UNITED STATES PATENT AND TRADEMARK OFFICE
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BEFORE THE PATENT TRIAL AND APPEAL BOARD
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ADOBE, INC.,
Petitioner,

v.

REALTIME ADAPTIVE STREAMING LLC,
Patent Owner.
_____

Case IPR2019-00712
Patent 8,929,442 B2
_____

Before GEORGIANNA W. BRADEN, GREGG I. ANDERSON, and
KAMRAN JIVANI, *Administrative Patent Judges*.

ANDERSON, *Administrative Patent Judge*.

DECISION
Institution of Inter Partes Review
35 U.S.C. § 314

I. INTRODUCTION

Adobe, Inc. ("Petitioner") filed a Petition (Paper 2, "Pet.") pursuant to 35 U.S.C. §§ 311–19 to institute an *inter partes* review of claims 1–15 ("challenged claims") of U.S. Patent No. 8,929,442 (Ex. 1001, "'442 patent"), filed on December 19, 2013.[1] Ex. 1001, [22]. The Petition is supported by the Declaration of Dr. Clifford Reader (Ex. 1003, "Reader Declaration"). Realtime Adaptive Streaming LLC ("Patent Owner") filed a Preliminary Response (Paper 6, "Prelim. Resp.").

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." 35 U.S.C. § 314(a). Having considered the arguments and evidence presented by Petitioner and Patent Owner, we determine Petitioner has demonstrated a reasonable likelihood of prevailing in showing that at least one of the challenged claims of the '442 patent is unpatentable. Accordingly, we institute an *inter partes* review as to all the challenged claims of the '442 patent on all grounds of unpatentability set forth in the Petition.

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[1] Without conceding the date, Petitioner alleges that the '442 patent's "earliest possible priority date" is the filing date of provisional application 60/268,394 ("'394 application") of February 13, 2001. Pet. 4 & n.1; *see also* Ex. 1001, [60], 1:15–16 (identifying the '394 application as related). The prior art references relied on were either filed or published prior to this date. *See* Section II.D below. Patent Owner's Preliminary Response explains that the '442 patent claims priority to U.S. application 10/076,013, filed February 13, 2002. Prelim. Resp. 4. Regardless, Patent Owner does not dispute that the references relied on are prior art.

II. BACKGROUND

A. Related Proceedings

Petitioner advises us that the '442 patent is the subject of the following actions and administrative proceedings: *Realtime Adaptive Streaming v. Adobe Systems Inc.*, Case No. 2-18-cv-09344 (C.D. Cal.); *Realtime Adaptive Streaming LLC v. Samsung Electronics Co.*, Case No. 6-18-cv-00113 (E.D. Tex.); *Realtime Adaptive Streaming LLC v. Adobe Systems Inc.*, Case No. 1-18-cv-10355 (D. Mass.); *Realtime Adaptive Streaming LLC v. Apple Inc.*, Case No. 1-17-cv-02869 (D. Colo.); *Realtime Adaptive Streaming LLC v. Sony Electronics Inc.*, Case No. 1-17-cv-01693 (D. Del.); *Realtime Adaptive Streaming LLC v. Polycom Inc.*, Case No. 1-17-cv-02692 (D. Colo.); *Realtime Adaptive Streaming LLC v. Brightcove Inc. et al.*, Case No. 1-17-cv-01519 (D. Del.); *Realtime Adaptive Streaming LLC v. Haivision Network Video Inc.*, Case No. 1-17-cv-01520 (D. Del.); *Realtime Adaptive Streaming LLC v. Cisco Systems Inc.*, Case No. 6-17-cv-00591 (E.D. Tex.); *Realtime Adaptive Streaming LLC v. Amazon.com Inc. et al.*, Case No. 6-17-cv-00549 (E.D. Tex.); and *Sony Corporation v. Realtime Adaptive Streaming LLC*, Case No. IPR2018-01439 (PTAB) ("'1439 IPR").[2] Pet. 87–88.

Patent Owner advises us of the "following proceedings that may affect, or be affected by," a decision in this proceeding: *Realtime Adaptive Streaming LLC v. Haivision Network Video Inc.*, Case No. 1-17-cv-01520 (D. Del.); *Realtime Adaptive Streaming LLC v. Adobe Systems Inc.*, Case

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[2] Dismissed. *See* '1439 IPR, Paper 10.

No. 1-18-cv-10355 (D. Mass); and *Realtime Adaptive Streaming LLC v. Arris Solutions, Inc.*, Case No. 19-cv-00585 (D. Colo.). Paper 3, 2.

B. Technology and the '442 Patent

The '442 patent is directed to "a system and method for compressing and decompressing based on the actual or expected throughput (bandwidth) of a system employing data compression and a technique of optimizing based upon planned, expected, predicted, or actual usage." Ex. 1001, 7:51–56.

1. Technology

The field of the invention is data compression and decompression. *Id.* at 1:22–23. There are a variety of known data compression algorithms where one or more parameters are changed, resulting in an associated change in performance. *Id.* at 1:32–36. Lempel-Ziv is "a typical dictionary based compression algorithm." *Id.* at 1:36–38. The size of the dictionary can affect performance resulting in a longer time to execute. *Id.* at 1:38–41. "Algorithms that compress particularly well usually take longer to execute whereas algorithms that execute quickly usually do not compress particularly well." *Id.* at 1:54–56. One of several problems identified is the need to "provide dynamic modification of compression system parameters so as to provide an optimal balance between execution speed of the algorithm (compression rate) and the resulting compression ratio." *Id.* at 1:57–61.

2. '442 Patent (Ex. 1001)

The '442 patent provides a solution to the existing problems by providing "a system and method for compressing and decompressing based

on the actual or expected throughput (bandwidth) of a system employing data compression and a technique of optimizing based upon planned, expected, predicted, or actual usage." Ex. 1001, 7:51–56. The system selects compression routines using a "controller [that] tracks and monitors the throughput (data storage and retrieval) of a data compression system and generates control signals to enable/disable different compression algorithms when, e.g., a bottleneck occurs so as to increase the throughput and eliminate the bottleneck." *Id.* at 9:55–59.

> The '442 patent explains that

> two categories of compression algorithms are defined—an "asymmetrical" data compression algorithm and a "symmetrical["] data compression algorithm[s]. An asymmetrical data compression algorithm is referred to herein as one in which the execution time for the compression and decompression routines differ significantly. In particular, with an asymmetrical algorithm, either the compression routine is slow and the decompression routine is fast or the compression routine is fast and the decompression routine is slow. Examples of asymmetrical compression algorithms include dictionary-based compression schemes such as Lempel-Ziv.

Ex. 1001, 9:61–10:4.

> The '442 patent then decribes "symmetry" and "asymmetry" in the context of compression and decompression.

> [I]n terms of overall effective bandwidth, compression ratio, or time or any combination thereof. In particular, in instances of frequent data read/writes, bandwidth is the optimal parameter for symmetry. In asymmetric applications such as operating systems and programs, the governing factor is net decompression bandwidth, which is a function of both compression speed, which governs data retrieval time, and decompression speed, wherein the total governs the net effective data read bandwidth.

Id. at 10:16–24.

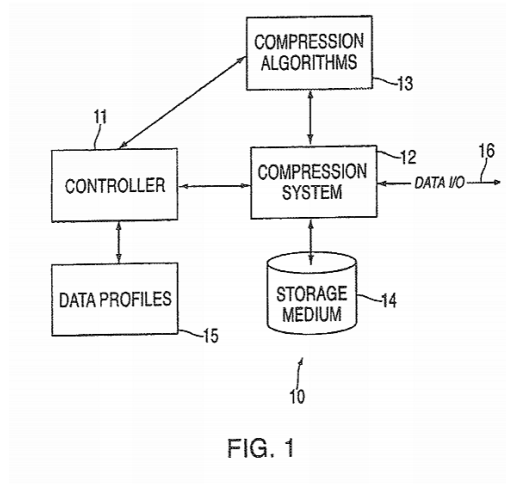Figure 1 of the '442 patent is reproduced below.

FIG. 1

Figure 1 is "a high-level block diagram [that] illustrates a system for providing bandwidth sensitive data compression/decompression according to an embodiment of the present invention." Ex. 1001, 10:31–34. Figure 1 illustrates "a host system 10 comprising a controller 11 (e.g., a file management system), a compression/decompression (or data compression) system 12, a plurality of compression algorithms 13, a storage medium 14, and a plurality of data profiles 15." *Id.* at 10:34–38. The "controller tracks and monitors the throughput (data storage and retrieval)" of the system and when the throughput of the system falls below a predetermined threshold, the system generates control signals to enable/disable different compression algorithms. *Id.* at 10:42–45. "In one embodiment, the system throughput that is tracked by the controller 11 preferably comprises a number of pending access requests to the memory system." *Id.* at 10:43–45.

