

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NETFLIX, INC., ARRIS SOLUTIONS, INC., and
COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner,

v.

REALTIME ADAPTIVE STREAMING, LLC,
Patent Owner.

IPR2018-01169
Patent 8,934,535 B2

Before KEVIN W. CHERRY, GARTH D. BAER, and
NABEEL U. KHAN, *Administrative Patent Judges*.

KHAN, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. Background

Netflix, Inc.¹ (“Petitioner”) filed a Petition (Paper 8, “Pet.”) to institute an *inter partes* review of claims 1–14 (the “challenged claims”) of U.S. Patent No. 8,934,535 B2 (Exhibit 1001, “the ’535 Patent”). Realtime Adaptive Streaming, LLC (“Patent Owner”) timely filed a Preliminary Response. Paper 19 (“Prelim. Resp.”). On January 17, 2019, upon consideration of the Petition, the Preliminary Response, and the evidence cited by the parties, we determined that Petitioner established a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the Petition and instituted review to determine the patentability of the challenged claims on all grounds. Paper 20 (“Dec. Inst.”), 1.

Subsequent to institution, Patent Owner filed a Patent Owner Response. Paper 26 (“PO Resp.”). Petitioner filed a Reply (Paper 31, “Reply”) thereto, and Patent Owner filed a Sur-Reply (Paper 33, “Sur-Reply”). Petitioner supports its challenge with the Declaration of James Storer, Ph.D. Ex. 1003. Patent Owner supports its Response with the Declaration of Kenneth A. Zeger, Ph.D. Ex. 2001. An oral hearing was held before the Board, the transcript of which was entered into the record (Paper 44).

B. Related Proceedings

The parties inform us that the ’535 Patent is involved in the following litigations:

¹ ARRIS SOLUTIONS, INC., who filed a petition in IPR2019-00674, and Comcast Cable Communications, LLC, who filed a petition in IPR2019-00684, have been joined as petitioners in this proceeding.

- *Realtime Data LLC d/b/a IXO v. Echostar Corp.*, No. 6:17-cv-00084 (E.D. Tex.)
- *Realtime Data LLC d/b/a IXO v. DISH Network Corp. et al.*, 6:17-cv-00421 (E.D. Tex.)
- *Realtime Adaptive Streaming, LLC v. Sling TV, LLC*, No. 1:17-cv-02097 (D. Colo.)
- *Realtime Adaptive Streaming, LLC v. Amazon.com, Inc.*, No. 6:17-cv-00549 (E.D. Tex.)
- *Realtime Adaptive Streaming LLC v. EchoStar Technologies, LLC et al.*, No. 6:17-cv-00567 (E.D. Tex.).
- *Realtime Adaptive Streaming, LLC v. Hulu, LLC*, No. 2:17-cv-07611 (C.D. Cal.)
- *Realtime Adaptive Streaming, LLC v. Cisco Systems, Inc.*, No. 6:17-cv-00591 (E.D. Tex.)
- *Realtime Adaptive Streaming, LLC v. Brightcove, Inc.*, No. 1:17-cv-01519 (D. Del.)
- *Realtime Adaptive Streaming, LLC v. Haivision Network Video, Inc.*, No. 1:17-cv-01520 (D. Del.)
- *Realtime Adaptive Streaming, LLC v. Polycom, Inc.*, No. 1:17-cv-02692 (D. Colo.)
- *Realtime Adaptive Streaming, LLC v. Netflix, Inc.*, No. 1:17-cv-01692 (D. Del.)
- *Realtime Adaptive Streaming, LLC v. Sony Electronics Inc.*, No. 1:17-cv-01693 (D. Del.)
- *Realtime Adaptive Streaming, LLC v. Apple, Inc.*, No. 1:17-cv-02869 (D. Colo.)
- *Realtime Adaptive Streaming, LLC v. Adobe Systems Inc.*, No. 1:18-cv-10355 (D. Mass.)
- *Realtime Adaptive Streaming, LLC v. Samsung Electronics Co.*, No. 6:18-cv-00113 (E.D. Tex.)
- *Realtime Adaptive Streaming LLC v. Wowza Media Systems LLC*, No. 1:18-cv-00927 (D. Colo.)

IPR2018-01169

Patent 8,934,535 B2

- *Realtime Adaptive Streaming LLC v. Google LLC et al*, No. 2:18-cv-03629 (C.D. Cal.)
- *Realtime Adaptive Streaming LLC v. Avaya Inc.*, No. 1:18-cv-01046 (D. Colo.)
- *Realtime Adaptive Streaming LLC v. Broadcom Corp. et al.*, No. 1:18-cv-01048 (D. Colo.)
- *Realtime Adaptive Streaming LLC v. LG Electronics Inc. et al*, No. 6:18-cv-00215 (E.D. Tex.)
- *Realtime Adaptive Streaming LLC v. Advanced Micro Devices, Inc.*, No. 1:18-cv-01173 (D. Colo.)
- *Realtime Adaptive Streaming LLC v. Intel Corp.*, No. 1:18-cv-01175 (D. Colo.)
- *Realtime Adaptive Streaming LLC v. Mitel Networks, Inc.*, No. 1:18-cv-01177 (D. Colo.)
- *Realtime Adaptive Streaming LLC v. Charter Communications, Inc. et al*, No. 1:18-cv-01345 (D. Colo.)
- *Realtime Adaptive Streaming LLC v. Cox Communications, Inc.*, No. 8:18-cv-00942 (C.D. Cal.)
- *Realtime Adaptive Streaming LLC v. Comcast Cable Communications, LLC*, No. 1:18-cv-01446 (D. Colo.).

Pet. 63–65; Paper 9, 2–4.

Petitioner further informs us that the '535 Patent is involved in the following *inter partes* review proceedings which are no longer pending before the Board:

- *Unified Patents Inc. v. Realtime Adaptive Streaming LLC*, IPR2018-00883
- *Hulu, LLC, Amazon.com, Inc., & Netflix, Inc. v. Realtime Adaptive Streaming LLC*, IPR2018-01170.

