

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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NETFLIX, INC.,  
Petitioner,

v.

REALTIME ADAPTIVE STREAMING LLC,  
Patent Owner.

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Case IPR2018-01187  
Patent 9,769,477 B2

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Before GEORGIANNA W. BRADEN, KEVIN W. CHERRY, and  
KAMRAN JIVANI, *Administrative Patent Judges*.

BRADEN, *Administrative Patent Judge*.

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

## I. INTRODUCTION

### A. Background

Netflix, Inc. (“Petitioner”) filed a Petition<sup>1</sup> requesting an *inter partes* review of claims 1–6, 9–14, 20–22, and 25–27 of U.S. Patent No. 9,769,477 B2 (Ex. 1001, “the ’477 patent”). Paper 4 (“Pet.”). Realtime Adaptive Streaming LLC (“Patent Owner”) filed a preliminary response. Paper 19 (“Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” After considering the Petition, the Preliminary Response, and associated evidence, we conclude Petitioner has demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of at least one claim of the ’477 patent. Thus, we authorize institution of an *inter partes* review of claims 1–6, 9–14, 20–22, and 25–27 of the ’477 patent.

### B. Related Proceedings

Petitioner informs us of multiple pending district court proceedings involving the ’477 patent, such of which involve Petitioner. Pet. 67–69. Patent Owner informs us of two pending *inter partes* review petitions challenging the ’477 patent, IPR2018-01413 and IPR2018-01630. Paper 15, 1 (Patent Owner’s Mandatory Notices). We note IPR2018-01413 was

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<sup>1</sup> Amazon.com Inc. and Hulu, LLC were part of the Petition originally. The Board has granted Amazon.com Inc. and Hulu, LLC’s Joint Motion to Terminate *Inter Partes* Reviews as to Amazon.com, Inc. and Hulu, LLC. Paper 14. Thus, Netflix is the sole remaining Petitioner in this proceeding.

terminated prior to the issuance of a decision on institution. IPR2018-01413, Paper 10.

*C. The '477 Patent*

The '477 patent was filed on October 6, 2015, and is titled “Video Data Compression Systems.” Ex. 1001, Title. It describes systems and methods directed to a “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, 7:66–8:3, 9:27–31. The '477 patent states that “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, is highly desirable.” *Id.* at 1:64–67. The '477 patent also states that it seeks to “provide[] a desired balance between execution speed (rate of compression) and efficiency (compression ratio).” *Id.* at 8:24–27. For example, where the speed of the encoder causes a “bottleneck” because “the compression system cannot maintain the required or requested data rates,” “then the controller will command the data compression system to utilize a compression routine providing faster compression . . . so as to mitigate or eliminate the bottleneck.” *Id.* at 14:14–24. The '477 patent discloses that it can resolve “bottlenecks” in the throughput of a system by switching between different compression algorithms applied to data. *Id.* at 10:3–8.

One embodiment of the '477 patent is shown in Figure 2, reproduced below.

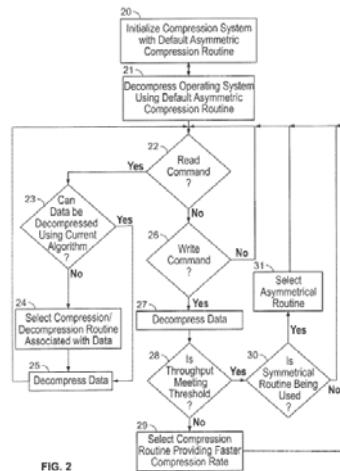


Figure 2, above, illustrates a method for providing bandwidth sensitive data compression. *Id.* at 13:25–27. The data compression system is initialized during a boot-up process after a computer is powered on and a default compression/decompression routine is initiated (step 20). *Id.* at 13:31–34. According to the '477 patent, the default algorithm comprises an asymmetrical algorithm, because asymmetric algorithms provide “a high compression ratio (to effectively increase the storage capacity of the hard disk) and fast data access (to effectively increase the retrieval rate from the hard disk).” *Id.* at 13:35–45. According to the '477 patent, depending on the access profile, it “is preferable to utilize an asymmetrical algorithm that provides a slow compression routine and a fast decompression routine so as to provide an increase in the overall system performance as compared to performance that would be obtained using a symmetrical algorithm.” *Id.* at 12:23–28. The '477 patent notes that symmetric routines “compris[e] a fast compression routine.” *Id.* at 14:40–43. In one embodiment, the '477 patent discloses a controller “tracks and monitors the throughput . . . of the data compression system 12.” *Id.* at 10:54–57. When the throughput of the system falls below a predetermined threshold, the system generates control signals to enable/disable different compression algorithms. *Id.* at 10:55–58.

*D. Illustrative Claims*

As noted above, Petitioner challenges claims 1–6, 9–14, 20–22, and 25–27 with claims 1 and 20 being independent. Independent claims 1 and 22 are illustrative of the challenged claims, and are reproduced below:

1. A system, comprising:  
a plurality of different asymmetric data compression encoders,  
wherein each asymmetric data compression encoder of the  
plurality of different asymmetric data compression encoders  
is configured to utilize one or more data compression  
algorithms, and  
wherein a first asymmetric data compression encoder of the  
plurality of different asymmetric data compression encoders  
is configured to compress data blocks containing video or  
image data at a higher data compression rate than a second  
asymmetric data compression encoder of the plurality of  
different asymmetric data compression encoders; and  
one or more processors configured to:  
determine one or more data parameters, at least one of the  
determined one or more data parameters relating to a  
throughput of a communications channel measured in  
bits per second; and  
select one or more asymmetric data compression encoders  
from among the plurality of different asymmetric data  
compression encoders based upon, at least in part, the  
determined one or more data parameters.

Ex. 1001, 20:57–21:13.

20. A system, comprising:  
a plurality of video data compression encoders;  
wherein at least one of the plurality of video data compression  
encoders is configured to utilize an asymmetric data  
compression algorithm, and  
wherein at least one of the plurality of video data compression  
encoders is configured to utilize an arithmetic data  
compression algorithm,  
wherein a first video data compression encoder of the plurality  
of video data compression encoders is configured to

compress at a higher compression ratio than a second data compression encoder of the plurality of data compression encoders; and  
one or more processors configured to:  
determine one or more data parameters, at least one of the determined one or more data parameters relating to a throughput of a communications channel; and  
select one or more video data compression encoders from among the plurality of video data compression encoders based upon, at least in part, the determined one or more data parameters.