Still referring to Figure 1, "[t]he data compression system 12 is operatively connected to the storage medium 14 using suitable protocols to write and read compressed data to and from the storage medium 14."

Ex. 1001, 10:46–48. "The data compression system 12 may maintain the compressed data to be stored on the storage medium 14 and the decompressed data that is retrieved from the storage medium 14 for subsequent data processing, storage, or transmittal." *Id.* at 10:64–11:1. Data compression system 12 may receive compressed or uncompressed data via I/O (input/output) port 16 from a remote location or transmit the data to another network device for remote processing or storage. *Id.* at 11:1–8.

"The controller 11 utilizes information comprising a plurality of data profiles 15 to determine which compression algorithms 13 should be used by the data compression system 12." Ex. 1001, 11:8–11. The access profile of a given data set is determined "prior to compression so that the optimum category of compression algorithm can be selected." *Id.* at 12:45–48. "The decision regarding which routines will be used at compression time (write) and at decompression time (read) is preferably made before or at the time of compression" so that "only the matching decompression routine can be used to decompress the data, regardless of how much processing time is available at the time of decompression." *Id.* at 12:48–57.

C. Illustrative Claim

Independent claims 1 and 8 of the challenged claims are independent claims to a method and apparatus, respectively. Claims 2 through 7 depend directly or indirectly from claim 1. Claims 9 through 15 depend directly or indirectly from claim 8.

Claim 1 is reproduced below as illustrative.[3]

1. [1.0] A method comprising:

[1.1] decompressing at least a portion of a compressed data block that was selected from among a plurality of compressed data blocks,

[1.2] wherein at least a portion of a data block having video or audio data was compressed with one or more compression algorithms selected from among a plurality of compression algorithms based upon a throughput of a communication channel and a parameter or an attribute of the at least the portion of the data block to create one or more of the plurality of compressed data blocks; and

[1.3] storing at least a portion of the decompressed data block.

Ex. 1001, 20:6–17.

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[3] We adopt Petitioner's format for labeling the claim limitations, i.e., the claim number followed by numbers for each limitation after the preamble. *See, e.g.*, Pet. 15. At this stage of the proceeding, Patent Owner disputes Petitioner's showing for one claim limitation, namely "asymmetric" compression recited in claims 2–6 and 8–15. *See* Prelim. Resp. 27–29. Patent Owner's remaining arguments are separately analyzed below and do not directly address whether any other limitation is or is not shown by the cited prior art. *See generally id.*

D. Asserted Challenges to Patentability and Evidence of Record

Petitioner challenges claims 1–15 of the '442 patent as unpatentable

over the following prior art. Pet. 4, 19–62.

Petition Ground	Reference(s)	Basis	Claims Challenged
1	Tso[4]	§§ 102/103[5]	1–15
2	Vishwanath[6] and Kidder[7]	§ 103	1–15

1. Tso (Ex. 1004)

Tso describes "[a] system for enhancing data access over a

communications link." Ex. 1004, Abstract. The system retrieves an object

over a computer network having a remote scaling server, a network client, a

remote proxy, and an encode service provider. *Id.*

An encode service provider selectively encodes or scales an object

based on a predetermined characteristic thereof, such as a datatype.

Ex. 1004, 2:60–62. Greater compression rates are achieved "without

negatively affecting software that ultimately processes the compressed data."

Id. at 2:63–66. Higher compression rates may be achieved by "reducing the

quality of a picture and/or by using compression techniques tuned for

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[4] Tso, et al., US 6,185,625 B1, filed December 20, 1996, issued February 6, 2001 (hereinafter "Tso," Ex. 1004).

[5] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103. Because the effective filing date of the '442 patent is before the effective date of the relevant amendment, the pre-AIA version of § 103 applies.

[6] Vishwanath, et al., US 6,216,157 B1, filed June 17, 1998, issued April 10, 2001 (hereinafter "Vishwanath," Ex. 1005).

[7] Kidder, US 5,898,833, filed December 31, 1996, issued April 27, 1999 (hereinafter "Kidder," Ex. 1006).

specific datatypes." *Id.* at 2:66–3:2. "For example, representing certain types of images, such as photographic images, using JPEG or fractal compression algorithms may result in a 10x improvement in compression rate over the popular GIF format." *Id.* at 3:2–6.
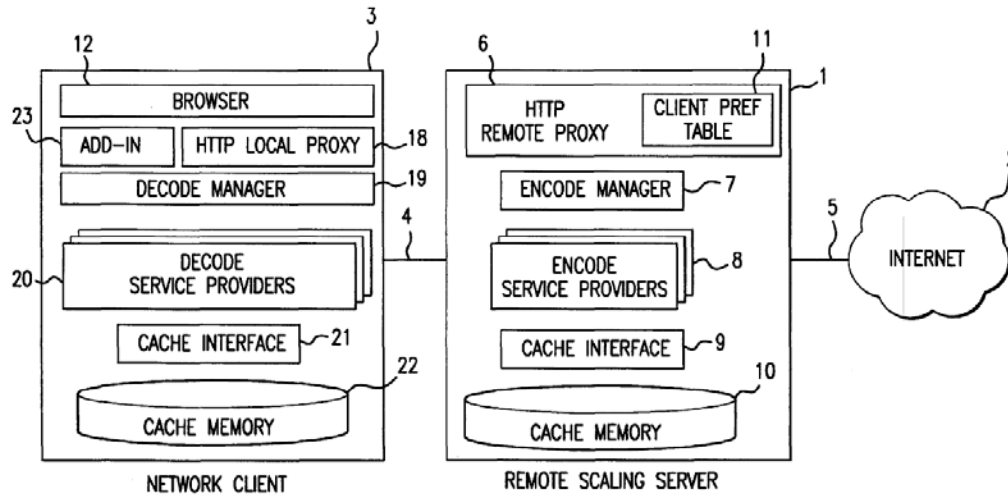
Figure 5 of Tso is reproduced below.

FIG.5

Figure 5 of Tso is "a schematic diagram illustrating an embodiment of the present invention directed to an enabled network client." Ex. 1004, 3:29–31. As illustrated in Figure 5, browser 12 renders data streams having non-standard MIME (Multipurpose Internet Mail Extensions) types as they are received by network client 3. *Id.* at 9:16–21, 13:41–44. Network client 3 is in communication with remote scaling server 1 and receives requests for refinement "to obtain higher quality representations of said images." *Id.* at 13:44–50. Network client 3 may contain specialized decoding software to support more sophisticated scaling features. *Id.* at 13:51–54.

Decode manager 19 controls one or more decode service providers 20. Ex. 1004, 13:55–58. In similar fashion, encode manager 7 controls encode service provider 8. *Id.* at 13:56–62. "Each decode service provider 20 is

responsible for decompression and/or translation of one or more different types of data content, and serves as a counterpart to an encode service provider 8." *Id.* "[N]etwork client 3 may include a client-side cache memory 22" managed by a client-side cache interface 21. *Id.* at 13:62–64.

2. *Vishwanath (Ex. 1005)*

Vishwanath describes modifying an output based on a characteristic of application data and a characteristic of the medium of transmission. Ex. 1005, Abstract. "[T]he client decodes the adapted output to produce a modified version of the interactive application that is adapted for the client." *Id.* at 2:38–41. The adapted output may be a selected compression algorithm decompressed by a decoder. *Id.* at 7:1–4.

