cir. 2015). Under the broadest reasonable interpretation (BRI) standard, and absent any special definitions, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in view of the specification. *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms or phrases must be set forth with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Petitioner proposes that each claim term of the challenged claims be construed to have its ordinary and customary meaning under the BRI standard. Pet. 11. Patent Owner does not dispute Petitioner’s proposed claim construction. Hence, we need not construe any claim terms expressly for purposes of this Decision. *See, e.g., Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (only those terms that are in

controversy need to be construed, and only to the extent necessary to resolve the controversy).

III. ANALYSIS OF PETITIONER’S PRIOR ART CHALLENGES

A. Obviousness over Potmesil, Hornbacker, and Lindstrom

Petitioner contends claims 1–21 are unpatentable under 35 U.S.C. § 103(a) over the combination of Potmesil, Hornbacker, and Lindstrom. Pet. 13–34. Petitioner asserts that Potmesil, Hornbacker, and Lindstrom are prior art to the ’506 patent under § 102(b). *Id.* at 11.

As an initial matter, Patent Owner notes that Lindstrom is undated and contends that Petitioner has not met its burden to show Lindstrom qualifies as printed publication prior art. Prelim. Resp. 4–9. In particular, Patent Owner contends that Petitioner has not demonstrated Lindstrom was publicly accessible prior to the critical date of the ’506 patent. *Id.* at 6–9.

Under 35 U.S.C. § 311(b), a petitioner in an *inter partes* review may only challenge the claims of a patent based on “prior art consisting of patents or printed publications.” 35 U.S.C. § 311(b). Petitioner has the initial burden of production, i.e., “going forward with evidence,” to establish that there is prior art that renders the claims unpatentable. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1379 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1327 (Fed. Cir. 2008)). As noted by Patent Owner, the Lindstrom article lacks any indication on the face of the reference that may suggest the date or the manner of its publication or dissemination. *See* Prelim. Resp. 4. Hence, it is not clear from the face of Lindstrom whether it qualifies as prior art in an

inter partes review. Thus, Petitioner must make a threshold showing that Lindstrom is a prior art “printed publication[.]” 35 U.S.C. § 311(b).

Whether a reference qualifies as a “printed publication” involves a case-by-case inquiry into the facts and circumstances surrounding the reference’s disclosure to members of the public. *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004). The key inquiry is whether the reference was made “sufficiently accessible to the public interested in the art” before the critical date. *In re Lister*, 583 F.3d 1307, 1311 (Fed. Cir. 2009) (quoting *In re Cronyn*, 890 F.2d 1158, 1160 (Fed. Cir. 1989)). A reference is considered “publicly accessible” upon a satisfactory showing that the document has been “disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence[] can locate it.” *Kyocera Wireless Corp. v. ITC*, 545 F.3d 1340, 1350 (Fed. Cir. 2008) (citation and internal quotation marks omitted). Often, the determination of public accessibility turns on whether a reference is indexed and catalogued in a meaningful way. For example, an uncatalogued and unshelved thesis in a university library, notwithstanding its accessibility to a graduate committee, was not sufficiently accessible to the public to constitute a printed publication within the meaning of 35 U.S.C. § 102(b) because the “thesis could have been located in the university library only by one having been informed of its existence by the faculty committee, and not by means of the customary research aids available in the library.” *In re Bayer*, 568 F.2d 1357, 1361–62 (CCPA 1978). In contrast, a dissertation shelved in the stacks and indexed in the catalog at a university library was found to be a printed publication.

In re Hall, 781 F.2d 897, 898–99 (Fed. Cir. 1986). However, indexing and cataloging must be prepared in a “meaningful” way, e.g., in relationship to the subject matter of the references, to allow an interested researcher exercising reasonable diligence to locate the prior art. *See Cronyn*, 890 F.2d at 1161.

Although Petitioner asserts that Lindstrom is prior art under § 102(b) (Pet. 11), the Petition does not discuss at all why that is the case. Instead, when identifying Lindstrom as prior art, the Petition without any explanation points to “associated” Exhibits 1013 and 1014, which are Declarations of Dr. Peter Lindstrom (“Lindstrom Decl.”) and Mr. Charles Randall Carpenter (“Carpenter Decl.”), respectively. *See* Pet. ii–iii, 3–4. We discuss each of these Declarations in turn.