C. The '535 Patent

The '535 Patent relates generally to “compressing and decompressing data based on an actual or expected throughput (bandwidth) of a system.” Ex. 1001, 1:21–25. The '535 Patent explains that data compression algorithms can have varied performance characteristics. Ex. 1001, 1:32–35. “For example, with a typical dictionary[-]based compression algorithm[,], such as Lempel-Ziv, the size of the dictionary can affect the performance of the algorithm.” Ex. 1001, 1:35–38. A large dictionary may yield very good compression ratios but may make the algorithm take a long time to execute. On the other hand, a smaller dictionary would yield a faster compression time but at the expense of a lower compression ratio. Ex. 1001, 1:38–44. Thus, one challenge in employing data compression is selecting the appropriate algorithm from a variety of algorithms for a given application or system. Ex. 1001, 1:47–50. The desired balance between speed and efficiency is an important factor in determining which algorithm to select for data compression. Ex. 1001, 1:50–53. A system that provides dynamic modification of compression system parameters to provide an optimal balance between speed and compression ratio is highly desirable. Ex. 1001, 1:56–60.

The '535 Patent describes two categories of compression algorithms: asymmetrical and symmetrical. An asymmetrical data compression algorithm is “one in which the execution time for the compression and decompression routines differ significantly.” Ex. 1001, 9:64–66. Thus, in an asymmetrical algorithm, either the compression time is fast and the decompression time is slow, or vice versa. An example of an asymmetric algorithm is Lempel-Ziv. Ex. 1001, 10:2–4. A symmetric compression algorithm, on the other hand, is “one in which the execution time for the

compression and the decompression routines are substantially similar. Examples of symmetrical algorithms include table-based compression schemes such as Huffman.” Ex. 1001, 10:5–9. The total execution time of the compression and decompression portions of asymmetrical algorithms is typically higher than the total time for symmetrical algorithms. Ex. 1001, 10:10–13. “But an asymmetric algorithm typically achieves higher compression ratios.” Ex. 1001, 10:13–14.

The invention described in the ’535 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, 7:51–55. A bandwidth sensitive data compression routine may be selected based on access profiles that enable the controller to determine a compression routine associated with a data type of the data to be compressed. Ex. 1001, 8:4–8. “The access profiles comprise information that enables the controller to select a suitable compression algorithm that provides the desired balance between” speed and compression ratio. Ex. 1001, 8:8–13.

These access profiles may take into account the overall throughput of a system as one factor in deciding whether to use an asymmetric or a symmetric algorithm. Ex. 1001, 11:25–29. Another factor the access profile may track is the type of data to be processed. Ex. 1001, 11:29–31. For example, different data types (the type may be determined by a file extension of the data) may be associated with different compression algorithms. Ex. 1001, 11:35–40.

The ’535 Patent illustrates this concept with three categories of access profiles. In a first category, the access profile of a particular data type may

specify that the data may be decompressed significantly more times than it is compressed. This is typical with operating systems, applications, and websites. Ex. 1001, 12:1–12. In such a situation, it may be suitable to utilize an asymmetric algorithm that provides a slow compression routine and a fast decompression routine. Ex. 1001, 12:14–20. Thus, the compression ratio achieved by using an asymmetric algorithm with slow compression will be higher than if a symmetric algorithm was used. Ex. 1001, 12:20–24.

A second category is one in which the data would be compressed significantly more times than decompressed. Ex. 1001, 12:25–27. This is typical for automatically updating an inventory database. Ex. 1001, 12:27–28. Here, an asymmetric algorithm with a fast compression routine and a slow decompression routine would be most appropriate. Ex. 1001, 12:28–35.

A third category is one in which the data is accessed with a similar number of reads and writes, and thus would be compressed and decompressed approximately the same number of times. Ex. 1001, 12:36–39. “This is typical of most user-generated data such as documents and spreadsheets.” Ex. 1001, 12:40–41. In this case, a symmetric algorithm that provides relatively fast compression and decompression would be preferable. Ex. 1001, 12:41–43.

In this way, the ’535 Patent describes a system that automatically selects an appropriate compression algorithm to optimize system throughput based on the type of data being installed or stored. Ex. 1001, 14:27–39.

D. Illustrative Claim

Of the challenged claims, claims 1 and 14 are independent. Claims 2–13 depend directly or indirectly from claim 1.

Claim 1, reproduced below, is illustrative:

1. A method, comprising:

determining a parameter or attribute of at least a portion of a data block having audio or video data;

selecting an access profile from among a plurality of access profiles based upon the determined parameter or attribute; and

compressing the at least the portion of the data block with one or more compressors using asymmetric data compression and information from the selected access profile to create one or more compressed data blocks, the information being indicative of the one or more compressors to apply to the at least the portion of the data block.

Ex. 1001, 29–41.

E. Asserted Ground of Unpatentability

Petitioner challenges claims 1–14 of the '535 Patent on the following ground:

Claim(s) Challenged	35 U.S.C. §	References/Basis
1–14	103	Imai, ² Ishii ³

F. Level of Ordinary Skill

Petitioner proposes that a person of ordinary skill

would have a bachelor's degree in electrical engineering, computer science, or a similar field with at least two years of

² Imai, Japanese Patent Application Publication No. H11331305, published Nov. 30, 1999. Ex. 1004. A certified English translation of Exhibit 1004 was submitted as Exhibit 1005. Citations to “Imai” herein refer to the translation.

³ Ishii, U.S. Patent No. 5,675,789, issued Oct. 7, 1997 (Exhibit 1007, “Ishii”).

experience in data compression or . . . a master's degree in electrical engineering, computer science, or a similar field with a specialization in data compression. Ex. 1003 at 65. A person with less education but more relevant practical experience may also meet this standard. Ex. 1003 at 65.

Pet. 7. Patent Owner does not propose a level of ordinary skill and indicates that it “adopts Petitioner’s definition of the level of ordinary skill.” PO

Resp. 6. We agree with and adopt Petitioner’s proposed level of ordinary skill.

G. Claim Interpretation

In an *inter partes* review filed before November 13, 2018, we construe claim terms in an unexpired patent according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b) (2017)⁴; *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). “Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history.” *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016). Only terms that are in controversy need to be construed, “and only to the extent necessary to resolve the controversy.” See *Wellman, Inc. v. Eastman Chem.*

⁴ The revised claim construction standard for interpreting claims in *inter partes* review proceedings, as set forth in the final rule published October 11, 2018, does not apply to this proceeding, because the new “rule is effective on November 13, 2018 and applies to all IPR, PGR, and CBM petitions filed on or after the effective date.” Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (now codified at 37 C.F.R. pt. 42 (2019)).