In one embodiment, Vishwanath describes a server side and a client side connected through a transmission medium. *Id.* at 4:47–49. Figure 2 of Vishwanath is reproduced below.
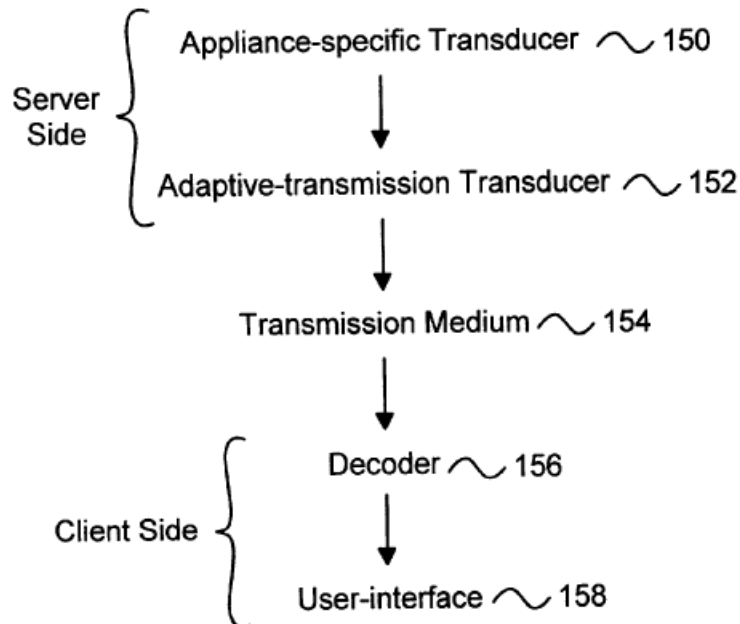

Figure 2

Figure 2 illustrates the server side and the client side of Vishwanath's invention connected through a transmission medium. Ex. 1005, 3:36–38. "The server side includes an appliance specific transducer 150 and an adaptive-transmission transducer 152." *Id.* at 4:51–53. Appliance-specific transducer 150 and adaptive-transmission transducer 152 modify respectively an application based on the capability of the client and transmission medium 154. *Id.* at 4:53–57.

Types of applications modified by the adaptive transmission include documents, internet (including "streaming multimedia"), email, and forms. Ex. 1005, 5:4–11. Similarly, the transmission medium delivering the application may be modified based on "the bandwidth, acceptable error rates, and the latency of the transmission medium." *Id.* at 2:62–64, 3:14–17, 4:27–33, 5:67–6:5.

Adaptive-transmission transducer 152, as described above, uses the characteristics of the application and transmission medium 154 to modify appliance-specific output 179 to generate adapted output 183. Ex. 1005, 4:53–57. "After the appliance-specific output 179 is modified to generate the adapted output 183, the server sends the adapted output 183 through the transmission medium to the client." *Id.* at 6:5–8. Generally, selection of the compression algorithm is done in an adaptive manner. *See, e.g.*, *id.* at 7:21–24.

The transmission transducer includes multimode compressor 250 and adaptive packetizer 252. Ex. 1005, 6:8–12. The packetizer selects the network protocol to generate the adapted output. *Id.* at 6:12–14. Multimode compressor 250 also may automatically select "the compression algorithm in view of the application, the transmission medium 154 and the client." *Id.* at

6:33–35. Parameters used to select the compression algorithm may include input data type and bandwidth versus quality. *Id.* at 6:50–61. Rendered Data Objects ("RDO") may use "smart-loading which improves the user experience by providing them with some data quickly." *Id.* at 7:61–8:22.

3. Kidder (Ex. 1006)

Kidder describes a method and apparatus where "a network client requests multiple downloads of a video clip stored on the network server." Ex. 1006, Abstract. "In response to each request, the network server compresses the video clip and transmits the compressed data in a scalable bitstream." *Id.*

The apparatus described improves the quality of graphic or audio information over a network. Ex. 1006, Abstract. In one embodiment, a network client requests multiple downloads of a video clip stored on the network server, "compresses the video clip, and transmits the compressed data in a scalable[8] bitstream." *Id.* The server uses "H.263 or MPEG compression standards for compressing the data to be transmitted." *Id.* at 6:48–50.

Kidder explains that it is desirable to improve "the quality of a transmitted video clip by increasing the effective bandwidth available for the transmission and playback of the video clip" and to use cached data to "improve the quality of subsequent viewing instances." Ex. 1006, 2:37–42. "[A] node coupled to the network receives and stores a first set of data

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[8] The Reader Declaration asserts that "scaled" means "compressed." Ex. 1003 ¶ 114.

which represents a data object and receives a second set of data which represents the data object." *Id.* at 2:47–49.

III. ANALYSIS

A. *Claim Construction*

In an *inter partes* review requested in a petition filed on or after November 13, 2018, we apply the same claim construction standard used in district courts in a civil action under 35 U.S.C. § 282(b), namely that articulated in *Phillips v. AWH Corp.,* 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,343 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018). In this case, the Petition was filed on February 27, 2019, and we, therefore, apply that standard here. In so doing, we construe a claim "in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R. § 42.100(b). The "specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess." *Phillips*, 415 F.3d at 1316. "[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy." *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *see also Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

1. "asymmetric"/"compression algorithms is asymmetric"
(claims 2–6, 8–15)

Patent Owner proposes that "asymmetric," as used in the claim term "compression algorithms is asymmetric," be construed. Prelim. Resp. 5. Petitioner states that it "is not proposing any particular construction" for these or any other term. Pet. 7–8, 29.

Patent Owner proposes the term "asymmetric/compression algorithms is asymmetric" be construed to mean a "compression algorithm . . . in which the execution time for the compression and decompression routines differ significantly." Prelim. Resp. 5 (citing Ex. 1001, 9:63–66). Patent Owner argues the phrase "[a]n asymmetrical data compression algorithm is referred to herein" in the '442 patent signifies that the patent provides "a definition for an asymmetric compression algorithm." *Id.*

The Specification specifically describes the all but identical term "asymmetric data compression algorithm." *Id.* We also are mindful of Patent Owner's citation to another panel's claim construction of very similar claim terms "asymmetric" or "asymmetrical algorithm." *See* Prelim. Resp. 5 (citing *Netflix, Inc. v. Realtime Adaptive Streaming, LLC*, IPR2019-00209, Paper 7, 8 (PTAB May 30, 2019) (Institution Decision) ("'209 IPR")).[9] The '209 IPR decision applied the construction Patent Owner proposes here to all but identical claim terms in a patent with the same Specification. *See id.* Notwithstanding the construction in the '209 IPR the present record, as summarized above supports a preliminary determination that "asymmetric"/"compression algorithm is asymmetric" means "a

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[9] Two of the three judges on the '209 IPR are on this panel. The construction was determined under the broadest reasonable interpretation standard. '209 IPR, Paper 7, 7.

compression algorithm . . . in which the execution time for the compression and decompression routines differ significantly."

2. *Other Claim Terms*

Beyond the "asymmetric" term discussed above, neither party proposes any other claim term be construed. In addition, the papers filed at this stage do not identify any dispute that would be resolved based on any additional claim construction. *See Nidec*, 868 F.3d at 1017. Accordingly, no other claim terms require construction at this stage of the proceeding.

B. *Denial Based on §§ 325(d), 314(a)*

Patent Owner contends Tso and Vishwanath "were previously presented to the Office" and, thus, the Petition presents "'the same or substantially the same prior art or arguments' previously [] presented to the Office" and we have discretion to deny institution on that basis. Prelim. Resp. 9–13 (quoting 35 U.S.C. § 325(d)). Patent Owner also asserts that we should deny institution because the use of "and/or" in Ground 1 "is not particular and results in voluminous and excessive grounds. Denial is also justified in view of the efficient administration of the Patent Office and as a matter of procedural fairness to Patent Owner." *Id.* at 17–18.

1. *35 U.S.C. § 325(d)*

Institution of *inter partes* review is discretionary. *See Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) ("[T]he PTO is permitted, but never compelled, to institute an IPR proceeding."). Several nonexclusive factors are considered in determining whether to exercise our discretion under § 325(d) to deny institution. The factors include those listed below.

(a) the similarities and material differences between the asserted art and the prior art involved during examination;
(b) the cumulative nature of the asserted art and the prior art evaluated during examination;
(c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
(d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art;
(e) whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and
(f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of prior art or arguments.

NHK Spring Co. v. Intri-Plex Techs., Inc., IPR2018-00752, Paper 8, 11–12 (PTAB Sept. 12, 2018) (precedential) (quoting *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8, 17–18 (PTAB Dec. 15, 2017) (precedential in relevant part)).

Patent Owner asserts we should exercise discretion under § 325(d) to deny institution based on the listing of Tso and Vishwanath on information disclosures presented to the Patent Office during prosecution. Prelim. Resp. 10 (Ex. 1002,[10] 268, 448 (*see* excerpts)). Patent Owner further argues Petitioner did not "acknowledge that Tso and Vishwanath were presented to the Office, even though these references are cited on the face of the '442 patent, at pages 4 of References Cited." *Id.*

Patent Owner does not show, beyond conclusory argument, how either Tso or Vishwanath were either similar or cumulative to prior art that was substantively considered during examination. Accordingly, *Becton,*

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[10] File History of '442 patent (excerpts).

Dickenson factors (a) and (b) do not support denial. Indeed, the record shows that Tso and Vishwanath were not substantively considered as part of a rejection or were not used "as the basis for a rejection."

Patent Owner's argument acknowledges that neither Tso nor Vishwanath were substantively considered as part of a rejection or "as a basis for rejection" by the Patent Office. Thus, *Becton Dickinson* factors (c) and (d) also weigh against denial under § 325(d).