In his Declaration, Dr. Lindstrom states that he is the “lead author” of the Lindstrom article. Ex. 1013 ¶ 3. Dr. Lindstrom also asserts that the Lindstrom article was “published and made publicly accessible in 1997.” *Id.* ¶ 5. According to Dr. Lindstrom, the Lindstrom article was “published online” as a GVU (Graphics, Visualization, and Usability Center at Georgia Institute of Technology) Technical Report in 1997, and was “available to the public . . . through the Georgia Tech website and File Transfer Protocol (FTP) site.” *Id.* ¶ 4. Dr. Lindstrom further asserts that the Lindstrom article “could be located by the general public through a search of the online Georgia Tech catalog” or “through an Internet or web search engine.” *Id.* Dr. Lindstrom, however, does not explain what the “online Georgia Tech catalog” is or provide any supporting evidence regarding the online catalog. Nor does he provide any evidence to support his assertion regarding public

accessibility “through an Internet or web search engine” in 1997. Dr. Lindstrom testifies that he checked the GVU FTP site in 1997 and observed that the Lindstrom article was available for download from the site. *Id.* None of this testimony was cited or discussed in the Petition itself. Hence, we give no weight to Dr. Lindstrom’s testimony. *See Google Inc. v. ART+COM Innovationpool GmbH*, Case IPR2015-00788, slip. op. at 10 (PTAB Sept. 2, 2015) (Paper 7) (citing 37 C.F.R. § 42.104(b)(5) (“The Board may exclude or give no weight to the evidence where a party has failed to state its relevance or to identify specific portions of the evidence that support the challenge.”))).

Furthermore, the mere fact that the Lindstrom article was available on the GVU FTP site is not sufficient to demonstrate the public accessibility of the article because Dr. Lindstrom does not provide any evidence how the interested members of the public could have found the FTP site in 1997 and, upon finding it, navigated the site to locate the article—for example, whether the FTP server contained an index or catalog to allow customary and meaningful research. *See SRI Int’l, Inc. v. Internet Security Sys., Inc.*, 511 F.3d 1186, 1194–97 (Fed. Cir. 2008) (holding that, although a paper on an FTP server was available to anyone who knew how to find it, the FTP server did not contain an index or catalogue or other tools for customary and meaningful research, and, therefore, the paper was “not publicized or placed in front of the interested public”).

The Lindstrom Declaration attaches two exhibits, Exhibits B and C, which, according to Dr. Lindstrom, are copies of electronic mails “relating to the publication of the Lindstrom Publication” he received in 1997 from

Ms. Elaine Swobe, who was the GVU's technical report coordinator at the time. Ex. 1013 ¶¶ 7–10. None of these attachments is mentioned or discussed in the Petition itself, nor is Dr. Lindstrom's testimony regarding the attachments cited or discussed in the Petition. Hence, we decline to give any weight to Exhibits B and C or Dr. Lindstrom's testimony regarding them. *See Google*, Case IPR2015-00788, slip. op. at 10.

We also note that neither Exhibits B and C nor Dr. Lindstrom's testimony demonstrate public accessibility of the Lindstrom article. For example, according to Dr. Lindstrom, Exhibit C shows “a message from Ms. Swobe to the GVU Advisory Board, faculty, and 15 graduate students . . . announcing the release and public availability of GVU Technical reports in March and April of 1997, including the Lindstrom Publication.” Dr. Lindstrom does not explain how this message demonstrates that the Lindstrom article was accessible to the interested public. At most, Dr. Lindstrom's testimony indicates that the article was made accessible to certain members of GVU, a research center within Georgia Institute of Technology, including the Advisory Board, faculty, and graduate students of GVU. This is not sufficient to demonstrate that the interested public, e.g., interested researchers outside GVU, exercising reasonable diligence could have located the Lindstrom article at the relevant time. *See Bayer*, 568 F.2d at 1361–62 (although accessible to a graduate committee, an uncatalogued and unshelved thesis in a university library was not a printed publication within the meaning of 35 U.S.C. § 102(b)). Further, although a list of keywords appears in Exhibits B and C, neither the exhibits nor the Lindstrom Declaration describe how the keywords were used or identify any

other indexing that would lead a person exercising reasonable diligence to the Lindstrom article.