*Id.* at 22:20–42.

*E. The Alleged Grounds of Unpatentability and Evidence of Record*

The information presented in the Petition sets forth proposed grounds of unpatentability of claims 1–6, 9–14, 20–22, and 25–27 of the ’477 patent under 35 U.S.C. § 103 as follows (*see* Pet. 3):<sup>2</sup>

Reference(s)	Basis	Challenged Claims
Imai <sup>3</sup>	§ 103	1, 3–5, 12–14
Pauls	§ 103	1, 3–6, 9–14
Imai and Pauls <sup>4</sup>	§ 103	1, 3–6, 9–14

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<sup>2</sup> Petitioner supports its challenge with the Declaration of James A. Storer, Ph.D. (“Dr. Storer”). Ex. 1003.

<sup>3</sup> Japanese Patent Application Publication No. H11331305, published Nov. 30, 1999 (Ex. 1005, “Imai”).

<sup>4</sup> European Patent Application Publication No. EP0905939A2, published Mar. 31, 1999 (Ex. 1007, “Pauls”).

Reference(s)	Basis	Challenged Claims
Imai, Pauls, and Chao <sup>5</sup>	§ 103	2, 11, 20–22, 25–27

## II. DISCUSSION

### A. Claim Construction

In an *inter partes* review, we currently 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.<sup>6</sup> 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard in an *inter partes* review). Claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). To rebut this presumption by acting as a lexicographer, the patentee must give the term a particular meaning in the specification with “reasonable clarity, deliberateness, and precision.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Limitations, however, are not

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<sup>5</sup> International PCT Patent Application Publication No. WO 98/40842, published Sept. 17, 1998 (Ex. 1016, “Chao”).

<sup>6</sup> 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. 51340 (Oct. 11, 2018) (to be codified at 37 C.F.R. pt. 42).

to be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993). In addition, the Board may not “construe claims during [an *inter partes* review] so broadly that its constructions are *unreasonable* under general claim construction principles.” *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015). Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *See Wellman, Inc. v. Eastman Chem. 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).

Petitioner proposes to construe “asymmetric data compression encoders” as “an encoder(s) configured to utilize a compression algorithm in which the execution time for the compression and decompression routines differ significantly.” Pet. 7. Petitioner further proposes to construe “data block” as “a unit of data comprising more than one bit.” *Id.* at 8. Patent Owner has not provided proposed constructions for either term, and states that the terms do not require construction in order to resolved the parties’ dispute. Prelim. Resp. 6.

We agree with Patent Owner and determine that an explicit construction of the claims is not necessary for the purposes of determining whether there is a reasonable likelihood that the Petitioner would prevail with respect to at least one of the claims challenged in the Petition. This determination does not preclude the parties from arguing proposed constructions of the claims during trial. A final determination as to claim construction will be made at the close of the proceeding, after any hearing, based on all the evidence of record. The parties are expected to assert all their claim construction arguments and evidence in the Petition, Patent



Owner's Response, Petitioner's Reply, or otherwise during trial, as permitted by our rules.

*B. Principles of Law*

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented 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 on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966).

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

Thus, to prevail in an *inter partes* review, Petitioner must explain how the proposed combinations of prior art would have rendered the challenged claims unpatentable. At this preliminary stage, we determine whether the information presented in the Petition shows there is a reasonable likelihood that Petitioner would prevail in establishing that one of the challenged claims is unpatentable. Additionally, the Supreme Court held that a decision to institute under 35 U.S.C. § 314(b) may not institute review on less than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1355–56 (2018). Moreover, in accordance with USPTO Guidance, “if the PTAB institutes a trial, the PTAB will institute on all challenges raised in the petition.” *See Guidance on the Impact of SAS on AIA Trial Proceedings* (April 26, 2018) (available at <https://www.uspto.gov/patents-application-process/patent-trial-and-appeal-board/trials/guidance-impact-sas-aia-trial>) (“USPTO Guidance”).

*C. Level of Ordinary Skill in the Art*

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991).

Petitioner argues that a person of ordinary skill in the art relevant to the ’477 patent would have had “a bachelor’s degree in electrical engineering, computer science, or a similar field with at least two years of experience in data compression or a person with a master’s degree in electrical engineering, computer science, or a similar field with a specialization in data

compression.” Pet. 6. Petitioner relies on the Declaration of Dr. Storer to support its contentions. Dr. Storer proffers the same level of skill as that argued by Petitioner but also states that “[a] person with less education but more relevant practical experience may also meet this standard.” Ex. 1003 ¶ 65.

At this stage of the proceeding, Patent Owner does not contest Petitioner’s definition of a person of ordinary skill in the art. *See generally* Prelim. Resp.

Based on our review of the ’477 patent, the types of problems and solutions described in the ’477 patent and cited prior art, and the testimony of Dr. Storer, for purposes of this Decision we adopt and apply Petitioner’s definition of a person of ordinary skill in the art. Specifically, we find that a person of ordinary skill in the art at the time of the claimed invention would have had “a bachelor’s degree in electrical engineering, computer science, or a similar field with at least two years of experience in data compression” or that such a person would have “a master’s degree in electrical engineering, computer science, or a similar field with a specialization in data compression.” Pet. 6.

*D. Alleged Obviousness of Claims 1, 3–5, and 12–14 of the ’477 Patent in View of Imai*

Petitioner contends claims 1, 3–5, and 12–14 of the ’477 patent are unpatentable under 35 U.S.C. § 103 as obvious in view of Imai. Pet. 15–35. Patent Owner disputes Petitioner’s contentions. Prelim. Resp. 6–25. For reasons that follow, we determine Petitioner has demonstrated a reasonable likelihood of demonstrating that the challenged claims would have been obvious under 35 U.S.C. § 103 in view of Imai.