Factors (e) and (f) are not pertinent here. Tso and Vishwanath were before the examiner during prosecution and are listed on the face of the '442 patent, but nothing in the record suggests they were part of any rejections or otherwise substantively addressed.

We find that, on balance, the *Becton, Dickinson* factors weigh against exercising our discretion under 35 U.S.C. § 325(d). None of the factors supports denial of institution. All are at best neutral or weigh against exercising our discretion to deny institution.

Furthermore, Patent Owner cites no authority supporting its argument that Petitioner should have pointed out that Tso and Vishwanath were "presented to the Office." *See* Prelim. Resp. 10. The listing of Tso and Vishwanath occurs in the References Cited, U.S. Patent Documents, portion of the '442 patent, which spans four pages, eight columns, and totals, by our estimate, approximately six hundred forty (640) references. Another twenty four (24) pages, forty-eight (48) columns, and thousands of other publications also are listed. Absent some other reason beyond the references being listed in information disclosure statements filed during prosecution and then listed as References Cited, we are not persuaded that Petitioner had

an obligation to point out that two references it relies on were two of a multitude of prior art submitted during prosecution.

2. *35 U.S.C. § 314(a)*

Patent Owner argues we should exercise our discretion and deny both grounds under § 314(a). Prelim. Resp. 13–18.

a. *Lack of Particularity*

For the §§ 102/103 challenge based on Tso, Patent Owner argues an alleged lack of particularity because of Petitioner's use of "anticipated and/or rendered obvious by Tso" in connection with Ground 1. *Id.* at 13–18 (citing Pet. 15). Patent Owner relies on *Adaptics Limited v. Perfect Company*, IPR2018-01596, Paper 20 (PTAB Mar. 6, 2019) (informative) ("*Adaptics*"), to argue institution should be denied for failure to satisfy the 35 U.S.C. § 312(a) requirement to identify grounds "with particularity." *Id.* at 15.

We are not persuaded that the use of "and/or" asserting a single reference either anticipates or renders obvious a challenged claim fails the particularity requirement. *See* 35 U.S.C. § 312(a)(3); *see also* 37 C.F.R. § 42.104(b) (specifying necessary elements of a petition). In the *Adaptics* case, the panel was faced with three obviousness challenges relying on from six to ten secondary references, at least two of the secondary references connected by "and/or." *See Adaptics*, 9. This led the *Adaptics* panel to conclude that "Petitioner's reliance on up to ten references connected by the conjunction 'and/or' results in a multiplicity of grounds, none of which is presented with sufficient particularity." *Id.* at 18 (footnotes omitted).

The fact pattern of *Adaptics* is not what we are presented with here. Petitioner is not connecting multiple references with "and/or" connectors

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"yielding hundreds of possible combinations." *See Adaptics*, 19. Rather, Petitioner relies on a single reference to assert either anticipation or obviousness of the challenged claims. *See*, e.g., Pet. 4.

Patent Owner argues the alleged defect relative to the Tso challenge is fatal to the entire Petition. Prelim. Resp. 17 (citing *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018); *see also Guidance on the Impact of SAS on AIA Trial Proceedings* (Apr. 26, 2018) (explaining that "the PTAB will institute as to all claims or none.")). Because we find the §§ 102/103 challenge based on Tso is alleged with sufficient particularity, we disagree with Patent Owner's assertion that institution should be denied on this basis. *See* Prelim. Resp. 17–18.

b. Incorrect Construction of "asymmetric"/"compression algorithm is asymmetric"

With respect to both of Petitioner's challenges, Patent Owner argues the Petition fails to show that an "'asymmetric' compression algorithm is disclosed or rendered obvious because the Petition provides no evidence or analysis under the correct claim construction." Prelim. Resp. 27. As a result, according to Patent Owner, "Petitioner has not met its burden for at least claims 2–6 and 8–15 (thirteen of the fifteen challenged claims), [and] the Board should deny institution as to all claims." *Id.* at 31 (citing *In Biofrontera Inc. v. DUSA Pharms., Inc.*, Case IPR2018-01585, Paper 10 (PTAB Feb. 26, 2019)).

Patent Owner's arguments do not identify any particular claim from the grouping of claims reciting "asymmetric." Claim 2 depends from claim 1 and recites "wherein at least one of the plurality of compression algorithms

is asymmetric." Accordingly, claim 2 is exemplary of Patent Owner's arguments on claim construction.

Patent Owner's Response starts by asserting that none of the references relied on discuss asymmetric algorithms, a contention with which Petitioner partially agrees. Prelim. Resp. 27; Pet. 70 ("[N]either Vishwanath nor Kidder uses the word 'asymmetric.'"). Patent Owner then points to its construction of the "asymmetric" term and argues "[t]he Petition fails to show that the prior art discloses 'asymmetric' compression *under the correct construction*." *Id.* at 27–30 (emphasis added). Patent Owner also contends that the '442 patent discusses MPEG and fractal compression but "only gives Lempel-Ziv (LZ) as an example of an asymmetric compression algorithm and Huffman coding as an example of a symmetric compression algorithm." *Id.* at 28 (citing Ex. 1001, 10:2–9).

Specifically to the construction issue, Patent Owner argues what Petitioner says about what asymmetric compression is based on an incorrect construction. Prelim. Resp. 28–29. Patent Owner quotes the Reader Declaration: "a POSITA[11] would have understood that MPEG and fractal compression are asymmetric because each algorithm is designed for ***compression to take more operations to perform than decompression*.**" *Id.* (citing Pet. 30); *see also* Ex. 1003 ¶ 171 (quote from Reader Declaration). Patent Owner contends the preceding testimony is not the construction Patent Owner proposes and that we have adopted.

We are not persuaded that Petitioner's showing regarding asymmetric compression is insufficient. Patent Owner argues that Petitioner "does not

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[11] Acronym for "a person of ordinary skill in the art."

offer any evidence, opinion, or analysis that any of the purported compression algorithms are asymmetric under the correct construction, 'compression algorithm in which the execution time for compression and decompression differ significantly.'" Prelim. Resp. 28. Using claim 2 as an example, Petitioner cites to the Reader Declaration. Pet. 29 (citing Ex. 1003 ¶¶ 68–87, 127–168). On this record, we are persuaded by Petitioner's argument that "[a]t least one of Tso's plurality of compression algorithms is asymmetric. [Ex. 1003 ¶ 169]. For instance, Tso discloses compression algorithms for particular data types, including 'video/mpeg' [Ex. 1004, 10:60–65] and 'fractal compression'" [Ex. 1004, 3:2–13, 11:39–43, 14:33–41, 16:20–46, 16:58–17:2, 17:55–18:20)]. *Id.* at 29–30. The conclusion that Tso teaches "asymmetric" compression algorithms is supported by Dr. Reader's testimony that "it was well-known prior to the Critical Date that MPEG is an asymmetric compression algorithm." Ex. 1003 ¶ 171 (citing Section V.J.2[12] of the Reader Declaration (Ex. 1013,[13] vii ("MPEG and H.261/H.263 . . . both use asymmetric compression algorithms."))).

The preceding evidence is not all of Petitioner's evidence from the Reader Declaration, however. Dr. Reader also cites to the '442 patent's descriptions of "asymmetric algorithm." *See* Ex. 1003 ¶¶ 24 (citing

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[12] It appears that the correct citation is to Section V.J.1, which includes the statement that "[i]t was well-known that the video compression techniques utilized in the MPEG standards described here are inherently **asymmetric."** Ex. 1003 ¶ 71 (citing Jim Taylor, *DVD Demystified*, xv (McGraw-Hill 1998)); Ex. 1012.

[13] Raymond Westwater, *Real-Time Video Compression — Techniques and Algorithms* (Jan. 1997), https://www.researchgate.net/publication/247345079 (last visited June 2019).

Ex. 1001, 8:41–43, 9:53–10:30, 11:9–12:44), 26–27 (quoting Ex. 1001, 9:63–10:5). The Reader Declaration paragraph 27 quotes the same description from the '442 patent relied on by Patent Owner for its proposed construction of "asymmetric/compression algorithms is asymmetric." *See* Prelim. Resp. 5 (citing Ex. 1001, 9:63–66); *see also* Section II.A above (adopting Patent Owner's construction of "asymmetric"/"compression algorithms is asymmetric").