Co., 642 F.3d 1355, 1361 (Fed. Cir. 2011); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

1. asymmetric compressors / compressors using asymmetric data compression

Petitioner argues that a person of ordinary skill in the art (“POSITA”):

would have understood that the terms “asymmetric compressor(s)” (Claims 12, 15, 16, and 24–26) and “compressors using asymmetric data compression” (Claims 1, 10, and 27) in view of the specification, mean “a compression algorithm in which the execution time for the compression and decompression routines differ significantly.”

Pet. 7. Patent Owner does not propose a construction for these terms.

We determine that an explicit construction of the terms is not necessary for determining whether Petitioner has demonstrated that the challenged claims are unpatentable.

2. data block

Petitioner proposes that “data block” be construed as “a unit of data comprising more than one bit.” Pet. 8. Patent Owner does not propose a construction for this term.

We determine that an explicit construction of the term is not necessary for determining whether Petitioner has demonstrated that the challenged claims are unpatentable.

3. access profile

Petitioner argues “access profile,” as recited in independent claims 1 and 14, should be construed as “information regarding the number or frequency of reads or writes.” Pet. 10. Patent Owner, on the other hand, proposes to construe “access profile” to mean “information that enables the controller to select a suitable compression algorithm that provides a desired

balance between execution speed (rate of compression) and efficiency (compression ratio).” PO Resp. 7.

Petitioner argues that an access profile “contains information regarding *accesses*—or a number or frequency of reads or writes.” Pet. 11. In other words, Petitioner argues that the term “access” refers to either reads or writes. Pet. 11 (citing Ex. 1001, 1, 14). Petitioner relies on tables from columns 11 and 12 of the ’535 Patent, one of which is reproduced below, “depict[ing] . . . ‘access profile’ as a description of the number or frequency of reads or writes of data” that is used in conjunction with data type to select a compression algorithm. Pet. 11–12.

Access Profile	Example Data Types	Compression Algorithm	Compressed Data Characteristics	Decompression Algorithm
1. Write few, Read many	Operating systems, Programs, Web sites	Asymmetrical (Slow compress)	Very high compression ratio	Asymmetrical (Fast decompress)
2. Write many, Read few	Automatically updated inventory database	Asymmetrical (Fast compress)	Very high compression ratio	Asymmetrical (Slow decompress)
3. Similar number of Reads and Writes	User generated documents	Symmetrical	Standard compression ratio	Symmetrical

The above table from column 12 of the ’535 Patent, which Petitioner relies upon, summarizes “three data access profiles and the type of compression algorithm that would produce optimum throughput.” Ex. 1001, 12:47–49.

Referring to the inclusion of the term “desired balance” in Patent Owner’s construction, Petitioner argues that “a POSITA would not know with reasonable certainty what a ‘desired balance’ between execution speed and efficiency is.” Reply 3. Petitioner also faults Patent Owner’s

construction for reciting a “controller” when no controller is recited in any of the ’535 Patent’s claims. Reply 3.

Patent Owner argues that its “construction comes directly from the ’535 patent” (PO Resp. 7 (citing Ex. 1001 8:8–12)), while “the ’535 patent describes access profiles without using any of the words in Petitioner’s construction” (PO Resp. 8). According to Patent Owner, Petitioner’s construction “is not the broadest reasonable interpretation and imports limitations from the specification into the claims.” PO Resp. 8. For example, Patent Owner refers to embodiments of access profiles that it argues contain information related to data type and to system throughput so that a suitable compression algorithm providing the desired balance between speed and compression ratio may be selected. PO Resp. 8 (citing Ex. 1001, 7:51–55, 8:4–12, 14:27–39). Similarly, Patent Owner argues that, in light of dependent claim 8, which recites “selecting the one or more compressors based upon a number of reads of at least a portion of a first compressed data block that was created from the at least the portion of the data block,” the broader claim 1 “is not limited to a method that uses ‘a number of reads.’” PO Resp. 10. Patent Owner argues that the tables from columns 11 and 12 of the ’535 Patent “is merely an example of the invention” and that limitations from this embodiment should not be imported into the claim. PO Resp. 11. Moreover, the access profiles in the tables “contain[] information about both reads and writes,” while Petitioner’s construction allows for reads *or* writes. PO Resp. 12–13.

Turning initially to Petitioner’s proposed construction, we agree with Petitioner that the term “access” as used in the ’535 Patent at least includes reads or writes of data. For example, the tables appearing in columns 11 and 12 of the ’535 Patent each refer to the amount of times data is either written

to or read from storage. However, while we agree with Petitioner that the '535 Patent provides several examples of access profiles that use the number and/or frequency of reads or writes to select a suitable compression algorithm, the specification does not limit the access profiles to only the number and/or frequency of reads or writes. Ex. 1001, 11:25–40. Rather, other information, such as data type, may also provide an indication of the amount of times data is written to or read from storage. See Ex. 1001, 12 (explaining that certain data types, such as operating system files, are written infrequently but read frequently, while other data types, such as database files, are written to frequently, but read infrequently). Therefore, we decline to limit the construction of access profile to only the number or frequency of reads or writes.

With respect to Patent Owner's proposed construction, we agree with Petitioner that Patent Owner's proposed construction is problematic in including the terms "desired balance" and a "controller." Although the '535 Patent states "[t]he access profiles comprise information that enables the controller to select a suitable compression algorithm that provides a desired balance between execution speed (rate of compression) and efficiency (compression ratio)," the specification also states that the "plurality of access profiles" are "operatively accessible by the controller that enable[] the controller to determine the compression routine that is associated with a data type of the data to be compressed." Ex. 1001, 8:4–13. Thus, in context, the statement Patent Owner relies upon is merely descriptive of the intended use of the access profiles rather than a definition. We also agree with Petitioner's argument that the introduction of the term "controller" in the construction would add a limitation that is not present in any of the claims of the '535 Patent.

In light of the above, we conclude that the term “access profile” at least encompasses, but is not necessarily limited to, Petitioner’s proposed construction, namely “information regarding the number or frequency of reads or writes.” Because we conclude that Petitioner’s proposed construction is encompassed within the bounds of the term “access profile,” we can properly analyze Petitioner’s contentions, which are based on this construction, and Patent Owner’s arguments to the contrary, without further construing the term.