Turning to the Carpenter Declaration, Mr. Carpenter states that he was the Manager of the GVU Lab between 1994 and 1998. Ex. 1014 ¶ 3. In his Declaration, Mr. Carpenter makes essentially the same assertions as those in the Lindstrom Declaration regarding the alleged online publication of the Lindstrom article via the GVU FTP site (*see id.* ¶¶ 6–7) and regarding the same two electronic mails received from Ms. Swobe (attached as Exhibits B and C) mentioned in the Lindstrom Declaration (*see id.* ¶¶ 15–17). In addition, the Carpenter Declaration includes two other items of information: a screen shot of a computer display showing the directory listing of the directory on the GVU FTP server containing the files comprising the Lindstrom article (*id.* ¶¶ 11–12); and a printout of an Internet Archive’s “Wayback Machine” capture of the GVU Technical Reports website as of June 28, 1998, which is attached as Exhibit D (*id.* ¶ 13). Similar to the Lindstrom Declaration, none of these attachments, information, or testimony is cited or discussed in the Petition itself. Hence, we give no weight to Exhibits B, C, and D, or Mr. Carpenter’s testimony regarding them. *See Google*, Case IPR2015-00788, slip. op. at 10; *see also Hughes Network Systems, LLC v. California Institute of Technology*, Case IPR2015-00060, slip. op. at 2–4 (PTAB Nov. 6, 2015) (Paper 20) (declining to consider evidence and testimony regarding the date of publication of prior art on a website, which are presented only in a declaration and not discussed at all in the petition itself).

Even if they were presented properly, the additional information and testimony in the Carpenter Declaration do not demonstrate public accessibility of the Lindstrom article. First, regarding Mr. Carpenter's assertion that the screen shot shows that the Lindstrom article and accompanying figures were uploaded on May 8, 1997 to the directory on the GVU FTP server captured in the screen shot (Ex. 1014 ¶¶ 11–12), the testimony is directed to the assertion that the Lindstrom article was stored on the GVU FTP server in May 1997, not the public accessibility of Lindstrom. Mr. Carpenter does not explain how interested members of the public could have found the GVU FTP site, navigated to the directory shown in the screen shot, and located the Lindstrom article as being related to the subject matter claimed in the '506 patent among the dozens of files listed in the screen shot. Hence, the screen shot and Mr. Carpenter's testimony regarding it fail to demonstrate that interested researchers exercising reasonable diligence could have found the Lindstrom article before the critical date.

Next, Mr. Carpenter asserts that Exhibit D shows that the Lindstrom article was publicly available as of June 1998. *Id.* ¶ 13. Mr. Carpenter further testifies that he was the designer of the GVU Technical Reports website and that the Wayback Machine capture of the website at <http://www.gvu.gatech.edu/gvu/reports/1997/> shown in Exhibit D is consistent with his recollection of how the website would have appeared in mid-1998. *See id.* ¶ 14. Mr. Carpenter also asserts that Exhibit D shows that the Lindstrom article was available for download from the GVU website in mid-1998. *Id.*

The Carpenter Declaration, however, does not explain how a researcher interested in the subject matter of the '506 patent claims would have found the GVU website prior to the critical date. Nor does Mr. Carpenter explain how Exhibit D shows an interested researcher would have located the Lindstrom article from the website. Assuming Exhibit D accurately depicts how the GVU Technical Reports website would have appeared in June 1998, the GVU website shows a listing of 25 papers including the title and the author (or authors) for each paper. The papers appear to be listed by a paper number that is unrelated to the subject matter or the title of the paper. *Id.*, Ex. D. In *Cronyn*, the Federal Circuit held that indexing based on author's name was not sufficient to render college thesis papers publicly available, even when the title of the papers was listed along with the author's name in the index cards, because the indexing by name bore "no relationship to the subject of [the papers]." *Cronyn*, 890 F.2d at 1161. Similarly, here, the listing of papers shown in Exhibit D by itself is insufficient to demonstrate public accessibility of the Lindstrom article without further evidence or explanation. The Carpenter Declaration does not say anything about whether the GVU website was catalogued or indexed to allow interested researchers to find the Lindstrom article based on the subject matter of the paper or the '506 patent claims. Mr. Carpenter also says nothing about whether the keywords mentioned in Exhibits B and C were used in connection with the GVU website. Thus, the Carpenter Declaration does not present sufficient information to demonstrate that an interested researcher exercising reasonable diligence could have found the Lindstrom article before the critical date. *See Groupon, Inc. v. Blue*

Calypso, LLC, Case CBM2013-00044, slip. op. 16–22 (PTAB Dec. 17, 2014) (Paper 47) (a technical report listed on a university department’s website was not shown to be publicly accessible because the paper was only available for viewing and downloading to members of the public who happened to know that the paper was there, and insufficient evidence was presented to establish the department’s webserver contained an index or catalog, or any other tools for finding the paper based on the subject matter of the paper).