Patent Owner argues that the now adopted "correct construction" was not used in the Petition, and thus, Petitioner fails to meet its burden to show the claims are unpatentable. *See* Prelim. Resp. 28–29 (citing Pet. 30). For support, Patent Owner cites one statement from the Petition that "a POSITA would have understood that MPEG and fractal compression are asymmetric because each algorithm is designed for ***compression to take more operations to perform than decompression.***" *Id.* We agree that this evidence does not directly comport with our adopted construction. However, Dr. Reader also testifies that

> When searching for similar blocks, it is important to find a similar block so that the IFS [iterated function system] accurately represents the input image, so the algorithm must *balance considering a sufficient number of candidate similar blocks for each partitioned block and the computational costs of doing so.* Exemplary applications of fractal compression are described in U.S. Patent No. 5,426,594 to Wright[14] directed to compression as applied to data transmission to "more efficiently utilize[] the communication medium between" the server and the client. [Ex. 1020, 7:42–55.] *The search for similar blocks serves as a bottleneck for the fractal compression algorithm, but is not equally taxing during decompression—fractal compression is highly asymmetric.* [Ex. 1020, 8:1–13].

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[14] Wright et al., U.S. 5,426,594, filed April 2, 1993, issued June 20, 1995.

Ex. 1003 ¶ 170 (emphasis added). On this record, we are persuaded that the emphasized language is consistent with our adopted construction. Specifically, in fractal compression there exists a "bottleneck" that makes the process "highly asymmetric," i.e., parts of the compression process are slowed at the "bottleneck." *Id.*

We are mindful of Patent Owner's argument that we should not "remedy Petitioner's failure" to apply the "correct construction." Prelim. Resp. 29–30. We agree it was Petitioner's responsibility under our rules to state how the challenged claim is to be construed. *See* 37 C.F.R. § 42.104(b)(3). It did not do so. Petitioner could have, and arguably should have, known that the construction of "asymmetric" compression terms has been at issue in multiple *inter partes* review petitions filed against Patent Owner.[15] Yet, the Petitioner's evidence regarding the meaning of "asymmetric" summarized above is more than what Patent Owner highlighted. The current record supports a conclusion that Dr. Reader has an understanding of how asymmetric compression would have been understood by a person of ordinary skill. That understanding is based on the parts of the '442 patent's description relied on to construe the term as well as other evidence regarding "asymmetric compression." On the whole, the evidence comports with the adopted construction of "asymmetric"/"compression algorithms is asymmetric." On this record, the Reader Declaration shows an understanding of "asymmetric" compression and, at least implicitly, aligns

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[15] Some of these proceedings resulted in institution of trial prior to the filing of the Petition on February 27, 2019. *See, e.g.*, *Amazon.com, Inc. v. Realtime Adaptive Streaming LLC*, IPR2018-01227, Paper 15 (PTAB Jan. 30, 2019) (Institution Decision).

with our adopted construction of "asymmetric"/"compression algorithms is asymmetric."

This situation is similar to one where the petition advances a construction that we do not adopt. That we choose not to adopt a proposed construction does not preclude a party from presenting its case. That is what Patent Owner proposes here; specifically, that we exercise our discretion to deny the Petition because Petitioner failed to construe "asymmetric" or, to the extent Petitioner proposed a construction, it was an incorrect construction. *See* Prelim. Resp. 27–32. We are not persuaded that Petitioner's failure to construe a disputed term for which it presents argument and evidence justifies denial of the Petition.

C. Legal Standards

1. Legal Standards for Anticipation

Anticipation "requires that every element and limitation of the claim was previously described in a single prior art reference, either expressly or inherently, so as to place a person of ordinary skill in possession of the invention." *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1082 (Fed. Cir. 2008) (citing *Schering Corp. v. Geneva Pharms., Inc.*, 339 F.3d 1373, 1379 (Fed. Cir. 2003); *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1267–69 (Fed. Cir. 1991)).

"[U]nless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102." *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008). Whether a claim is invalid as anticipated

is a two-step inquiry. *See Power Mosfet Tech., LLC v. Siemens AG*, 378 F.3d 1396, 1406 (Fed. Cir. 2004). The first step requires construction of the claim. *Id.* The second step in the analysis requires a comparison of the properly construed claim to the prior art. *Id.*

2.   Legal Standards for Obviousness

A patent claim is invalid as obvious 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 said subject matter pertains." *See* 35 U.S.C. § 103(a).

"The ultimate determination of obviousness is a question of law, but that determination is based on underlying factual findings." *In re Nuvasive, Inc.*, 842 F.3d 1376, 1381 (Fed. Cir. 2016). The underlying factual findings include: (1) "the scope and content of the prior art"; (2) "differences between the prior art and the claims at issue"; (3) "the level of ordinary skill in the pertinent art"; and (4) the presence of secondary considerations of nonobviousness such "as commercial success, long felt but unsolved needs, failure of others," and unexpected results. *Id.* (citing, *inter alia*, *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)).

"To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Furthermore, in assessing the prior art, the Board must consider whether a person of ordinary skill would have been motivated to combine the prior art to achieve the claimed invention.

Nuvasive, 842 F.3d at 1381. As the Federal Circuit has noted, in quoting from the Supreme Court's decision in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 418–419 (2007), "'because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known,' 'it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.'" *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 991–992 (Fed. Cir. 2017).

3. Person of Ordinary Skill in the Art

Petitioner alleges a person of ordinary skill in the art at the time of the invention would have

> had a bachelor's degree in electrical engineering, computer engineering, computer science, or the equivalent and 2–3 years of work experience with real-time systems implementing data compression, storage retrieval, processing, and transmission, or the equivalent.

Pet. 7 (citing Ex. 1003 ¶¶ 97–99). Patent Owner does not comment on Petitioner's proposal or propose an alternative. On this record, we adopt Petitioner's proposed description of a person of ordinary skill.

D. Alleged Anticipation/Obviousness of Claims 1–15 Over Tso

Petitioner alleges claims 1–15 would have been "anticipated and/or rendered obvious byr Tso." Pet. 4, 15–53 (emphasis omitted). The Petition is supported by the Reader Declaration. Ex. 1003 ¶¶ 126–238. As discussed above, Patent Owner contends that "Petitioner has not met its burden for at least claims 2–6 and 8–15 (thirteen of the fifteen challenged claims), the Board should deny institution as to all claims." Prelim. Resp. 31; *see*

Section II.B.2.b above. Claims 2, 3–6, and 8–15 all recite directly or indirectly "asymmetric" in the claim term "compression algorithms is asymmetric." At this time, Patent Owner does not contest any other claim limitation, including any limitation of claims 1 and 7.

In addition to Patent Owner's argument alleging Petitioner's challenge based on anticipation "and/or" obviousness is not sufficiently particular (see Section IIIB.2.a above), we have considered the sufficiency of a single-reference obviousness ground based on Tso. At this stage of the proceeding, we determine that, if not anticipated, Petitioner has shown a reasonable likelihood that "it would have been obvious to modify [the single] reference to arrive at the patented invention." *See Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016). Our analysis is directed to both anticipation and obviousness. We address below whether any particular limitation is disclosed or taught below.

1. Claims 1 and 7

The preamble of the '442 patent, designated limitation 1.0, recites "[a] method comprising." Petitioner argues Tso discloses a "***method*** for providing a client with an object to be rendered to a user." Pet. 15 (citing Ex. 1004, Abstract, Figs. 8–10 (*see* claim 21); Ex. 1003 ¶ 127). Neither party suggests, nor do we find, that the preamble is limiting. Regardless, Petitioner has shown sufficiently that Tso discloses or teaches a method as per the preamble of claim 1.

Limitation 1.1 recites "decompressing at least a portion of a compressed data block that was selected from among a plurality of compressed data blocks." Petitioner's annotation of Tso's Figure 5 from page 16 of the Petition is reproduced below.