*1. Overview of Imai (Ex. 1005)*

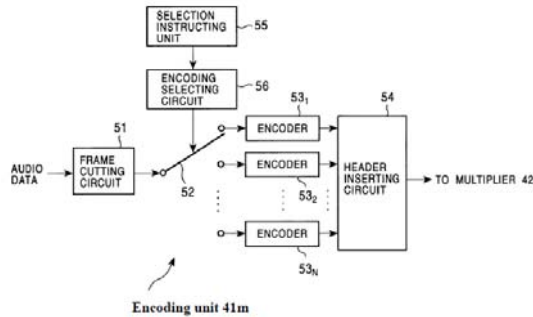
Imai is a Japanese Patent Application<sup>7</sup> titled “Transmitting apparatus and transmitting method, receiving apparatus and receiving method, as well as providing medium.” Ex. 1005, Title. Imai is related to encoding and transmitting digital signals to the receiving side where they are decoded and reproduced in real time. Ex. 1005 ¶ 1. According to Imai, real time encoding, transmitting, and decoding can present several problems though. *Id.* ¶¶ 3–5. 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. *Id.* ¶ 3. The hardware capabilities or decoding method of the receiving device can also slow down real time decoding of the received signals. *Id.* ¶ 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. *Id.* ¶ 7. The digital signals Imai is particularly concerned with are audio signals, and the plurality of coding methods can include PCM, ADPCM, layers 1, 2, 3, of MPEG, ATRAC, ATRAC2, and HVXC. *Id.* ¶ 67. The factors that can affect which coding method is used include the processing capability of the receiving device (*see id.* at Fig. 9, ¶¶ 88–99), transmission rate of the network (*see id.* ¶¶ 145–166), and the audio content of the audio signals (*see id.* ¶¶ 101–102). For example, Imai describes a situation where the audio signal is predominantly voice, in which case HVXC

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<sup>7</sup> The original application is in Japanese and provided in the record as Exhibit 1004. A certified English language translation of Imai is provided in the record as Exhibit 1005. All citations to Imai in the Petition, Preliminary Response, and this Decision are made to Exhibit 1005.

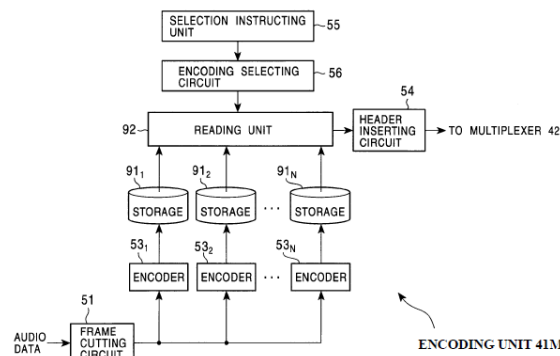
may be appropriately used as the coding method. *Id.* ¶ 102. On the other hand, if the audio signal is predominantly instrument sounds, then ATRAC may be appropriately used as the coding method. *Id.*

One embodiment of a coding unit in Imai is illustrated in Figure 5, reproduced below.



As shown above in Figure 5, audio signals are encoded using a chosen encoder 53<sub>1</sub>-53<sub>N</sub>. *Id.* ¶ 66, Fig. 5. According to Imai, the encoders are constructed to encode the audio signal with different coding methods from each other. *Id.* ¶ 67. Selection instructing unit 55 then decides the appropriate coding methods corresponding to encoders 53<sub>1</sub> to 53<sub>N</sub>, and instructs encoding selecting circuit 56 to select the decided coding method. *Id.* ¶ 70. Imai discloses that switch 52 may be changed midway through a sequence of continued encoding of the audio signal, so one portion audio signal is encoded with one coding method while another part of the audio signal is encoded with another coding method. *Id.* ¶ 72. Imai further discloses that header inserting circuit 54 adds, to the coded data of each frame, an ID indicating the coding method selected to encode the frame. *Id.* The coded data added with the ID in header inserting circuit 54 is supplied to multiplexing unit 42 and transmitted to a client. *Id.* ¶ 74.

Another embodiment of a coding unit in Imai is illustrated in Figure 16, reproduced below. *See, e.g., id.* ¶¶ 165–171



As shown above in Figure 16, the audio signal is encoded into coded data by encoders 53<sub>1</sub>–53<sub>N</sub> and store in storage 91<sub>1</sub>–91<sub>N</sub>. *Id.* ¶ 167. According to Imai, when a request for an audio signal is issued from client terminal 3, encoding selecting circuit 56 controls read-out unit 92 in accordance with an instruction based on the encoding schedule provided from selection instructing unit 55. *Id.* ¶ 169.

## 2. Analysis of Cited Art as Applied to Independent Claim 1

- a. “a plurality of different asymmetric data compression encoders, wherein each asymmetric data compression encoder of the plurality of different asymmetric data compression encoders is configured to utilize one or more data compression algorithms”

Independent claim 1 recites “a plurality of different asymmetric data compression encoders, wherein each asymmetric data compression encoder of the plurality of different asymmetric data compression encoders is configured to utilize one or more data compression algorithms. . . .”  
Ex. 1001, 20:58–63.

Petitioner contends Imai teaches this limitation, because Imai discloses “a plurality of coding methods corresponding to the encoders 53<sub>1</sub> to 53<sub>N</sub>” and “[the] encoders 53<sub>1</sub> to 53<sub>N</sub> employ ‘different coding methods from each other’ and are thus different encoders.” Pet. 16 (citing Ex. 1005 ¶ 67; Ex. 1003 ¶ 113). According to Petitioner, “Imai’s encoders comprise a

plurality of different *asymmetric* data compression encoders that utilize data compression algorithms” because the cited “MPEG layers 1, 2, and 3, and the ATRAC and ATRAC 2 compression algorithms are each different asymmetric data compression algorithms that are each used by Imai’s encoders.” *Id.* at 17 (citing Ex. 1005 ¶¶ 67, 70; Ex. 1003 ¶¶ 117–118).

Petitioner further contends that Imai’s teaching is equally applicable to video. *Id.* at 19 (citing Ex. 1005 ¶ 172). According to Petitioner, a person of ordinary skill in the art would have known to use Imai’s teachings for video data because video is an “asymmetric application” that realizes the same benefits from compression with asymmetric encoders and algorithms as other media, such as audio. *Id.* at 19 (citing Ex. 1003 ¶¶ 122–123; Ex. 1012, 5). Petitioner notes that asymmetric application for compression/decompression was known in the art because the MPEG family of audio compression algorithms, discussed in Imai, uses a slow, complex algorithm for compression and a simpler algorithm for decompression. *Id.* (citing Ex. 1003 ¶ 120; Ex. 1009, 81; Ex. 1010, 7).

Patent Owner does not address specifically this limitation of independent claim 1, but nonetheless the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

At this stage of the proceeding and based on the record before us, we are persuaded Petitioner has shown adequately for purposes of institution that Imai’s disclosure of “a plurality of coding methods corresponding to the encoders 53<sub>1</sub> to 53<sub>N</sub>” where encoders 53<sub>1</sub> to 53<sub>N</sub> use “different coding methods from each other” satisfies the challenged claim limitation.