In consideration of the above, we are not persuaded that Petitioner has met its initial burden of production of evidence establishing that Lindstrom is applicable as prior art. Therefore, we are not persuaded that Petitioner has demonstrated a reasonable likelihood that it would prevail in its challenge to patentability of claims 1–21 under 35 U.S.C. § 103(a) as obvious over the combination of Potmesil, Hornbacker, and Lindstrom.

B. Obviousness over Rutledge, Ligtenberg, and Cooper

Petitioner contends claims 1–3, 5–10, 12–17, and 19–21 are unpatentable under 35 U.S.C. § 103(a) over the combination of Rutledge, Ligtenberg, and Cooper. Pet. 34–58. We are not persuaded that Petitioner has established a reasonable likelihood of prevailing on the asserted ground for the reasons explained below.

1. Principles of Law

A claim is unpatentable under § 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 v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

2. Analysis

Patent Owner asserts that the obviousness analysis presented in the Petition is deficient because the Petition generally does not identify the differences between the claims and the asserted references as required under the *Graham* framework. Prelim. Resp. 12–14, 17–18. Patent Owner also contends that the Petition does not adequately explain how the asserted references are to be combined. *Id.* at 20–21. Patent Owner further contends that the Petition is also deficient because the Petition omits the claim language from the obviousness analysis and never links the actual terms of the claim elements to any particular teaching of the asserted prior art references. *Id.* at 31–34. Although Patent Owner argues that most of Petitioner’s analysis suffers from these problems, for purposes of this Decision, we focus on a limitation that is included in all claims and relates to a significant aspect of the invention claimed in the ’506 patent.

Claims 1, 8, and 15

Independent claims 1, 8, and 15 all recite the following limitation (the “common limitation”):

resolution of the series K_{1-N} of derivative images being related to that of the source image data or predecessor image in the series by a factor of two, and said array subdivision being related by a factor of two such that each image parcel being of a fixed byte size.

Ex. 1001, col. 12, ll. 47–52; col. 13, ll. 55–60; col. 14, ll. 57–62. For claim 1, Petitioner identifies this limitation as elements 1.H, 1.I, and 1.J.⁸

Ex. 1012, 1. Petitioner treats these elements separately as if they are three distinct limitations, each describing or capturing a discrete feature or concept. *See* Pet. 44–45. As discussed below, Petitioner’s analysis is fundamentally flawed because the common limitation set forth above must be considered as a whole. The reason is that the limitation captures a single concept described in the Specification—a concept that can be understood only when the limitation is considered as a whole. Petitioner’s omission of the actual claim language in its analysis and using the labels (e.g., claim elements 1.H, 1.I, or 1.J) in place of the claim language obscures the problem underlying Petitioner’s approach and reinforces the erroneous impression that the Petitioner-identified elements are separate and distinct limitations.

As discussed above in Section I.B, the Specification of the ’506 patent describes preparation of pre-processed images at the network image server, where a source image data is pre-processed to obtain a series K_{1-N} of derivative images, which are subdivided into a regular array of image

⁸ Petitioner identifies the same limitation as elements 8.N, 8.O, and 8.P for claim 8; and as elements 15.O, 15.P, and 15.Q for claim 15. Ex. 1012, 4, 6.

parcels. Ex. 1001, col. 6, ll. 10–17. The resolution of a particular image in the series of images is related to the predecessor image by a factor of four while, at the same time, the array subdivision is also related by a factor of four, such that each image parcel of the series images has the same fixed byte size, e.g., 8K bytes. *Id.* at col. 6, ll. 17–22. For example, if the array subdivision decreases by a factor of four from one image to the next one in the series, the resolution would also decrease by a factor of four such that the size of each image parcel would remain at the same fixed byte size. The claim language of the common limitation quoted above essentially tracks this disclosure in the Specification except that a factor of two is recited in the claims instead of a factor of four mentioned in the Specification. Hence, in view of the Specification, a person of ordinary skill would understand the ordinary and customary meaning of the common limitation to be that, for successive images in the series K_{1-N} of images, the resolution and the array subdivision are each related by a factor of two such that each image parcel of the series images has the same fixed byte size. In other words, the common limitation quoted above operates as a whole to capture the concept of varying the resolution and array subdivision of the series images in relation to each other so as to maintain the size of each image parcel at the same fixed byte size. Thus, a proper obviousness analysis must address the common limitation as an integral whole because the limitation describes a single unitary concept that can only be understood when considering the limitation as a whole.