II. DISCUSSION

A. *Principles of Law*

To prevail in its challenges to the patentability of the claims, Petitioner must demonstrate by a preponderance of the evidence that the challenged claims are unpatentable. 35 U.S.C. § 316(e) (2012); 37 C.F.R. § 42.1(d). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. See *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, “would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The

question of obviousness is resolved based on 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. of Kansas City*, 383 U.S. 1, 17–18 (1966). An obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418; *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007). Petitioner, however, cannot satisfy its burden of proving obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record” to support an obviousness determination. *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380–81 (Fed. Cir. 2016). Petitioner also must articulate a reason why a person of ordinary skill in the art would have combined the prior art references. *In re NuVasive*, 842 F.3d 1376, 1382 (Fed. Cir. 2016).

B. Overview of Imai

Imai is related to encoding and transmitting digital signals to the receiving side where they are decoded and reproduced in real time. Ex. 1005 ¶ 1. Real-time encoding, transmitting, and decoding, however, can present several problems. For example, the transmission rate of the network can vary and drop below the data rate of the coded data, which leads to the encoded digital signals arriving too late. Ex. 1005 ¶ 3. The hardware capabilities or decoding method of the receiving device can also slow down real-time decoding of the received signals. Ex. 1005 ¶ 4. To address these problems, Imai includes a plurality of coding methods and selects the

appropriate coding method to encode the digital signals, or part of the digital signals, based on certain relevant factors. Ex. 1005 ¶ 7. The digital signals Imai is particularly concerned with are audio signals, and the plurality of coding methods can include PCM, ADPCM, ATRAC, ATRAC2, HVXC, and layers 1, 2, and 3, of MPEG. See Ex. 1005 ¶ 67. Factors that can affect which coding method is used include the processing capability of the receiving device (see Ex. 1005, Fig. 9, ¶¶ 88–99), transmission rate of the network (see Ex. 1005 ¶¶ 145–166), and the audio content of the audio signals (see Ex. 1005 ¶¶ 101–102). For example, Imai describes a situation where the audio signal is predominantly voice, in which case HVXC may be appropriately used as the coding method. Ex. 1005 ¶ 102. On the other hand, if the audio signal is predominantly instrument sounds, then ATRAC may be appropriately used as the coding method. Ex. 1005 ¶ 102.

Imai discloses at least two embodiments of its invention. The first, illustrated in Figure 5, is an embodiment in which audio signals are encoded (compressed) using a chosen encoder and transmitted to the client. See, e.g., Ex. 1005 ¶¶ 65–74. The second, illustrated in Figure 16, is an embodiment in which the audio signal is encoded using each of the available encoding methods and the resulting output is stored on the server. See, e.g., Ex. 1005 ¶¶ 165–171.

C. Overview of Ishii

Ishii is related to a file compression processor that records image and text data to a recording media after data compression. Ex. 1007, 1:10–15. Ishii's file compression processor includes a file status monitor that keeps track of the current available capacity on the file unit and a threshold value of available capacity that is always to be ensured. Ex. 1007, Abstract, 1:56–60. When the current available file capacity is greater than the threshold

value, files are not compressed and, in some embodiments, certain files with high access frequency are decompressed. Ex. 1007, 6:65–7:3. When the current available file capacity is below the threshold, the system searches for files with a lower access frequency and compresses them. Ex. 1007, 5:43–50. An appropriate data compression method is selected based on access frequency and file type. Ex. 1007, 5:43–50, 5:60–65. For example, a compression method with shorter compression and decompression times is selected for files that are accessed frequently and a compression method with a higher compression ratio (and typically longer compression times) is selected for files with lower access frequency. Ex. 1007, 6:12–17.

D. Reason to Combine Imai and Ishii

1. Petitioner's Contentions

Petitioner argues that a person of ordinary skill in the art would have combined Imai with Ishii because the combination “would improve upon Imai’s system by adding the capability to track the frequency with which Imai’s digital signals are requested by the client as taught by Ishii and would modify Imai’s compression algorithm selection logic to consider the frequency of access as taught by Ishii.” Pet. 18.

In Imai, the factors considered in determining which compression algorithm to select include “the content of the data, the data type, the processing ability of the client, and the throughput of a communications channel.” Pet. 19 (citing Ex. 1005 ¶¶ 88–102, 149–160; Ex. 1003 ¶ 117). In Ishii, the factors considered “include a ‘data attribute (whether it is text data or binary data)’ and ‘access frequency.’” Pet. 20 (citing Ex. 1007, 5:66–6:6). According to Petitioner, “[t]he combined system yields the predictable result of having a more complete set of compression algorithm selection

criteria that will improve the system's ability to choose the most suitable algorithm for compressing a given data set." Pet. 20 (citing Ex. 1003 ¶ 119).

Petitioner also argues that one of ordinary skill would have used the number of reads and writes in selecting a compression algorithm, as taught in Ishii, with the selection criteria of Imai, because "a POSITA would have known and Imai in fact teaches, one of the limiting factors in compression systems would have been the processing capacity of the overall system." Pet. 21 (citing Ex. 1005 ¶ 167; Ex. 1003 ¶ 120). Petitioner explains that "[u]sing the number of read/writes of a data file for selection of a more symmetric/less symmetric algorithm would assist in this goal by reducing the scale necessary for the server and the overall workload of the system." Pet. 21 (citing Ex. 1005 ¶ 170).

2. Patent Owner's Arguments

In order to understand Patent Owner's arguments regarding whether Petitioner has set forth an appropriate reason to combine Imai and Ishii, we first review Patent Owner's assertions regarding Imai's operation. As argued by Patent Owner, when Imai receives a request for audio data, its frame cutting circuit cuts the audio signal into units of frame. PO Resp. 15. Then, a compression algorithm is selected for each frame, from among a number of compression algorithms, by determining, for example, whether the frame has instrument sounds or vocal sounds. PO Resp. 15 (citing Ex. 1005 ¶ 102). After the frames are compressed, they are transmitted to the client over the network. PO Resp. 15 (citing Ex. 1005 ¶ 64).