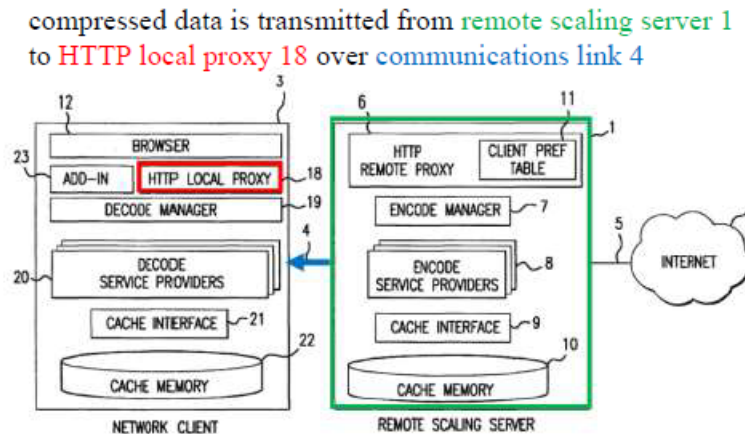**Petitioner's Annotation of Tso Fig. 5**

FIG.5

Figure 5 is a schematic diagram illustrating an embodiment of the invention directed to an enabled network client. Ex. 1004, 3:29–31. As shown in the annotation to Figure 5, Tso's system "includes a 'network client 3 [that] accesses Internet 2 through a remote scaling server 1' implemented as a network server." Ex. 1003 ¶ 128; *see also* Pet. 15–16 (citing Ex. 1004, 6:3–12). Petitioner argues, in part, that "Tso's server uses a compression algorithm to create compressed data blocks." Pet. 17 (citing Ex. 1004, Fig. 6 (annotated)), 22 (citing Ex. 1003 ¶ 153). Furthermore, Petitioner cites to Tso's teaching that the compressed data is received as a "block of data" and that, in addition, blocks of data would have been obvious to a person of ordinary skill. Pet. 16–17 (citing Ex. 1004, 11:6–16; Ex. 1003 ¶¶ 128–132). Petitioner has sufficiently shown that Tso discloses or teaches a server and client encoding and decoding compressed data transmitted in data blocks, as recited in limitation 1.1.

Limitation 1.2 recites

wherein at least a portion of a data block having video or audio data was compressed with one or more compression algorithms

selected from among a plurality of compression algorithms based
upon a throughput of a communication channel and a parameter
or an attribute of the at least the portion of the data block to create
one or more of the plurality of compressed data blocks.

See Pet. 22. Part of Petitioner's showing for limitation 1.2 relies on Tso's
disclosure of data transmission including "different type[s] of data content,
such as image, *video*, or HTML." Pet. 22 (citing Ex. 1004, 6:27–45;
Ex. 1003 ¶ 152). Petitioner argues Tso discloses selection of a compression
algorithm for "datatype-specific compression techniques" and a "decode
service provider 20 . . . responsible for decompression." Pet. 16 (citing
Ex. 1004, 13:51–64 (decompression)) (emphasis omitted), 24 (citing
Ex. 1004, 3:6–14 (compression)).

As to selecting the algorithm based upon "throughput," Petitioner
argues Tso discloses selection of a compression algorithm based upon
"determin[ing] whether or not to scale the content to be returned to network
client 3 by default based on the *speed of client/server communications link
4*." Pet. 27 (citing Ex. 1004, 10:11–20); *see also* Ex. 1003 ¶ 162 (discussing
speed of link). For the claim limitation that the selection of a compression
algorithm is "based upon . . . a parameter or an attribute," Petitioner argues
Tso's server compresses requested objects based on the "type of data
content." Pet. 28 (citing Ex. 1004, 6:27–36, 2:49–3:13, 6:37–7:18, 10:59–
11:44, claim 3). Petitioner has sufficiently shown that Tso discloses or
teaches selection of a data compression algorithm for video data based on
throughput and a data parameter, like data type, as recited in limitation 1.2.

Limitation 1.3 recites "storing at least a portion of the decompressed
data block." Among other showings, Petitioner cites Tso's network as
including "a client-side cache memory 22" in which "'the

decompressed/translated data stream' is stored." Pet. 29 (citing Ex. 1004, 13:51–65, 15:53–65 ("The decompressed/translated data stream may then be simultaneously stored in client-side cache memory 22."); Ex. 1004, Fig. 5 (annotated) above (cache memory 22)). Petitioner has sufficiently shown, for purposes of institution, that Tso discloses storing compressed data blocks, as recited in limitation 1.3. For purposes of institution, Petitioner has sufficiently shown Tso anticipates or renders obvious claim 1.

Claim 7 depends from claim 1 and recites "wherein the at least the portion of the compressed data block was compressed, prior to decompression, based upon a user command." Like claim 1, claim 7 does not include the term the "compression algorithm is asymmetric."

Petitioner argues Tso's compression and decompression process is initiated when a user "requests" an object. Pet. 42 (citing Ex. 1004, 9:3–60). Tso teaches that the user's request is transmitted as "an HTTP request for the . . . object to remote scaling server 1 over client/server communications link 4." Ex. 1004, 9:44–60. Petitioner argues that "[o]nce the request is received at remote scaling server 1, encode manager 7 of the server selectively compresses the data based on a predetermined characteristic." Pet. 42–43 (citing Ex. 1004, 6:13–45, 9:60–11:5; Ex. 1003 ¶ 204). Petitioner has sufficiently shown, for purposes of institution, that Tso discloses compressing data prior to decompressing that data, as recited in claim 7.

2. Dependent Claim 2

Claim 2 depends from claim 1 and recites "wherein at least one of the plurality of compression algorithms is asymmetric." The asymmetric term was construed above in Section II.A.

To the extent the parties argue claim 2, those arguments are discussed in Section II.B.2.b. For the reasons given above, we determine that for this stage of the proceeding, Petitioner has sufficiently shown, for purposes of institution, that Tso discloses "compression algorithms is asymmetric," as recited in claim 2.

3. Claim 8

We have reviewed Petitioner's arguments regarding claim 8. *See* Pet. 28–41; Ex. 1003 ¶¶ 208–220. Claim 8 is an independent apparatus claim of similar scope to claim 1. Petitioner relies on much of its arguments for claim 1 in asserting claim 8 is unpatentable. Pet. 28–41.

Exemplary of Petitioner's analysis for claim 8 is its analysis of limitation 8.1, which recites "a data decompression system configured to decompress a compressed data block." Limitation 1.1, which recites, in principal part, "decompressing at least a portion of a compressed data block." Petitioner incorporates its showing for limitation 1.1 to show limitation 8.1. Pet. 45. Similarly, Petitioner's arguments for limitations 8.2 and 8.3 incorporate the arguments for limitations 1.3 and 1.2, respectively. *Id.* at 46–48.

Limitation 8.4 recites the same language as used in dependent claim 2, analyzed above. Petitioner relies on the arguments made for claim 2 for limitation 8.4. Pet. 48 (citing Ex. 1003 ¶¶ 219–220). We determine that for this stage of the proceeding, Petitioner has sufficiently shown that Tso, as understood by a person of ordinary skill, discloses that a "compression algorithms is asymmetric," as recited in limitation 8.4. For purposes of institution, Petitioner has sufficiently shown Tso anticipates or renders obvious claim 8.

4. *Dependent Claims 3–6 and 9–15*

As discussed above in Section II.E.1–3, we have determined that Petitioner has sufficiently shown all the limitations of independent claims 1, 2, 7 and 8 are disclosed by Tso and, as a result, there is a reasonable likelihood these claims are unpatentable as anticipated or as obvious. Thus, review of all claims is justified and we also proceed to trial on the dependent claims on this ground. *SAS*, 138 S. Ct. at 1356 (holding an *inter partes* review may not institute on fewer than all claims challenged in the petition). Apart from the requirement that trial proceed on all claims, on this record, our review of claims 3–6 and 9–15 results in a preliminary determination that Petitioner has sufficiently shown that Tso discloses or teaches limitations of those claims as well.

5. *Summary (Ground 1)*

Based on the record at this stage of the proceeding, we determine Petitioner has shown a reasonable likelihood that Tso anticipates or renders obvious claims 1–15.

E. *Alleged Obviousness of Claims 1–15 Over Vishwanath and Kidder*

Petitioner alleges claims 1–15 would have been obvious over Vishwanath and Kidder. Pet. 4, 53–87. Petitioner also relies on the Reader Declaration to support its position. *See* Ex. 1003 ¶¶ 239–350. Patent Owner contests why and how a person would modify Vishwanath and Kidder. Prelim. Resp. 18–26. Patent Owner does not advance any other arguments regarding whether or not Vishwanath and Kidder teach any of the limitations of the challenged claims. *Id.*

1. Claims 1 and 7

We begin with Petitioner's alleged rationale and motivation for combining Kidder with Vishwanath. Petitioner argues that "Vishwanath does not explicitly describe storage of the decompressed data," as recited in limitation 1.3. Pet. 68. According to Petitioner, Kidder meets the storage limitation by teaching receipt of "compressed data, decompresses the data, and stores the decompressed data in a cache." *Id.* (citing Ex. 1006, 7:2–8:28).