- b. *“first asymmetric data compression encoder” “configured to compress data blocks containing video or image data at a higher data compression rate than” a “second asymmetric data compression encoder”*

Claim 1 recites “wherein a first asymmetric data compression encoder of the plurality of different asymmetric data compression encoders is configured to compress data blocks containing video or image data at a higher data compression rate than a second asymmetric data compression encoder of the plurality of different asymmetric data compression encoders.” Ex. 1001, 20:64–21:3.

Petitioner contends Imai renders this limitation obvious because Imai teaches using a plurality of asymmetric data compression encoders 53<sub>1</sub> to 53<sub>N</sub>. Pet. 20. Petitioner argues that a person of ordinary skill in the art would have found it obvious that “a first encoder of a plurality of asymmetric data compression encoders in Imai would compress data blocks at a higher data compression rate than a second encoder for several reasons.” *Id.* Petitioner notes that the ’477 patent uses the term “data compression rate” to refer to the execution or algorithmic speed of a compression encoder. *Id.* at 20–21 (citing Ex. 1001, 2:63–67, 8:10–18, 14:11–38; Ex. 1003 ¶ 124). Based on the disclosure of the ’477 patent, Petitioner then argues that Imai meets the claim limitation because it includes asymmetric compression encoders that have different execution speeds, and compares and contrasts different asymmetric data compression encoders in terms of their “compression rate,” and identifies several asymmetric data compression algorithms that “provide[] a high *compression rate*,” referring to MPEG layer 3 and ATRAC 2 as “example[s].” *Id.* at 21 (citing Ex. 1005 ¶ 68; Ex. 1003 ¶ 138–139).



Petitioner further argues that Imai teaches a first encoder using an asymmetric compression algorithm (MPEG layer 3) configured to compress data at a higher compression rate than a second encoder using another asymmetric algorithm (ATRAC 2). Pet. 22 (citing Ex. 1005 ¶¶ 67–69). Petitioner notes that “Imai explains that ATRAC 2 can encode at various compression rates (*e.g.*, “64 Kbps, 32K bps, 24 Kbps”).” *Id.* (citing Ex. 1005 ¶ 69; Ex. 1003 ¶¶ 139, 142). According to Petitioner, a person of ordinary skill in the art “would have appreciated from Imai’s various teachings that the different asymmetric data compression encoders have different data compression rates, with some encoders having higher rates than others.” *Id.* (citing Ex. 1003 ¶¶ 138–139). And Petitioner asserts a person of ordinary skill in the art “would have also found it obvious to select among different encoders having higher and lower data compression rates to better match the incoming data stream to the throughput of the communication channel. *Id.* at 22 (citing Ex. 1003 ¶ 143).

Petitioner then argues that although Imai’s examples are directed to audio data, “it would have been obvious to perform the step using data blocks containing video:” because Imai discloses that “the present invention is also applicable to other signals, such as *video signals*, other types of time-series signals, and signals being not in time series.” *Id.* at 24 (citing Ex. 1005 ¶ 172; Ex. 1003 ¶ 146).

Patent Owner contends Petitioner fails to specify which encoder of Imai is the “first encoder” and which one is the “second encoder” as required by the claim so Petitioner’s challenge is inadequate. Prelim. Resp. 9–10. Patent Owner further contends Petitioner fails to explain how Imai teaches a “first asymmetric data compression encoder” *configured* to compress data “at

a higher data compression rate” than the “second asymmetric data compression encoder.” *Id.* at 11–21. According to Patent Owner, the term “configured to” means that the “first encoder” must, by design, compress at a higher rate than the “second encoder.” *Id.* at 12 (citing *Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1349 (Fed. Cir. 2012) (construing “adapted to” in the narrower sense of “configured to,” “made to,” or “designed to,” rather than in the “broader sense” of “capable of” or “suitable for.”). Patent Owner then argues that the “configured to” limitation cannot be met by an accidental difference in compression rates because the invention relies on the *predictable* relationship between the compression rates of two encoders and the invention would not function if the relationship was reversed. *Id.* at 14. Patent Owner cites to the ’477 patent to support its position, because the specification describes switching from an encoder having a relatively slow compression rate to one having a “faster rate of compression” when the “throughput falls below a predetermined threshold” “so as to increase the throughput.” *Id.* (citing Ex. 1001, 8:12–18). Patent Owner argues that “[i]f the arrangement or configuration of the encoders were reversed, the opposite would occur: the system would switch from the relatively fast encoder to the relatively slow encoder, *reducing* the throughput and *exacerbating* the bottleneck it was seeking to alleviate.” *Id.* Patent Owner concludes that the mere possibility that Imai may have encoders with different compression rates fails to meet the required “configured to” limitation. *Id.* at 17–18.

Patent Owner further contends that the Petition fails to show Imai teaches compression rates (i.e., speed of compression measured by input data compressed per unit of time). Prelim. Resp. 18–19. According to Patent

Owner, the cited teachings do not pertain to the encoders' "compression rate" and fails to show the use of encoders with varying compression rates. *Id.* at 20–21. Patent Owner further asserts that the Petition points to no evidence of Imai teaching lowering the output rate by modifying the speed of compression, as Claim 1 requires or offering any reason why a person of ordinary skill in the art would solve the problem of a slow network by varying the compression rate as opposed to the compression ratio. *Id.* at 22. Patent Owner argues that the Petition's suggested approach of modifying the speed of compression would be ineffectual at best and counterproductive at worst in view of Imai's solution of increasing the degree of compression. *Id.* at 23.