Patent Owner argues that the Petition does not indicate how to use access frequencies to select compressors for Imai's units of frame. PO Resp. 32. This is because, according to Patent Owner, Petitioner's theory applies Ishii's access frequency to the entire digital signal (e.g. the entire song)

rather than the individually cut up units of frame of that digital signal. PO Resp. 19–20. Patent Owner argues that “[t]here is no evidence that the frequency of access of the digital signals is the same as the frequency of access of the units of frame.” PO Resp. 21. Indeed, Patent Owner argues, depending on the size of the units of frame, how the digital signal is cut into those frames, and whether certain patterns repeat within a digital signal or across digital signals, the access frequency of the units of frame may all be different from each other and from the access frequency of the digital signal as a whole. PO Resp. 21–22. Because the access frequency of the units of frame do not coincide with the access frequency of the digital signal, Patent Owner argues, a POSITA would not know how to design a system that tracks the access frequency of an entire digital signal and use that information to select compressors for the units of frame of that signal. PO Resp. 23–24.

Further, Patent Owner argues that Imai already considers factors such as the computational capabilities of a client and the congestion of the network in selecting a compressor for the units of frame of a digital signal. PO Resp. 33. Adding Ishii’s access frequency to these other factors would be a “non-trivial task and would require significant creativity and experimentation,” according to Patent Owner. PO Resp. 33.

In addition to arguing that Petitioner fails to explain how to combine Ishii’s access frequency with Imai’s system, Patent Owner also argues that Petitioner fails to explain *why* a person of ordinary skill would add Ishii’s access frequency to the other factors already considered in Imai. PO Resp. 30–32. This is because, according to Patent Owner, “[t]he number of times a particular digital signal is requested in Imai’s Figure 5 embodiment

by one or more clients has no effect on Imai's ability to deliver the data to its clients." PO Resp. 31. Patent Owner argues:

Imai's teachings are primarily about how to achieve real-time communications by reducing decoding complexity for a client with limited CPU ability and reducing data transmission when the transmission network is congested. It is assumed in Imai that all compressors operate fast enough to provide real-time compression and delivery of data to the clients.

PO Resp. 30–31 (citation omitted). Patent Owner further asserts:

Whether one client repeatedly requests the same audio file or whether multiple clients all request the same audio file has no effect on Imai's ability to deliver such content to the clients. A POSITA reading Imai and Ishii would not find any motivation to alter Imai with Ishii's teachings because there is no apparent benefit and because there is no apparent way to combine them without altering Imai's intended purpose.

PO Resp. 31 (citation omitted). Patent Owner also argues that adding more criteria to Imai in selecting a compressor would increase the complexity of the system without providing a predictable benefit, such as improving real-time transmission of the digital audio signals. PO Resp. 38.

For many of the reasons discussed above, Patent Owner also argues that Imai and Ishii have "different principles of operation" that teach away from each other. PO Resp. 34. For example, Patent Owner argues that "Ishii's goal is to maximize throughput for accessing files, whereas Imai's goal is a guarantee real-time decoding by its clients. Ishii's server decompresses files before delivering them, whereas Imai's clients decompress pieces of audio signals after receiving them from the server."

PO Resp. 35 (citations omitted). For this reason, Patent Owner argues:

Frequency of access as a criterion for compression makes sense for Ishii since the decompression is done at the server side which affects throughput in a file system. Frequency of access

does not make sense for choosing compressors at the server in Imai, since the decompression is not performed until the compressed data blocks arrive at the clients, which would not affect real time decompression by Imai's clients.

PO Resp. 35 (citing Ex. 2005 ¶ 107).

3. Analysis

We find Petitioner has “articulate[d] specific reasoning, based on evidence of record” for combining Imai with Ishii. *Magnum Oil Tools*, 829 F.3d at 1380 (“To satisfy its burden of proving obviousness, . . . [t]he petitioner must . . . articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” (citing *KSR*, 550 U.S. at 418)). Imai and Ishii's disclosures support the Petitioner's contention that both references are directed to “systems that select a compression algorithm from a plurality of algorithms,” including asymmetric algorithms, based on a variety of factors. Pet. 18–19; Ex. 1003 ¶ 116. The factors considered by Imai in determining which compressor to select, include content of data, data type, processing capability of the client, and throughput of a communications channel. Pet. 19 (citing Ex. 1005 ¶¶ 51, 88–100, 101, 102, 149–160, 167, Ex. 1003 ¶ 117). Ishii includes frequency of access as one factor when selecting a compression algorithm. Pet 20 (citing Ex. 1007 5:66–6:6, Ex. 1003 ¶ 118). Petitioner argues Ishii's frequency of access could be added to Imai's other factors by one of ordinary skill in the art to yield the predictable result of having a combined system with a more complete set of selection criteria, resulting in an improved ability to select the most suitable compression algorithm. Pet. 20; Ex. 1003 ¶ 119. According to Petitioner, Imai teaches that “one of the limiting factors in compression systems would have been the processing

capacity of the overall system”; thus, factoring in the number of reads or writes of data in selecting a compressor would assist in reducing the overall workload of the system. Pet. 21 (citing Ex. 1005 ¶ 167, Ex. 1003 ¶ 120).

We disagree with Patent Owner’s argument that one of ordinary skill in the art would not have known how to use Ishii’s access frequency as a factor for selecting the compressor in Imai because the access frequency of the individual unit frames of Imai are different than the access frequency of the digital signal from which they originate. As Patent Owner acknowledges, Imai teaches using factors such as client processing capacity and network congestion in selecting the compressor for unit frames. See PO Resp. 30–31. Both of these factors are independent of the unit frames themselves and yet are still applied to the unit frames in Imai. In the same way, even if the access frequency of the digital signal is different than the access frequency of the individual unit frames, we find that one of ordinary skill would have been able to apply that frequency to the unit frames without relying on significant experimentation, as Patent Owner suggests.

Moreover, we agree with Petitioner that one of ordinary skill would have understood that the access frequency of the digital signal could be used as a proxy for the access frequency of the individual unit frames that stem from that digital signal. See Reply 13–14. Even if, as Patent Owner argues, the access frequencies differ from each other to some degree, Petitioner presents sufficient evidence and reasoning that the two would be roughly proportional or at least in some way correlated with each other. See Reply 13–14 (explaining that if the frequency of requests for the Star Spangled Banner is low while that of the Bohemian Rhapsody is high, a POSITA would have known to associate low frequency of access to the unit frames of

the Star Spangled Banner and high frequency of access to the unit frames of Bohemian Rhapsody).