Petitioner's analysis, however, arbitrarily breaks up the common limitation into three elements, e.g., elements 1.H, 1.I, and 1.J for claim 1,

and treats each of them separately in isolation from each other. *See* Pet. 44–45. For example, Petitioner asserts that the combination of Rutledge, Ligtenberg, and Cooper teaches element 1.H (“resolution of the series K_{1-N} of derivative images being related to that of the source image data or predecessor image in the series by a factor of two”), the combination of Rutledge and Ligtenberg teaches element 1.I (“said array subdivision being related by a factor of two”), and Ligtenberg teaches element 1.J (“such that each image parcel being of a fixed byte size”). *Id.* However, Petitioner does not address the meaning of the common limitation as a whole in view of the Specification, nor does the Petition or the Michalson Declaration present any discussion of how the combination of Rutledge, Ligtenberg, and Cooper teaches the claimed feature of varying the resolution and the array subdivision in relation to each other, so as to keep the image parcel size the same for the series of images. *See id.*; Ex. 1009 ¶¶ 216–218. This is a basic error fatal to Petitioner’s case. *See Anchor Wall Sys., Inc. v. Rockwood Retaining Walls, Inc.*, 340 F.3d 1298, 1311 (Fed. Cir. 2003) (“[T]he claim limitation, as a whole, [] must be considered in claim construction.”); *United States v. Telectronics, Inc.*, 857 F.2d 778, 781 (Fed. Cir. 1988) (holding that district court’s interpretation of the term “avoid” based on the dictionary definition without regard to the rest of the limitation was error). Because Petitioner fails to address a significant feature recited in the claim, the Petition fails to present a prima facie case of obviousness based on the combination of Rutledge, Ligtenberg, and Cooper.

The Petition fails for additional reasons, including its failure to link the actual terms of the claim element to a particular teaching of Rutledge,

Ligtenberg, or Cooper. For example, Petitioner contends that Ligtenberg teaches element 1.J because Ligtenberg teaches “the use of fixed size image parcels, e.g., 64x64 or 128x128 pixel resolution parcels for each layer of resolution.” Pet. 44–45 (citing Ex. 1005, Abstract; col. 1, ll. 42–56; col. 2, ll. 31–38; col. 6, ll. 51–57; col. 13, ll. 30–37). However, Petitioner’s argument does not match the actual claim term “such that each image parcel being of a fixed byte size” to the teaching of Ligtenberg. Since the phrase “such that” ties element 1.J to preceding elements 1.H and 1.I, a person of ordinary skill would understand “each image parcel” recited in element 1.J to mean “each image parcel of any image” of the series K_{1-N} images in view of the Specification and in the context of the common limitation as a whole. In contrast, the cited portions of Ligtenberg at most teach that images are divided into image tiles for *some* layer of resolution such that the image tiles are of the same size *within* a particular resolution layer. See Ex. 1005, Abstract (“decomposing the input image into a number of images at various resolutions, subdividing at least *some* of these images into tiles (rectangular arrays) . . . the tiles are 64x64 pixels or 128x128 pixels”); col. 6, ll. 55–56 (“the tile blocks are all of equal length *in a given layer*”) (emphases added). Petitioner does not cite, nor do we discern, where in Ligtenberg the reference teaches each image parcel having the same byte size *for any resolution layer* or *across all resolution layers*, i.e., “each image parcel being of a fixed byte size” for any image in the series images, as recited in the claim.