At this stage of the proceeding, we are not persuaded by Patent Owner's arguments because Petitioner has identified Imai's teachings regarding encoders 53<sub>1</sub> to 53<sub>N</sub> that are specifically "constructed" to encode a signal use "different coding methods from each other." *See* Pet. 20–22; Ex. 1005 ¶ 67. We are satisfied by the Petition's citations to these encoders and Imai's teachings regarding the function of encoders 53<sub>1</sub> to 53<sub>N</sub> that would render one of them a "first encoder" and another one a "second encoder" are required by the claim. *See* Ex. 1005 ¶¶ 67–69. Imai specifically discloses that the encoders are constructed to encode the audio signal with different coding methods from each other, thus, the different rates of encoding would not be happenstance. *Id.* ¶ 67. Imai then discloses a plurality of coding methods with different compression speeds, such as PCM, ADPCM, layers 1, 2, 3, of MPEG, ATRAC, ATRAC2, and HVXC. *Id.* Imai also teaches that selection instructing unit 55 decides the appropriate coding methods corresponding to encoders 53<sub>1</sub> to 53<sub>N</sub>, and instructs encoding selecting circuit

56 to select the decided coding method. *Id.* ¶ 70. We also find Petitioner’s rationale for selecting different encoders in Imai with higher and lower data compression rates to better match the transmission rate of the communication channel (*see* Pet. 22) to be adequate for institution. Accordingly, at this stage of the proceeding and based on the record before us, we are satisfied Petitioner has shown adequately that Imai teaches a “first encoder” that is “configured to” compress data “at a higher data compression rate” than the “second asymmetric data compression encoder.” *See* Ex. 1003 ¶¶ 124–147.

Thus, we are satisfied for purposes of institution that Imai teaches “wherein a first asymmetric data compression encoder of the plurality of different asymmetric data compression encoders is configured to compress data blocks containing video or image data at a higher data compression rate than a second asymmetric data compression encoder of the plurality of different asymmetric data compression encoders” as required by challenged claim 1.

*c. “one or more processors configured to”*

Claim 1 recites “one or more processors configured to . . .” Ex. 1001, 21:4. Petitioner contends this limitation is met by Imai because Imai teaches that its “CPU 12 decides which one of the coding methods executed in the encoders 531 to 53n is used.” Pet. 25 (citing Ex. 1005 ¶ 100). According to Petitioner, a person of ordinary skill in the art “would have understood that Imai’s CPU is a controller that is configured to execute the compression and transmission functions of the server.” *Id.* (citing Ex. 1003 ¶ 148).

Patent Owner does not address specifically this limitation of independent claim 1, but nonetheless the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

At this stage of the proceeding and based on the record before us, we are persuaded Petitioner has shown adequately for purposes of institution that Imai's disclosure of "CPU 12" where CPU 12 "decides which one of the coding methods executed in the encoders 53<sub>1</sub> to 53<sub>n</sub> is used" satisfies the challenged claim limitation. *See* Ex. 1005 ¶ 100, Fig. 2.

- d. "determine one or more data parameters, at least one of the determined one or more data parameters relating to a throughput of a communications channel measured in bits per second"*

Claim 1 recites "determine one or more data parameters, at least one of the determined one or more data parameters relating to a throughput of a communications channel measured in bits per second." Ex. 1001, 21:5–8. Petitioner contends this limitation is met by Imai because Imai selects a coding method that impact the transmission rate of the communication channel used to transmit the coded data from server to client, which varies due to the amount of traffic being sent across the channel and impacts the ability of the client to reproduce the transmitted signals in real-time. Pet. 26 (citing Ex. 1005 ¶¶ 145, 146, 149; Ex. 1003 ¶¶ 150–152). Petitioner argues that the "transmission rate" of the network in Imai is a measure of a throughput of a communication channel. *Id.* (citing Ex. 1003 ¶ 152). Thus, according to Petitioner, the determined transmission rate of the network is a data parameter relating to a throughput of the communication channel or network, and Imai measures this determined data parameter in bits per second. *Id.* at 26–27 (citing Ex. 1003 ¶¶ 151–153).

Patent Owner does not address specifically this limitation of independent claim 1, but nonetheless the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

At this stage of the proceeding and based on the record before us, we are persuaded Petitioner has shown adequately for purposes of institution that the “determined transmission rate of the network” is a data parameter relating to a throughput of the communication channel or network and Imai’s measuring of this determined data parameter in bits per second satisfies the challenged claim limitation. *See* Ex. 1005 ¶¶ 145, 146, 149.

*e. “select one or more asymmetric data compression encoders from among the plurality of different asymmetric data compression encoders based upon, at least in part, the determined one or more data parameters”*

Claim 1 recites “select one or more asymmetric data compression encoders from among the plurality of different asymmetric data compression encoders based upon, at least in part, the determined one or more data parameters.” Ex. 1001, 21:9–13.

Petitioner contends this limitation is met by Imai because Imai teaches selection instructing unit 55 that selects an appropriate “one from a plurality of coding methods corresponding to the encoders 53<sub>1</sub> to 53<sub>N</sub> . . . and then instructs the encoding selecting circuit 56 to select the decided coding method.” Pet. 27 (citing Ex. 1005 ¶ 70). According to Petitioner, Imai selects a specific encoder from the plurality of encoders based on the transmission rate of the communication channel used to transmit coded data. *Id.* at 27–28 (citing Ex. 1005 ¶¶ 146, 152, 154–160; Ex. 1003 ¶ 154).

Patent Owner does not address specifically this limitation of independent claim 1, but nonetheless the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

At this stage of the proceeding and based on the record before us, we are persuaded Petitioner has shown adequately for purposes of institution that

the Imai's selection instruction unit 55 selects an appropriate encoder based on a data parameter, which is the transmission rate of the communication channel, and thereby satisfies the challenged claim limitation. *See* Ex. 1005 ¶¶ 146, 152, 154–160. Accordingly, we conclude Petitioner has established a reasonable likelihood it would prevail in showing that challenged independent claim 1 would have been obvious under 35 U.S.C. § 103 in view of Imai.

*3. Analysis of Cited Art as Applied to Dependent Claims 3–5 and 12–14*

Petitioner contends dependent claims 3–5 and 12–14 of the '477 patent are unpatentable under 35 U.S.C. § 103 as obvious in view of by Imai and provides specific arguments for each challenged claim. Pet. 28–35 (citing Ex. 1003 ¶¶ 155–165). Patent Owner does not address the additional limitations of dependent claims 3–5 and 12–14, but the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

We have considered carefully all arguments and supporting evidence in light of the limitations recited in challenged dependent claims 3–5 and 12–14. At this stage of the proceeding, we are persuaded that Petitioner's analysis as supported by Dr. Storer's testimony is sufficient for institution regarding the specific limitations recited in these claims. Accordingly, we conclude Petitioner has established a reasonable likelihood it would prevail in showing that challenged dependent claims 3–5 and 12–14 would have been obvious under 35 U.S.C. § 103 in view of Imai.