We also disagree with Patent Owner that Petitioner fails to explain *why* a person of ordinary skill would add Ishii's access frequency to the other factors already considered in Imai. In particular, Patent Owner argues that in Imai, the frequency that a digital file is accessed has no effect on Imai's ability to deliver the file to its clients and therefore, adding access frequency as a factor would not benefit Imai. PO Resp. 31. However, Petitioner explains that using access frequency of Imai's digital files would assist in reducing the scale necessary for the server and also reduce the overall workload of the system. Pet. 21 (citing Ex. 1005 ¶ 170). We are persuaded by Petitioner's argument. Imai indicates that both server and client loads are of concern in compressing and decompressing files. For example, Dr. Storer explains that a person of ordinary skill would have recognized that Imai's server could have problems supporting real-time production when there are certain files that are requested repeatedly. Pet. 19 (citing Ex. 1003 ¶ 122). Imai expresses concern about overall server workload and ability to process client requests stemming from a large number of client connections. Reply 20 (citing Ex. 1005 ¶ 87). One of ordinary skill would have understood that this workload would be exacerbated if clients requested files at a very high frequency. One way of dealing with the additional workload caused by a high frequency of client requests would be to track the access frequency of files requested by clients and select a compressor that takes less time to compress a file over one that takes more time to compress a file. Thus, contrary to Patent Owner's assertion, the access frequencies of the digital files would, at least in the aggregate, affect Imai's ability to deliver files to its clients. Even a single

digital file with a high enough access frequency (e.g., a new song released by a popular artist) could increase the workload of the server. For these reasons, we agree with Petitioner that tracking the access frequency of digital files would assist in the goal of reducing overall workload of Imai's system and, thus, motivate one of ordinary skill in the art to combine Ishii's access frequency with the other factors considered by Imai in selecting a compressor.

Patent Owner argues that the principle of operation of Imai is different than that of Ishii and the two would teach away from their combination. PO Resp. 34. We disagree. Patent Owner emphasizes that while Imai's server compresses the files, those files are not decompressed until they arrive at the client. Because decompression does not occur on the server side, relying on access frequency as a factor does not make sense in Imai, according to Patent Owner. This argument, however, does not take into consideration that Imai shows concern for both server-side workload and client-side workload. As explained above, Imai takes into account server-side workload caused by a high number of client connections. Ex. 1005 ¶ 87. Similarly, Imai considers a client's capacity to decompress the audio files as a limiting factor as well. Ex. 1005 ¶ 95. Because compression occurs on the server side and server processing capacity is one of the limiting factors identified in Imai, one of ordinary skill in the art would understand that accounting for the access frequency of a digital file in selecting a compressor would make sense. Similarly, given that the processing capacity of the client is also identified as a limiting factor, one of ordinary skill would understand that accounting for the frequency that a client accesses files in selecting a compressor would also make sense.

Although there are differences between the two references, these differences do not go so far as to teach away from the invention. A teaching away requires a reference to actually criticize, discredit, or otherwise discourage the claimed solution. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) (“The prior art’s mere disclosure of more than one alternative does not constitute . . . teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed.”). The evidence presented by Patent Owner does not show that Imai teaches away from using Ishii’s access frequency as a factor in selecting a compressor by criticizing or discouraging it. Moreover, “[a] finding that two inventions were designed to resolve different problems . . . is insufficient to demonstrate that one invention teaches away from another.” *Nat’l Steel Car, Ltd. v. Canadian Pac. Ry., Ltd.*, 357 F.3d 1319, 1339 (Fed. Cir. 2004). Thus, even if we agreed with Patent Owner that Imai’s goal is guaranteeing real-time decoding by its clients, while Ishii’s goal is maximizing throughput for accessing files, this distinction would be insufficient to show that the references teach away from the invention.

Based on the record as a whole, Petitioner establishes adequately that one of ordinary skill in the art would have been motivated to combine Imai and Ishii by adding Ishii’s frequency of access as an additional factor to Imai in selecting a compressor.

E. Independent Claims 1 and 14

Claim 1 recites “determining a parameter or attribute of at least a portion of a data block having audio or video data.” Claim 14 recites a similar limitation. Petitioner argues both Imai and Ishii teach this limitation. According to Petitioner, Imai does so by “consider[ing] the level of the voice

as compared to a level of the instrument sounds in a portion of a data block.”

Pet. 24 (citing Ex. 1005 ¶ 102). Ishii determines a parameter or attribute of a data block by tracking file attributes such as a data attribute (e.g., text data file, program file or image data file) and number of accesses of the file. Pet. 25 (citing Ex. 1007, 6:20–31). Petitioner argues that the data blocks of Imai have audio or video data (Pet. 25 (citing Ex. 1005 ¶¶ 67, 102, 172)) and that one of skill in the art would know that the binary data of Ishii could be audio or video data (Pet. 26–27).

Claims 1 and 14 further recite “selecting an access profile from among a plurality of access profiles based upon the determined parameter or attribute.” Petitioner argues that Ishii teaches this limitation by selecting an appropriate compression method “based on the ‘*access frequency* and *file type*’ of the file to be compressed.” Pet. 27 (citing Ex. 1007, 5:60–65). In Ishii, “the ‘access frequency . . . is given as high, medium and low’ and is ‘set in the file search portion.’” Pet. 28 (citing Ex. 1007, 5:54–59).

According to Petitioner, the access frequency of high, medium, and low teaches the claimed “access profile,” which is selected based on parameters or attributes such as file type and number of accesses. Pet. 28.

Claim 1 further recites

compressing the at least the portion of the data block with one or more compressors using asymmetric data compression and information from the selected access profile to create one or more compressed data blocks, the information being indicative of the one or more compressors to apply to the at least the portion of the data block.

Claim 14 recites a similar limitation. Petitioner argues “Ishii teaches using the information from the selected access profile to choose the asymmetric data compressor and compress a data block.” Pet. 29 (citing Ex. 1003

¶¶ 141–143). In particular, Petitioner points out that Ishii teaches “[t]he file compression method selection portion 104 . . . selects the method with suitable compression ratio and compression/decompression speed depending on the file access frequency and data attribute.” Pet. 29 (Ex. 1007, 7:17–20) (emphasis omitted). In other words, according to Petitioner, “Ishii stores information regarding how to classify a file as having ‘high, medium [or] low’ access frequency in the file search portion 102 and then that access frequency classification is used in Step 250 to pick the specific compressor to use.” Pet. 30.