Petitioner argues Vishwanath and Kidder are related art. According to Petitioner, "Vishwanath describes an adaptive compression and transmission system that selects an appropriate compression algorithm based on a parameter of requested multimedia (e.g., audio and/or video) content and available bandwidth of a transmission medium over which the multimedia content is delivered." Pet. 53 (citing Ex. 1005, 2:8–65; Ex. 1003 ¶¶ 239–251). Petitioner argues Kidder is like Vishwanath in describing "a system that adaptively compresses data based on the 'available bandwidth of [a] network' over which the data is transmitted." *Id.* (citing Ex. 1006, 6:25–8:28). Petitioner argues both references also describe compression and transmission systems that "incrementally improve data by transmitting different versions of requested data to the same client." *Id.* (citing Ex. 1005, Abstract, 7:61–8:23; Ex. 1006, 6:25–8:28).

Petitioner argues the reason a person of ordinary skill would have been motivated to combine Kidder with Vishwanath is found in Vishwanath's description of "incremental reconstruction of the output at the client" for "smart-loading which improves the user experience by providing them with some data quickly." *Id.* at 53–54 (citing Ex. 1005, 8:10–15).

Petitioner notes that details of the output reconstruction process are lacking in Vishwanath but are found in Kidder's teaching of caching data for "'iterative improvement' of data quality." *Id.* at 54 (citing Ex. 1006, 6:25–8:28), 55–56 (citing Ex. 1003 ¶¶ 239–246 (Kidder's caching technique)).

Patent Owner argues Petitioner has not shown "why" Vishwanath would have been modified by Kidder. *See* Prelim. Resp. 20–23. Patent Owner argues Petitioner's evidence of "why" a person of ordinary skill would arrive at the combination is not "clear and particular." *Id.* at 21 (citing *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1334 (Fed. Cir. 2002)). Patent Owner contends the motivation to "improve data quality and user experience" is "generic" testimony that should be rejected. *Id.* (citing *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1327–28 (Fed. Cir. 2012)). According to Patent Owner, Kidder does not add anything to what Vishwanath already has, i.e., "incremental reconstruction of the output at the client." *Id.* at 22 (citing Ex. 1005, 7:61–8:15; *In re Schweickert*, 676 F. App'x 988, 995 (Fed. Cir. 2017) (a person of ordinary skill would not create a combination where the primary reference already has what the secondary reference is alleged to contribute in the combined system, "add[ing] unwanted cost and complexity")).

Patent Owner's arguments are not persuasive for the reasons discussed below. Contrary to Patent Owner's position, we determine Petitioner has sufficiently shown through the Reader Declaration that a person of ordinary skill would have looked to Kidder, and would have added the benefits of Kidder to Vishwanth. *See* Pet. 53–56 (citing Ex. 1003 ¶¶ 239–251). On this record, we give weight to the Reader Declaration,

which includes testimony supporting the arguments described above. *See*

Ex. 1003 ¶¶ 241–246. Specifically, the Reader Declaration asserts that

> [b]ecause Kidder describes a method for decompressing and caching different versions of requested data to iteratively improve data quality [(Ex. 1006, 6:25–8:28)], one of ordinary skill would have been motivated to modify Vishwanath's adaptive transmission system to also store decompressed data [by employing Kidder's caching technique].

Id. ¶ 246. That Kidder stores different versions of the compressed data is a

feature related to the general increased speed desired in both references.

Storage shown in Kidder would be an asset to speed, i.e., using a cache.

Using cache memory feature is a "detail" of improving data quality not

found in Vishwanath. *Id.* ¶ 245.

> Petitioner argues a person of ordinary skill
>
> would have understood *how* to implement Kidder's storage structure and iterative transmission techniques in Vishwanath's system with a reasonable expectation of success, stemming from the significant overlap across the references in their teachings and suggested approaches for adaptive compression and transmission of data over communications channels of varying quality.
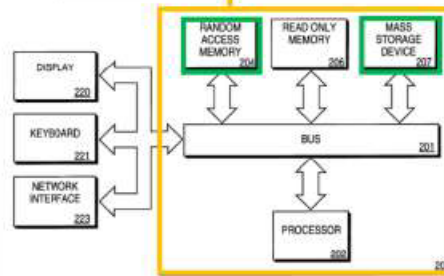
Pet. 56 (citing Ex. 1003 ¶¶ 239–247) (emphasis added). Petitioner uses an

annotation combining Figure 2 of Vishwanath with Figures 1 and 2 of

Kidder, which annotation is reproduced below. *Id.* at 57.

**Petitioner's Annotation of Vishwanath Fig. 2
and Kidder Figs. 1 and 2**
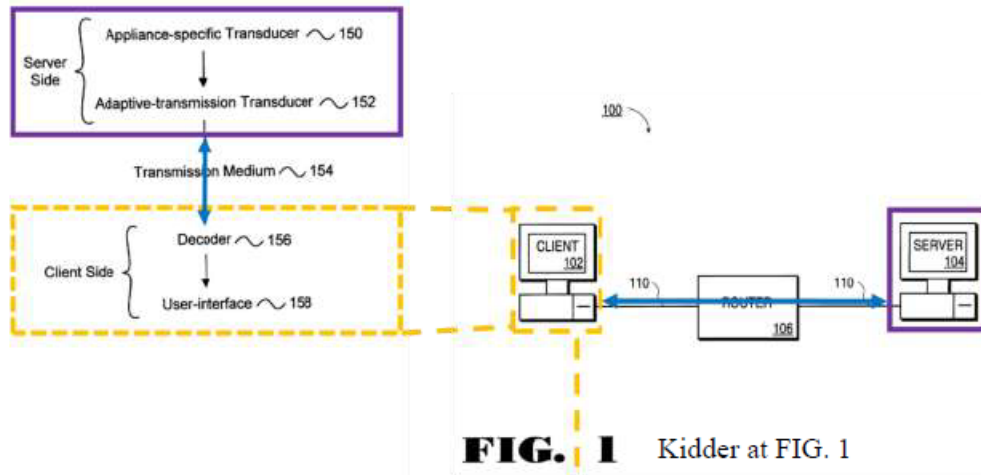
FIG. 1 Kidder at FIG. 1

Vishwanath at FIG. 2

Figure 2

FIG. 2 Kidder at FIG. 2

Pet. 57. The above annotation shows how a person of ordinary skill would "have implemented Kidder's storage and adaptive compression system, as shown in Kidder's FIGS. 1 and 2, in Vishwanath's system by modifying Vishwanth's client to cache requrested data that was received and decompressed (like Kidder's client 102)." *Id.* at 56–57. Petitioner alleges "[i]mplementing these modifications would require only routine knowledge of electronics hardware design and conventional programming proficiency, which were well within the skill of a POSITA prior to the Critical Date." *Id.* (citing Ex. 1003 ¶ 250).

Patent Owner argues Petitioner has not shown "how" Vishwanath would have been modified by Kidder. *See* Prelim. Resp. 23–26. Patent

Owner argues, or at least suggests, the Reader Declaration testimony is based on improper hindsight. *Id.* at 23–24 (citing *ActiveVideo Networks*, 694 F.3d at 1327–28). Patent Owner disputes the similarity of the Vishwanath and Kidder technologies. *Id.* at 25. Patent Owner argues Kidder relates to "fully capable computers" on a network operating with clients, servers, and routers. *Id.* (citing Ex. 1006, 4:42–45, Fig. 2). According to Patent Owner, the Vishwanath hardware is, in contrast, "'a palmtop,' a 'microwave,' or a 'television' existing at the time of Vishwanath's patent application—i.e., late 1990s." *Id.* (quoting Ex. 1005, 2:12–17, 3:7–10). Patent Owner contends that "[a]dding caching requirements to low-memory devices such as microwave ovens or television of the 1990s would make them non-functional, as there would not be enough memory." *Id.* Furthermore, Patent Owner argues Petitioner does not explain what clients of Vishwanath would use caching. *Id.* at 26.

Patent Owner's arguments are not persuasive, because, as described above, we are persuaded on this record that Vishwanth and Kidder are sufficiently related that one of ordinary skill would have consulted Kidder when looking to improve the speed of Vishwanath. As Patent Owner recognizes, both references have components identified as "clients." *See* Prelim. Resp. 25. Whether and how the alleged differences would preclude combining the two is a matter left for final resolution after trial and a review of Patent Owner's further argument and supporting evidence. Similarly, Patent Owner does not address the annotation of Figure 2 of Vishwanath and Figures 1 and 2 of Kidder, which we find persuasive.