The Michalson Declaration does not remedy the deficiency in the Petition. Citing column 13, lines 30–37 of Ligtenberg, Dr. Michalson

testifies that “[s]ince each tile in a layer has the same size (‘fTileSize’) . . . it would be obvious that each image parcel could have the same fixed byte size.” Ex. 1009 ¶ 218. However, the cited portion in column 13 of Ligtenberg appears to be a listing of C language source code, which shows that “fTileSize” is a variable for storing 16-bit integer values. See Ex. 1005, col. 13, ll. 30–37 (“UInt16 fTileSize;”). Dr. Michalson does not cite any disclosure in Ligtenberg that requires this value to remain constant for all layers of resolution. Instead, Dr. Michalson asserts that “it would be obvious that each image parcel *could have* the same fixed byte size” because “using a fixed size . . . *could improve* predictability of the system” by making “the caching process more straightforward.” Ex. 1009 ¶ 218 (emphases added). However, “obviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. Nov. 5, 2015) (citing *InTouch Technologies, Inc. v. VGO Communications, Inc.*, 751 F.3d 1327, 1352 (Fed. Cir. 2014)). Dr. Michalson justifies his “could have” reasoning by making an analogy to stacking cubic boxes of the same size in a room. Ex. 1009 ¶ 218. We are not persuaded by Dr. Michalson’s testimony because it is conclusory and provides insufficient explanation why a person of ordinary skill would have modified Ligtenberg to teach the claimed feature, i.e., each image parcel having the same byte size for any resolution layer or across all resolution layers. The lack of adequate reasoning in Dr. Michalson’s testimony indicates that Dr. Michalson relies on impermissible hindsight. See *KSR*, 550 U.S. at 421 (“A

factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.”); *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1354 (Fed. Cir. 2013) (“Where, as here, the necessary reasoning is absent, we cannot simply assume that ‘an ordinary artisan would be awakened to modify prior art in such a way as to lead to an obviousness rejection.’ It is in such circumstances, moreover, that it is especially important to guard against the dangers of hindsight bias.” (citation omitted)); *ActiveVideo Networks, Inc. v. Verizon Communications, Inc.*, 694 F.3d 1312, 1327 (Fed. Cir. 2012) (“[T]he expert’s testimony on obviousness was essentially a conclusory statement that a person of ordinary skill in the art would have known, based on the ‘modular’ nature of the claimed components, how to combine any of a number of references to achieve the claimed inventions. This is not sufficient and is fraught with hindsight bias.”). Therefore, we are not persuaded that Petitioner has demonstrated Ligtenberg teaches element 1.J, “such that each image parcel being of a fixed byte size,” as recited in claim 1.

Lack of Sufficient Reasons to Combine

Furthermore, even if the elements are considered individually, Petitioner does not explain adequately the reasons to combine the references to teach elements 1.H, 1.I, and 1.J. An invention “composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR*, 550 U.S. at 418. Petitioner must also show that there was a reason to combine those elements to achieve the claimed invention with a reasonable expectation of success.

See PAR Pharm., Inc. v. TWi Pharms., Inc., 773 F.3d 1186, 1193 (Fed. Cir. 2014).

First, we note that not all combinations elements 1.H and 1.I satisfy element 1.J, “such that each image parcel being of a fixed byte size.” For example, if the resolution *increased* by a factor of two while the array subdivision *decreased* by a factor of two from one image to the next in the series of images, the byte size of the image parcels would *increase* by a factor of four. In another example, reducing the resolution by a *factor of four* while reducing the array subdivision by a *factor of eight* would *increase* the byte size of the image parcels by a factor of two. In both examples, elements 1.H and 1.I would be satisfied but *not* element 1.J because each image parcel of the two successive images would not be of a fixed size as required by the claim. Hence, in order to show that the combination of Rutledge, Ligtenberg, and Cooper teaches the claimed feature of elements 1.H, 1.I, and 1.J, Petitioner must show how a person of ordinary skill would be motivated to combine the references to teach varying the resolution and array subdivision in a specific way, e.g., both decreasing by a factor of four, “*such that* each image parcel [is] of a fixed byte size.”

Petitioner contends that Rutledge teaches element 1.H because Rutledge discloses zoom layers, where each zoom layer can be a factor of eight greater in scale from the preceding layer. *See* Pet. 44 (citing Ex. 1006, col. 2, ll. 31–38; col. 4, ll. 41–47; col. 5, ll. 15–24, 50–64; Fig. 3). Petitioner also asserts that Ligtenberg teaches element 1.H because the image layers of Ligtenberg are related by a reduction of a factor of two. *Id.* (citing Ex. 1005,

col. 2, ll. 9–22, 25–38, 56–62; col. 5, ll. 21–27, 34–53; col. 7, ll. 19–21; col. 9, ll. 6–20; App. A).