Both Ishii and Imai teach the use of asymmetric compressors, according to Petitioner. For example, Petitioner argues “Ishii identifies a number of exemplary compressors, including: . . . Lempel-Ziv” and that Lempel-Ziv is an “asymmetric compression algorithm” as expressly taught by the ’535 Patent itself. Pet. 31 (citing Ex. 1007, 7:31–55). Similarly, Imai teaches the use of ATRAC, ATRAC2, MPEG layer 1, MPEG layer 2, and MPEG layer 3, each of which are asymmetric algorithms, according to Petitioner. Pet. 32 (citing Ex. 1005 ¶¶ 67–71).

Claim 14 differs from claim 1 in that instead of explicitly requiring the use of an “asymmetric data compressor,” claim 14 recites “wherein the one or more compressors utilize at least one slow compress encoder and at least one fast decompress decoder.” Claim 14 further recites:

wherein compressing the at least the portion of the data block with the at least one slow compress encoder takes more time than decompressing the at least the portion of the data block with the at least one fast decompress decoder if the time were measured with the at least one slow compress encoder and the at least one fast decompress decoder running individually on a common host system.

Ex. 1001, 60–67. Petitioner argues that Ishii and Imai teach these limitations of claim 14 largely for the same reasons that they teach the “asymmetric data compression” limitations of claim 1. Namely, Ishii teaches the use of Lempel-Ziv, which, according to Petitioner, “takes more time for compression than for decompression.” Pet. 36 (citing Ex. 1003 ¶ 156). Similarly, Imai teaches the use of ATRAC, ATRAC2, MPEG layer 1, MPEG layer 2, and MPEG layer 3, each of which are “known to have been implemented as a ‘slow compress encoder’ and a ‘fast decompress decoder.’” Pet. 37 (citing Ex. 1003 ¶¶ 157–159).

Patent Owner points out that Petitioner maps Imai’s units of frame (cut up frames from a larger digital signal) to the “data block” of claims 1 and 14. PO Resp. 19. According to Patent Owner, given Petitioner’s mapping, the claims require, therefore, require that the parameter or attribute be of the units of frame and that units of frame be compressed with a compressor selected based on this parameter or attribute. Patent Owner argues that Petitioner’s argument is deficient because it relies on a parameter or attribute that is not of the units of frame but rather is of the entire digital signal. PO Resp. 20 (“But importantly, Petitioner does not assert that Ishii’s ‘frequency of access’ is applied to Imai’s ‘units of frame.’ [Ex. 2001] ¶¶ 64–67. Instead, Petitioner asserts that Ishii’s ‘frequency of access’ is applied to Imai’s ‘digital signals,’ which is the entire digital signal (e.g., song) requested by the client before it is cut into units of frame.”); *see also* Sur-Reply 11 (explaining that Petitioner points to different things when satisfying the “parameter or attribute” limitation). Thus, Patent Owner argues, Petitioner’s combination of Imai with Ishii does not teach the limitations of claim 1 because “[u]nder Petitioner’s theory, access profile information is derived from one thing (the entire signal) but used to select a

compressor for a different thing (the units of frame)”; however, “claim 1 requires the ‘at least a portion of the data block’ to be the **same** thing.” Sur-Reply 11. Patent Owner’s arguments also apply to claim 14 which also recites similar limitations. PO resp. 45.

Having reviewed Petitioner’s and Patent Owner’s contentions as summarized above, we find Petitioner has shown by a preponderance of the evidence that Imai and Ishii teach or suggest the limitations of claims 1 and 14. We agree with Petitioner that Imai and Ishii teach “determining a parameter or attribute of at least a portion of a data block having audio or video data,” as recited in claim 1, and the corresponding limitation of claim 14. In particular, we agree with Petitioner that the level of voice or instrument sounds within a digital audio signal is a parameter or attribute of a portion of a data block. Similarly, we agree with Petitioner that by tracking file attributes such as a data attribute (e.g., text data file, program file, or image data file) and number of accesses of the file, Ishii determines a parameter or attribute of at least a portion of a data block having audio or video data.

In addition, we agree with Petitioner that Ishii teaches “selecting an access profile from among a plurality of access profiles based upon the determined parameter or attribute,” as recited in claims 1 and 14. For example, we agree that Ishii’s disclosure of access frequency of high, medium, and low teaches the claimed “access profile,” which is selected based on parameters or attributes such as file type and number of accesses.

Moreover, we agree with Petitioner that Imai and Ishii teach the following limitation of claim 1 as well as the corresponding limitation of claim 14:

compressing the at least the portion of the data block with one or more compressors using asymmetric data compression and information from the selected access profile to create one or more compressed data blocks, the information being indicative of the one or more compressors to apply to the at least the portion of the data block.

First, we agree that Ishii selects a compressor using information regarding whether a file has high, medium, or low access frequency and, therefore, teaches compressing at least a portion of the data block using information from the selected access profile. Ex. 1007, 7:17–20. Second, we agree that both Imai and Ishii teach compressing data blocks using an asymmetric data compression algorithm. For example, Ishii’s disclosure of using Lempel-Ziv (Ex. 1007, 7:31–55), and Imai’s disclosure of using ATRAC, ATRAC2, MPEG layer 1, MPEG layer 2, and MPEG layer 3 (Ex. 1005 ¶¶ 67–71), teach using asymmetric compression algorithms to compress the relevant data blocks. As to claim 14, we agree with Petitioner that the disclosure of Lempel-Ziv in Ishii, and of ATRAC, ATRAC2, and the MPEG algorithms, teaches the claimed slow compress encoder and fast decompress decoders of the claim. Ex. 1003 ¶¶ 156–159.