*E. Alleged Obviousness of Claims 1, 3–6, and 9–14 of the '477 Patent in View of Pauls*

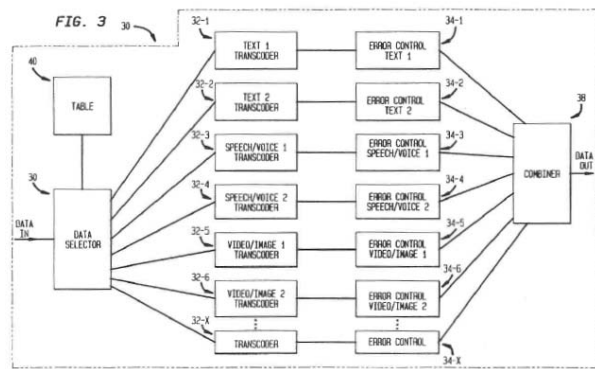
Petitioner contends claims 1, 3–6, and 9–14 of the '477 patent are unpatentable under 35 U.S.C. § 103(a) in view of Pauls. Pet. 46–52. Patent Owner disputes Petitioner's contentions. Prelim. Resp. 27–34. For reasons that follow, we determine Petitioner has demonstrated a reasonable likelihood of prevailing as to the challenged claims.

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

Pauls is a European Patent Application Publication titled “Adaptive communication data formatting,” and directed to improving data transfer performance over data networks using adaptive communication formatting. Ex. 1007, Title (54), Abstract (57). Pauls discloses that adaptive communication formatting includes encoding (or compressing) data and applying error control schemes to reduce the amount of data being transmitted and to correct/conceal errors occurring during data transmission. *Id.* at Abstract (57). Pauls further discloses that data is formatted using a mixture of transcoding techniques and error control schemes. *Id.* ¶ 9. Pauls provides a list of different encoding algorithms that can be used. *Id.* ¶ 10. Pauls teaches that the particular transcoding techniques used to format the data should be adaptive to factors, such as the nature of the new, the preferences of the users, and the data type. *Id.* ¶ 12.

One embodiment of Pauls's system is illustrated in Figure 3, reproduced below.





Pauls’s access server 20 includes data selector 30, a plurality of text/speech/voice/video/image transcoding techniques 32-n, a plurality of error control schemes 34-n, and combiner 38 for multiplexing formatted data. *Id.* ¶¶ 19, 20.

Examples of transcoding techniques and error control schemes used in Pauls are listed in Figure 5, reproduced below.

50 FIG. 5

DATA TYPE	SUB-TYPES (BIT RATE)	TRANSCODER ENCODING ALGORITHMS (BIT RATE)	ADAPATION LAYERS
SPEECH/VOICE	AUDIO (256 Kbps) WAVE (84 Kbps) SPEECH (32 Kbps)	VCELP (8Kbps) VSELP (8Kbps) EDRU (4-8 Kbps)	HYBRID APO ERROR CONCEALMENT (MUTING)
VIDEO/IMAGE	TIFF GIF MPEG (1.5Mbps) MPEG2 (12.0 Mbps)	H.263 (8-24 Kbps)	HYBRID APO ERROR CONCEALMENT (INTERPOLATION)
TEXT	ASCII HEX/HEX	GZIP PKZIP	APO

Figure 5 illustrates chart 50, which shows data sub-types and their associated bit rates, encoding algorithms and the bit rate of the data after encoding (or compression), and error control schemes. Ex. 1007 ¶ 24. Pauls teaches that data with an audio sub-type has a 256 Kbps bit rate. *Id.* According to Figure 5 of Pauls, “[i]f a transcoding technique with a VCELP encoding algorithm is used to encode the audio data, the bit rate can be reduced to 8 Kbps.” *Id.*

*2. Analysis of Cited Art as Applied to Independent Claim 1*

Claim 1 recites “wherein a first asymmetric data compression encoder of the plurality of different asymmetric data compression encoders is configured to compress data blocks containing video or image data at a higher data compression rate than a second asymmetric data compression encoder of the plurality of different asymmetric data compression encoders.” Ex. 1001, 20:64–21:3.

Petitioner contends Pauls renders this limitation obvious because Pauls teaches a plurality of encoders 32-n that use different encoding algorithms depending on the type of data to be encoded and Pauls teaches compressing data blocks containing video or image data. Pet. 36–37, 38. Petitioner argues that Pauls teaches using a first asymmetric data compression encoder and a second asymmetric data compression encoder where the encoders compress video and image data at higher and lower data compression rates. *Id.* at 39. According to Petitioner, Pauls identifies several asymmetric data compression algorithms and a person of ordinary skill in the art would have appreciated that each algorithm would have different relative rates of compression. *Id.* Accordingly, Petitioner concludes that Pauls must teach the limitation because “it is only a remote possibility that any two different asymmetric data compression encoders would have the same execution speed.” *Id.* at 40 (citing Ex. 1003 ¶¶ 176–178).

Petitioner relies on the testimony of Dr. Storer to support its position. Dr. Storer testifies that “H.263, MPEG, and MPEG2 are asymmetric data compression algorithms identified by Pauls.” Ex. 1003 ¶ 175. Dr. Storer cites to Pauls’s Figure 5 for teaching that “H.263 renders video at a bit rate of 8-24 Kbps, MPEG renders video at a bit rate of 1.5 Mbps, and MPEG2

renders video at a bit rate of 2.0 Mbps. *Id.* ¶ 176 (citing Ex. 1007, Fig. 5). According to Dr. Storer, a person of ordinary skill in the art “would have appreciated that each of these well-known and widely used video compression standards have different relative rates of compression, with MPEG having the lowest compression ratio and MPEG2 and H.263 having relatively higher compression ratios. *Id.* (citing Ex. 1019, 7–9 (comparing average compression ratios for MPEG, MPEG2, and H.263)). Dr. Storer testifies that “an encoder implementing any one of these compression algorithms would have a different execution speed from another encoder that implements a different one of the compression algorithms, and therefore at least one encoder would perform at a higher data compression rate.” *Id.* ¶ 177.

Patent Owner contest Petitioner’s position arguing that Pauls fails to teach (1) “compression rates” as defined by Petitioner or (2) encoders that are “configured to compress data blocks containing video or image data at a higher data compression rate than a second asymmetric data compression encoder.” Prelim. Resp. 26–38. According to Patent Owner, the Petition only points to Pauls’s disclosures regarding compression ratios not rates. *Id.* at 26–27. Patent Owner also takes issues with the Petitioner reliance on encoders that just happen to have different speeds but fail to demonstrate a deliberate configuration that requires different encoders have different compression speeds. *Id.* at 28.