Turning to whether Petitioner has shown the recited limitations of claim 1 are met by the asserted combination, we find that Petitioner has done

so. Petitioner argues Vishwanath describes the preamble of claim 1, a
"method comprising," by teaching a "[m]ethod . . . to deliver an application
to a client." Pet. 58 (citing Ex. 1005, Abstract, Fig. 3, claims 10–13).
Assuming the preamble were limiting, which we do not determine at this
stage, Petitioner has sufficiently shown that Vishwanath teaches a method as
per the preamble of claim 1.[16]

Limitation 1.1 recites "decompressing at least a portion of a
compressed data block that was selected from among a plurality of
compressed data blocks." Petitioner relies on Vishwanath's teaching of a
client that communicates with a server over a transmission medium.
Pet. 60–61 (citing Ex. 1005, 4:46–51, annotated Fig. 2). Petitioner further
argues "Vishwanath's client 'generat[es a] modified version of an
application from [the] adapted [i.e., compressed] output' [Ex. 1005, 2:54–
59] by decoding it with decoder 156." *Id.* at 61 (citing Ex. 1005, 2:22–42,
claims 12–13). Petitioner relies on the understanding of a person of ordinary
skill relating to transmission of packets including selected data blocks of
variable size. *Id.* at 62 (citing Ex. 1003 ¶¶ 48–88, 257–261; Ex. 1001, 7:3–7
(files are comprised of data blocks); Ex. 1005, 7:61–8:23 ("Incremental
reconstruction of the output at the client.")). Petitioner cites to both
Vishwanath and Kidder as teaching "receiving compressed data as a stream,
and decompressing the stream of data." *Id.* at 63 (citing Ex. 1005, 5:1–12,
7:18–42, 7:61–8:22; Ex. 1006, 6:25–47, 7:2–8:28). Petitioner contends a

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[16] Petitioner also cites to Kidder as teaching various limitations. *See, e.g.*,
Pet. 59 (Kidder also describes a method). Unless otherwise stated, for
purposes of this Decision we analyze only Vishwanath.

person of ordinary skill would understand a data stream to include a plurality

of compressed blocks. *Id.* at 63–64 (citing Ex. 1003 ¶¶ 265–268; Ex. 1005,

7:61–8:22; Ex. 1014,[17] 5:27–31; Ex. 1024,[18] Abstract, 1:46–59, 3:33–54).

Petitioner has sufficiently shown that Vishwanath teaches

decompressing selected data blocks as per limitation 1.1.

Limitation 1.2 recites

> wherein at least a portion of a data block having video or
> audio data was compressed with one or more compression
> algorithms selected from among a plurality of compression
> algorithms based upon a throughput of a communication channel
> and a parameter or an attribute of the at least the portion of the
> data block to create one or more of the plurality of compressed
> data blocks.

Petitioner cites to Vishwanath's teaching of "many different types of

media," including audio and video. Pet. 64 (citing Ex. 1005, 2:10–13, 5:4–

11, 6:50–57). Petitioner argues Vishwanath shows one or more compression

algorithms because, among other showings, "Vishwanath's transducer

selects, as illustrated in FIG. 7, an 'appropriate compression algorithm' [Ex.

1005, 6:7–15] to apply to the requested data from among '[a] number of

compression algorithms[] applicable,' including 'LZ . . . MPEG1, MPEG2,

[and] H.263." *Id.* at 65 (citing Ex. 1005, 6:32–37).

Petitioner further argues "Vishwanath's system selects a compression

algorithm based on parameters such as '[i]nput data type' and available network

bandwidth." Pet. 66 (citing Ex. 1005, 6:50–62, Fig. 9B). According to Petitioner,

compression of the data block "based upon a throughput of a communication

channel" is shown because Vishwanath uses over varying transmission media and

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[17] Kalmanek et al., EP 0739138 A2; published April 10, 1996.
[18] Porter et al., U.S. 6,519,286 B1; issued February 11, 2003.

automatically modifying requested data based on "the resources available." *Id.* (citing Ex. 1005, 1:9–13, 2:60–3:33). Furthermore, Petitioner argues "compression selection is based on 'the **bandwidth** [i.e., throughput] . . . of the transmission medium.'" *Id.* at 67 (citing Ex. 1005, 2:62–64, 6:50–67). In addition, Petitioner contends Vishwanath "selects a compression algorithm for a particular application based on parameters, such as the type of data within the application in addition to available network bandwidth." *Id.* at 67 (citing Ex. 1005, 6:50–62).

Based on the record at this stage of the proceeding, we are satisfied Petitioner has sufficiently shown that Vishwanath teaches selection of a data compression algorithm for video data based on throughput and a data parameter, like data type, as recited in limitation 1.2.

Limitation 1.3 recites "storing at least a portion of the decompressed data block." Petitioner relies on Kidder's teaching that decompressed data is stored in a cache. Pet. 68 (citing Ex. 1006, 7:2–8:28). Petitioner has sufficiently shown, at this stage of the proceeding, that Kidder teaches storing compressed data blocks, as recited in limitation 1.3. For purposes of institution, Petitioner has sufficiently shown Vishwanth and Kidder render claim 1 obvious.

Turning to claim 7, this claim was analyzed in Section III.D.1 above. Petitioner argues Vishwanath allows a user to enter a user preference after which "the system adaptively compresses the data and 'deliver[s] it to' the user's client device through a transmission medium." Pet. 79 (citing Ex. 1005, 2:22–42, 4:12–38). Relying in part on the Reader Declaration, Petitioner asserts the "user's preference initiating the adaptive compression process renders obvious use of a user command, and that the compressed

data block was compressed, prior to decompression at the client, based upon this user command." *Id.* (citing Ex. 1003 ¶ 318).

Petitioner has sufficiently shown that Vishwanath teaches compressing data prior to decompressing that data, as recited in claim 7.

2. *Claim 2*

Claim 2 was analyzed in connection with Ground 1 in Section II.E.2 above. Petitioner acknowledges that "neither Vishwanath nor Kidder uses the word 'asymmetric,' a POSITA reviewing Vishwanath or Kidder would have understood or found obvious the asymmetric nature of these compression algorithms." Pet. 70 (citing Ex. 1005, 6:62–67, Fig. 7; Ex. 1006, 6:48–60 ("H.263 or MPEG," asymmetric compression algorithms); Ex. 1003 ¶¶ 252–287). Relying in part on the Reader Declaration, Petitioner asserts MPEG and H.263 were known asymmetric techniques. *Id.* at 70–71 (citing Ex. 1003 ¶¶ 68–87, 287).

The parties' arguments regarding claim 2 were discussed in Section II.B.2.b. At this stage of the proceeding, we determine Petitioner has sufficiently shown that Vishwanath teaches a "compression algorithm is asymmetric," as recited in claim 2.

3. *Claim 8*

Petitioner relies on much of its argument for claim 1 in asserting claim 8 is unpatentable.

Exemplary is limitation 8.1, which recites "a data decompression system configured to decompress a compressed data block." Limitation 1.1, which recites, in principal part, "decompressing at least a portion of a compressed data block." Petitioner incorporates its arguments for limitation 1.1 to show limitation 8.1. Pet. 80. Similarly, Petitioner's argument for

limitations 8.2 and 8.3 incorporate the argument for limitations 1.3 and 1.2, respectively. *Id.* at 81–83.

Limitation 8.4 recites the same language as used in dependent claim 2, analyzed above. Petitioner relies on the argument made for claim 2 for limitation 8.4. Pet. 83 (citing Ex. 1003 ¶¶ 284–292, 336–337). At this stage of the proceeding, we determine Petitioner has sufficiently shown that Vishwanath, as understood by a person of ordinary skill, teach that a "compression algorithm is asymmetric," as recited in limitation 8.4. On this record and for purposes of institution, Petitioner has sufficiently shown Vishwanth and Kidder render claim 8 obvious.

4. Dependent Claims 3–6 and 9–15

We have reviewed Petitioner's arguments regarding dependent claim 3–6 and 9–15. *See* Pet. 71–78 (claims 3–6), 83–87 (claims 9–15); Ex. 1003 ¶¶ 293–316 (claims 3–6), 338–350 (claims 9–15). At this time, Patent Owner does not separately argue any of the dependent claims. As discussed above in Section III.E.1, we have determined there is a reasonable likelihood that Petitioner will succeed in demonstrating claim 1 is unpatentable. Thus, review of all claims is justified and we proceed to trial on the dependent claims on this ground. *SAS*, 138 S. Ct. at 1356. Apart from the requirement that trial proceed on all claims, on this record, our review of claims 3–6 and 9–15 results in a preliminary determination that Petitioner has sufficiently shown that the combination of Vishwanath and Kidder teaches the subject matter of claims 3–6 and 9–15.

5. Summary (Ground 2)

Based on the preliminary record at this stage of the proceeding, we determine Petitioner has shown a reasonable likelihood that claims 1–15 would have been obvious over Vishwanath and Kidder.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that *inter partes* review is *instituted* with respect to all claims and all grounds of unpatentability raised in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(a), *inter partes* review of the '442 patent is hereby instituted commencing on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial.

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