We disagree with Patent Owner’s argument that the combination of Imai with Ishii does not teach the limitations of claim 1 because, under Petitioner’s theory, the parameter or attribute is of Imai’s units of frame of a digital signal while the access frequency is of the entire digital signal. Patent Owner is correct that Petitioner maps Imai’s units of frame of a digital signal to the claimed “data block” (*see* Pet. 24 (stating “[e]ach of Imai’s ‘units of frame’ is a data block”)) but uses the access frequency of the entire digital signal, rather than the access frequency of the units of frame, in selecting the compressor for the units of frame (Pet. 18 (“The combined

system would improve upon Imai's system by adding the capability to track the frequency with which Imai's digital signals are requested by the client"). Under an obviousness challenge, however, Petitioner need not strictly map the references to the limitations of the claims without permitting any modifications to the referenced systems or without allowing for some flexibility in how the teachings of the two references are combined. "[T]he [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 550 U.S. at 418. Here, Petitioner makes clear that "Imai's compression algorithm selection logic [is modified] to consider the frequency of access" of the entire digital signal. Pet. 18. Thus, Petitioner's combination treats the frequency of access of the digital signal as the frequency of access of the individual units of frame of that signal. Further, as explained above (*see* § II.D.3), the fact that the access frequency of the digital signal may be different than the access frequency of its units of frame does not mean that one of ordinary skill in the art would not use the access frequency of the entire digital signal as representative of the access frequency of the units of frame of that digital signal, given that the two are correlated with one another.

Based on our review of the entire record, we determine that Petitioner has established by a preponderance of the evidence that the combination of Imai and Ishii teaches the limitations of claims 1 and 14 and that claims 1 and 14 would have been obvious to one of ordinary skill in the art.

F. Claim 4

Claim 4 depends from claim 1 and recites, "The method of claim 1, wherein the one or more compressed data blocks comprise: one or more

files.” Petitioner asserts that Ishii “teaches compression of files for storage on a disk.” Pet. 50 (citing Ex. 1007, 3:65–4:54, 5:60–62, 8:34–41, 9:49–52). Petitioner further asserts that Imai teaches an embodiment where the compressed data blocks are stored for later use. Pet. 50 (citing Ex. 1005 ¶¶ 167–168, Fig. 16). Petitioner argues that a person of ordinary skill in the art “would have found it obvious to use a file to store the compressed data blocks because organizing data into files for storage has long been well-known and standard in the art and there are a finite number of identified, predictable solutions to this problem.” Pet. 50–51 (citing Ex. 1003 ¶¶ 187–188).

Patent Owner argues that “claim 1 explicitly states [that] these one or more compressed data blocks are produced by compressing a single data block—not a plurality of data blocks.” PO Resp. 39. Therefore, according to Patent Owner, “claim 4 requires that the ‘one or more compressed data blocks’ derived from compressing a single input data block must comprise one or more files.” PO Resp. 39 (citing Ex. 2001 ¶ 112). Patent Owner argues that under Petitioner’s theory, the units of frame of a digital signal would, after being compressed, have to comprise one or more files, but that Petitioner has not offered any evidence supporting such a contention. PO Resp. 39.

We find Petitioner has demonstrated by a preponderance of the evidence that Imai and Ishii teach the limitations of claim 4. In particular, Imai teaches an embodiment where “each frame outputted from the frame cutting circuit 51 is supplied to all the encoders 53₁ to 53_N and encoded into encoded data. The coded data obtained by the encoders 53₁ to 53_N are supplied to and stored (recorded) in the storages 91₁ to 91_N, respectively.” Ex. 1005 ¶ 168. In other words, the compressed units of frame are stored in

storage. We agree with Petitioner that one of ordinary skill in the art would have found it obvious to store these units of frame as one or more files because storing data as files was well known and standard in the art. Ex. 1003 ¶¶ 187–188. Patent Owner assumes that the compressed units of frame would not comprise one or more files but does not persuasively explain why the units of frame could not be stored as files.

Based on our review of the entire record, we determine that Petitioner has established by a preponderance of the evidence that the combination of Imai and Ishii teaches the limitations of claim 4 and that claim 4 would have been obvious to one of ordinary skill in the art.

G. Remaining Claims

Petitioner sets forth evidence and argument alleging that the combination of Imai and Ishii also teach the limitations of claims 2, 3, and 5–13. Pet. 38–62. Patent Owner relies on the arguments addressed above with respect to the combination of Imai and Ishii, and with respect to claims 1, 14, and 4, without presenting any additional arguments specific to claims 2, 3, and 5–13. PO Resp. 45. Specifically, Patent Owner does not contend that the combination of Imai and Ishii fails to teach any of the limitations of claims 2, 3, and 5–13. As to the uncontested limitations of these claims, Patent Owner has waived any argument that the combination discloses the limitations. *See In re NuVasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016) (“Although the Board did not make findings as to whether any of the other claim limitations (such as fusion apertures or anti-migration teeth) are disclosed in the prior art, it did not have to: NuVasive did not present arguments about those limitations to the Board. . . . The Board, having found the only disputed limitations together in one reference, was not required to address undisputed matters.”); *see also* Paper 21, 6 (emphasizing that “any

arguments for patentability not raised and fully briefed in the response will be deemed waived” (emphasis added)).

Even absent such waiver, the record fully supports that the combination of Imai and Ishii teaches the limitations in these claims. *See* Pet. 38–62. We have reviewed the information in the Petition and supporting evidence, and we determine that the combination of Imai and Ishii renders obvious claims 2, 3, and 5–13. We adopt as our factual findings the factual contentions in the Petition based on the evidence and arguments in the Petition regarding these claims. Based on our review of the entire record, we determine that Petitioner has established by a preponderance of the evidence that the combination of Imai and Ishii teaches the limitations of claims 2, 3, and 5–13 and that these claims would have been obvious to one of ordinary skill in the art.

CONCLUSION⁵

For the foregoing reasons, we are persuaded that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1–14 are unpatentable under 35 U.S.C. § 103.

⁵ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).

Claims	35 U.S.C. §	References/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–14	103	Imai, Ishii	1–14	
Overall Outcome			1–14	

ORDER

For the reasons given, it is:

ORDERED that claims 1–14 are held unpatentable; and

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

IPR2018-01169
Patent 8,934,535 B2
PETITIONER:

Harper Batts
Christopher Ponder
SHEPPARD, MULLIN, RICHTER
& HAMPTON LLP
hbatts@sheppardmullin.com
cponder@sheppardmullin.com

PATENT OWNER:

Philip X. Wang
C. Jay Chung
Neil A. Rubin
Kent N. Shum
Reza Mirzaie
RUSS AUGUST & KABAT
pwang@raklaw.com
jchung@raklaw.com
nrubin@raklaw.com
kshum@raklaw.com
rmirzaie@raklaw.com