At this stage of proceeding, based on the teachings of Pauls and the testimony of Dr. Storer, we are satisfied Petitioner’s analysis is adequate for purposes of institution. Specifically, we credit Dr. Storer’s testimony regarding the compression rates of the asymmetric algorithms of MPEG,

MPEG2, and H.263 and the impact of such rates. *See* Ex. 1003 ¶¶ 175–178. Pauls does not explicitly require that the encoder use different encoding methods or different encoding rates, but it does disclose that “[e]ach of the aforementioned encoding algorithms have associated different levels or percentages of compression.” Ex. 1007 ¶ 10. Although we agree with Patent Owner that Petitioner provides minimal explanation as to how or why the bit rate would be different for different encoders that compress video/image data in the same format (e.g., both data sets are MPEG), we credit the testimony of Dr. Storer that a person of ordinary skill in the art at the time of the invention would have understood that two different encoders (e.g., encoders that implement different compression algorithms) would have a different execution/algorithmic speed. Accordingly, based on the record before us currently, we determine Petitioner has met its burden to establish a reasonable likelihood it would prevail in showing that challenged independent claim 1 would have been obvious under 35 U.S.C. § 103 in view of Pauls.

*3. Analysis of Cited Art as Applied to Dependent Claims 3–6 and 9–14*

Petitioner contends dependent 3–6 and 9–14 of the ’477 patent are unpatentable under 35 U.S.C. § 103 as obvious in view of Pauls. Pet. 43–51 (citing Ex. 1003 ¶¶ 186–204). Patent Owner does not address the additional limitations of dependent claims 3–6 and 9–14, but the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

We have considered carefully all arguments and supporting evidence in light of the limitations recited in challenged dependent claims 3–6 and 9–14. For the reasons given with regard to independent claim 1, we are

persuaded that Petitioner's arguments and analysis are sufficient for institution. Accordingly, we conclude Petitioner has established a reasonable likelihood it would prevail in showing that challenged dependent claims 3–6 and 9–14 are obvious under 35 U.S.C. § 103 in view of Pauls.

*F. Alleged Obviousness of Claims 1, 3–6, and 9–14 of the '477 Patent in View of Imai and Pauls*

Petitioner contends claims 1, 3–6, and 9–14 of the '477 patent are unpatentable under 35 U.S.C. § 103(a) in view of Imai and Pauls. Pet. 52–59. Patent Owner disputes Petitioner's contentions. Prelim. Resp. 29–42. For reasons that follow, we determine Petitioner has demonstrated a reasonable likelihood of prevailing as to the challenged claims.

*1. Prior Art Overview*

*a. Overview of Imai (Ex. 1005)*

*See supra* Section II.D.1.

*b. Overview of Pauls (Ex. 1007)*

*See supra* Section II.E.1.

*2. Analysis of the Prior Art as Applied to Independent Claim 1*

Petitioner provides the combination of Imai with Pauls in the event that the Board does not find Imai adequately teaches video compression, which is taught expressly by Pauls. Pet. 52. Petitioner purportedly maps each claim limitation to the cited references. *Id.* at 54–59. Patent Owner contests Petitioner's position argues that the combined reference fail to remedy the shortcomings of the individual references. Prelim. Resp. 37–39. For the reasons provided above with the regards to Imai and Pauls individually, we are satisfied Petitioner has provided adequate analysis and evidence for purposes of institution.

### *3. Rationale to Combine Imai and Pauls*

Petitioner contends a person of ordinary skill in the art would have many motivations to combine Imai and Pauls, because both references (1) are used for the same purpose: encoding data at a server for transmission to a client over a distributed network such as the Internet, (2) teach encoding data using asymmetric encoding methods, (3) choose an encoding method based upon the type of data being transmitted, (4) choose an encoding method based upon a throughout of the communications channel connecting the client, and (5) implement their inventions on known computer systems. *Id.* According to Petitioner, although most of Imai is directed to audio signal, it mentions the applicability to video signals, so a person of ordinary skill in the art would have look to other references directed to video encoding techniques such as those taught by Pauls. *Id.* at 52–53.

Petitioner argues that a person of ordinary skill in the art would have been motivated to combine the systems of Imai and Pauls to utilize the numerous video and image data compression encoders of Pauls to enable video compression in Imai’s system. *Id.* at 53 (citing Ex. 1003 ¶¶ 211–214). Petitioner relies on the testimony of Dr. Storer to support its position. Specifically, Dr. Storer testifies that “Imai and Pauls’ teachings are presented in such a manner that generic encoders can be readily swapped in and out of the configuration.” Ex. 1003 ¶ 211. Dr. Storer further testifies that the encoders disclosed in Imai are ones that could have been “easily modified or replaced to include the compression algorithms of Pauls, and Imai’s teachings are structured to support such a configuration.” *Id.*

Petitioner further argues that a person of ordinary skill in the art would have been motivated to apply Imai’s detailed teachings regarding

determining the bandwidth of a communication channel to Pauls' system that selects from multiple video data compression encoders to fine-tune Pauls' video transmission system. *Id.* (citing Ex. 1003 ¶ 212). According to Petitioner, a person of ordinary skill in the art would have had a reasonable expectation of success in combining the teachings of Imai and Pauls and also would have achieved predictable results from the combination. *Id.*

Patent Owner contests Petitioner's position, arguing that Petitioner fails to provide an adequate rationale as to why a person of skill in the art would combine the system of Imai with the specific encoders of Pauls. Prelim. Resp. 30–31. Patent Owner further argues that Petitioner provides no analysis regarding the combination of Imai and Pauls but, rather, offers only conclusory statements that Imai could be modified for video encoding and that a person of ordinary skill in the art would use the encoders taught by Pauls. *Id.* at 31.