Petitioner does not present a separate argument for element 1.I (“said array subdivision being related by a factor of two”), but, instead, relies on its arguments and evidence advanced for element 1.H. *Id.* However, the cited portions of Ligtenberg include no disclosure regarding the array subdivisions being related by a factor of two. *See* Ex. 1005, col. 2, ll. 56–62 (describing reduction of *resolution* by a factor of two in each dimension). Furthermore, Petitioner provides no explanation why Rutledge’s description of the “zoom layers” being related by “a factor of eight . . . in scale” shows *both* the resolution and the array subdivision being related by a factor of two. *See* Pet. 44. In this regard, we discern no evidence or explanation presented in the Petition that supports Petitioner’s contention that Rutledge teaches *both* elements 1.H and 1.I. If anything, the cited passages of Rutledge appear to relate to the array subdivisions for zoom levels corresponding to the scale in a geographical map display, rather than the resolution of the map image itself. *See* Ex. 1006, col. 5, ll. 15–24, 50–64; Fig. 3. Based on this record, for purposes of this Decision, we accept that Petitioner relies on Ligtenberg to teach element 1.H while Rutledge is relied upon to teach element 1.I. For element 1.J, Petitioner argues that Ligtenberg teaches the element (Pet. 44–45), which we find unpersuasive for the reasons discussed above.

Petitioner’s argument is also unpersuasive for a failure to articulate adequate reasons to combine. As discussed above, Ligtenberg teaches reducing the resolution by a factor of two in each dimension, i.e., a factor of four, from one image to next in the series of layers, whereas Rutledge

teaches varying the array subdivision by a factor of eight. Hence, when combining these teachings without modification, the byte size of the image parcels would increase by a factor of two, not maintained at a fixed size as required by the claim. As discussed above, Petitioner does not contend that there is express teaching in either Rutledge or Ligtenberg for varying the resolution and the array subdivision in relation to each other so as to maintain the byte size of each image parcel at a fixed byte size. Rather, citing the testimony of Dr. Michalson, Petitioner contends that a person of ordinary skill in the art “would have recognized the benefit of combining Ligtenberg’s file format and fixed size compression as an implementation choice in combination with the image download and view techniques taught by Rutledge along with Cooper’s priority queue to efficiently use network bandwidth and memory on a client device.” *Id.* at 45 (citing Ex. 1009 ¶ 218). But this rationale does not address the feature claimed in elements 1.H, 1.I, and 1.J and, therefore, is not sufficient to provide an adequate reason for why one of ordinary skill would combine the teachings of Rutledge, Ligtenberg, and Cooper to teach varying the resolution and array subdivision in relation to each other, e.g., both decreasing by a factor of four, *such that* each image parcel is of a fixed byte size. Further, Dr. Michalson’s testimony that “it would be obvious that each image parcel *could have* the same fixed byte size” based on an analogy to stacking cubic boxes of the same size in a room is unpersuasive because Dr. Michalson fails to address the reasons for combining elements 1.H and 1.I in a specific way such that each image parcel is of a fixed byte size. See Ex. 1009 ¶ 218

(emphasis added). As discussed above, this failure indicates that Dr. Michalson relies on impermissible hindsight.

Thus, the Petition fails to demonstrate that the combination of Rutledge, Ligtenberg, and Cooper teaches the common limitation set forth above. Although our discussion is focused on claim 1, the same analysis is applicable to claims 8 and 15 because the common limitation is also recited in those claims. Accordingly, on this record, the information presented in the Petition does not demonstrate a reasonable likelihood of Petitioner prevailing in its challenge to independent claims 1, 8, and 15 under 35 U.S.C. § 103(a) as obvious over the combination of Rutledge, Ligtenberg, and Cooper.

Claims 2, 3, 5–7, 9, 10, 12–14, 16, 17, and 19–21

Claims 2, 3, and 5–7; 9, 10, and 12–14; and 16, 17, and 19–21 depend from claims 1, 8, and 15, respectively. Petitioner’s arguments and evidence presented with respect to these dependent claims do not remedy the deficiencies in Petitioner’s analysis of the challenged independent claims. Therefore, Petitioner fails to demonstrate a reasonable likelihood of Petitioner prevailing in its challenge to claims 2, 3, 5–7, 9, 10, 12–14, 16, 17, and 19–21 under 35 U.S.C. § 103(a) as obvious over the combination of Rutledge, Ligtenberg, and Cooper.

Dr. Michalson attaches as Appendix V a claim chart for claims 1–3, 5–10, 12–17, and 19–21, which cites various portions of Rutledge, Ligtenberg, and Cooper without any explanation. See Ex. 1009 ¶ 282, App. V. We decline to consider Appendix V, which is not discussed at all in

the Petition or the Michalson Declaration. Accordingly, on this record, the information presented in the Petition does not demonstrate a reasonable likelihood of Petitioner prevailing in its challenge to claims 1–3, 5–10, 12–17, and 19–21 under 35 U.S.C. § 103(a) as obvious over the combination of Rutledge, Ligtenberg, and Cooper.

C. Obviousness over Rutledge, Ligtenberg, Cooper, and Hassan

Petitioner contends claims 4, 11, and 18 are unpatentable under 35 U.S.C. § 103(a) over the combination of Rutledge, Ligtenberg, Cooper, and Hassan. Pet. 58–59. Claims 4, 11, and 18 depend from claims 1, 8, and 15, respectively, and each further recite “the limited communication bandwidth computer device further comprises one of a mobile computer system, a cellular computer system, an embedded computer system, a handheld computer system, a personal digital assistants and an internet-capable digital phone and a television.” Petitioner relies on Hassan to teach the additionally recited limitation of claims 4, 11, and 18. *Id.*

Petitioner’s arguments and evidence presented with respect to dependent claims 4, 11, and 18 do not remedy the deficiencies in Petitioner’s analysis of the challenged independent claims 1, 8, and 15. Dr. Michalson attaches as Appendix W a claim chart for claims 4, 11, and 18, which cites various portions of Rutledge, Ligtenberg, Cooper, and Hassan without any explanation. See Ex. 1009 ¶ 286, App. W. We decline to consider Appendix W, which is not discussed at all in the Petition or the Michalson Declaration.

Accordingly, on this record, the information presented in the Petition does not demonstrate a reasonable likelihood of Petitioner prevailing in its challenge to claims 4, 11, and 18 under 35 U.S.C. § 103(a) as obvious over the combination of Rutledge, Ligtenberg, Cooper, and Hassan.

D. Additional Grounds Not Discussed in the Petition

In addition to the grounds discussed above, Petitioner contends that the Michalson Declaration shows claims 1–21 are obvious “for four more grounds in view of additional prior art.” Pet. 12 (citing Ex. 1009 ¶¶ 285–479). Dr. Michalson’s discussion of these four additional grounds spans a total of 57 pages. Dr. Michalson also attaches claim charts for these additional grounds, which are not discussed in the Petition or the Michalson Declaration. Ex. 1009 ¶¶ 387, 473.

These four additional grounds are not discussed at all in the Petition itself and may not be incorporated by reference. *See* 37 C.F.R. § 42.6(a)(3) (prohibiting incorporation by reference). Among other problems, Petitioner’s incorporation by reference serves to circumvent the page limit imposed on petitions for *inter partes* review. Accordingly, we will not consider arguments that are not made in the Petition, but are instead incorporated by reference to the cited paragraphs and claims charts of Dr. Michalson’s Declaration. *See Cisco Systems, Inc., v. C-Cation Techs., LLC*, Case IPR2014-00454, slip op. at 9–10 (PTAB Aug. 29, 2014) (Paper 12) (Informative) (expanded panel decision explaining that arguments not made in the Petition will not be considered); *Fidelity National Information Services, Inc., v. Datatransury Corp.*, Case IPR2014-00489, slip op. at 9

(PTAB Aug. 13, 2014) (Paper 9) (“Under our rules, the petition must contain a ‘full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence’ 37 C.F.R.

§ 42.22(a)(2). We, therefore, decline to consider information presented in a supporting declaration, but not discussed sufficiently in a petition”).

IV. CONCLUSION

Based on the arguments and evidence presented in the Petition, we conclude Petitioner has not demonstrated a reasonable likelihood that Petitioner would prevail in showing at least one of the challenged claims of the ’506 patent is unpatentable based on any asserted ground of unpatentability. Therefore, we do not institute an *inter partes* review with respect to any of the challenged claims of the ’506 patent.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is denied as to all challenged claims of the ’506 patent.

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