We have considered carefully all arguments and supporting evidence regarding the rationale for combining Imai and Pauls. At this stage of the proceeding, we find Petitioner provides an adequate reason that a person of skill in the art would have combined the teachings from the cited prior art to arrive at the inventions recited in the challenged claims. A motivation to combine may be found “explicitly or implicitly in market forces; design incentives; the ‘interrelated teachings of multiple patents’; ‘any need or problem known in the field of endeavor at the time of invention and addressed by the patent’; and the background knowledge, creativity, and common sense of the person of ordinary skill.” *ZUP, LLC v. Nash Mfg., Inc.*, 896 F.3d 1365, 1371 (Fed. Cir. 2018) (quoting *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1354 (Fed. Cir. 2013)). As Petitioner and Petitioner's

declarant, Dr. James Storer, argue both references are used for the same purpose: encoding data at a server for transmission to a client over a distributed network such as the Internet. Pet. 52 (citing Ex. 1003 209). Additionally, they both teach (1) encoding the data using encoding methods that achieve data compression using asymmetric techniques, (2) choosing an encoding method based upon the type of data being transmitted, and (3) choosing the encoding method based upon a throughout of the communications channel connecting the client. *Id.* Based on the current record, Petitioner appears to bring in Pauls to provide a more explicit teaching of asymmetric compression encoders for Imai's system using compression algorithms directed to video or image data blocks because Pauls teaches use of well-known compression techniques for video data compression. We specifically credit the testimony of Dr. Storer regarding the ease with which a person of ordinary skill in the art could have modified or replaced the encoders disclosed in Imai to include the compression algorithms of Pauls, especially in light of Imai's suggestion to use its system for video data compression. *See* Ex. 1003 ¶ 211. Given Imai's express teaching regarding the use of video compression encoders in its system, and the fact that both audio and video compression techniques were similar and well-known, we agree with Petitioner that a person of ordinary skill would have been motivated to turn to Pauls' video compression encoders for use with Imai's system. *See Realtime Data, LLC v. Iancu*, No. 2018-1154, 2019 WL 149835, at \*5 (Fed. Cir. Jan. 10, 2019) (finding the Board had sufficient evidence for a motivation to combine references where the second reference was "well known," the techniques taught in the two references "share[d] striking similarities," and one reference "suggests that a wide variety of



adaptive compression algorithms could be used and encourages a person having ordinary skill in the art to turn to ‘well known’ algorithms such as [the other reference’s]”).

Accordingly, on this record and for purposes of this Decision, we are persuaded Petitioner presents sufficient evidence to establish a reasonable likelihood it would prevail in showing that claims 1, 3–6, and 9–14 would have been obvious under 35 U.S.C. § 103 in view of Imai and Pauls.

*G. Alleged Obviousness of Claims 2, 11, 20–22, and 25–27 of the ’477 Patent in View of Imai, Pauls, and Chao*

Petitioner contends claims 2, 11, 20–22, and 25–27 of the ’477 patent are unpatentable under 35 U.S.C. § 103(a) in view of Imai and Pauls. Pet. 59–66. Patent Owner disputes Petitioner’s contentions. Prelim. Resp. 42–47. For reasons that follow, we determine Petitioner has demonstrated a reasonable likelihood of prevailing as to the challenged claims.

*1. Prior Art Overview*

*a. Overview of Imai (Ex. 1005)*

*See supra* Section II.D.1.

*b. Overview of Pauls (Ex. 1007)*

*See supra* Section II.E.1.

*c. Overview of Chao (Ex. 1016)*

Chao is a U.S. patent titled “System and Method for Image Compression and Decompression.” Ex. 1016, Title. Chao is directed to a system for compressing video or image data employed in “‘video on demand’ systems, such as video servers” for “streaming video” in “realtime.” *Id.* at

4:29–35.<sup>8</sup> Chao’s video data is compressed using an entropy coding technique of either “arithmetic, run length, or Huffman encoding.” *Id.* at 7:5–8. Chao also teaches having a particular entropy compression algorithm applied where it is “selected at run-time by the user, based on the desired compression ratio and the amount of time required to get the selected level of compression.” *Id.* at 14:19–22.

2. *Analysis of the Prior Art as Applied to Claims 2, 11, 20–22, and 25–27*

Petitioner provides the combined teachings of Imai and Pauls with Chao to address specific limitations recited in certain dependent claims. Pet. 59–66. Petitioner purportedly maps each claim limitation to the cited references. *Id.* Specifically, Petitioner relies on Chao to meet limitation requiring the use of arithmetic algorithms. *Id.* at 59. Petitioner further notes that Pauls teaches using arithmetic compression algorithms, including H.263 and JPEG which both utilize an arithmetic algorithm in their respective arithmetic coding modes. *Id.* at 60 (citing Ex. 1007 ¶ 10; Ex. 1020, 69–76 (describing Arithmetic Coding mode of H.263 standard); Ex. 1008, 32 (“JPEG uses two techniques for entropy coding: Huffman coding and arithmetic coding.”), 49; Ex. 1003 ¶ 229).

Patent Owner contests Petitioner’s position argues that the combined references fail to remedy the shortcomings of the individual references. Prelim. Resp. 37–39. For the reasons provided above with the regards to Imai and Pauls individually, and because we agree Chao teaches use of

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<sup>8</sup> To avoid confusion, citation format uses page numbers added to the exhibit by Petitioner.

arithmetic algorithms, we are satisfied Petitioner has provided adequate analysis and evidence for purposes of institution.

*3. Rationale to Combine Imai, Pauls, and Chao*

As discussed previously in Section II.F.2., Petitioner contends one of ordinary skill would have been motivated to combine the teachings of Imai with Pauls in order to extend Imai's system to video data, as taught by Pauls. Pet. 52–53. Petitioner further contends a person of ordinary skill in the art would have known of arithmetic data compression encoders, understood the benefits of such an effective technique, and known that such encoders could be used to complement or as a substitute to other well-known asymmetric encoders used in Imai and Pauls. *Id.* at 60 (citing Ex. 1003 ¶ 228).

According to Petitioner, a person of ordinary skill in the art would have been motivated to combine Chao's arithmetic video data compression encoder with the systems of Imai and Pauls for several reasons: (1) Chao states that “an advantage of the present invention [is] to provide a system and method of a wavelet-based image compression that is suitable for both still and video images.” (*id.* at 62 (citing Ex. 1016, 6:27–30)); and (2) it would have been obvious to substitute Chao's video encoder for Pauls' H.263 video encoder because it would be a simple substitution of one encoder for another to obtain the benefits from using an arithmetic coder (*id.* at 63 (citing Ex. 1018, 14–15)). Petitioner asserts that “[t]he substitution is also reasonable because Pauls' H.263 is an asymmetric video encoder that has an optional arithmetic coding mode.” *Id.* (citing Ex. 1003 ¶ 235).

Patent Owner contests Petitioner's position, arguing that Petitioner fails to provide an adequate rationale as to why a person of skill in the art would combine the system of Imai with the specific encoders of Pauls.

Prelim. Resp. 30–31. Patent Owner further argues that Petitioner provides no analysis regarding the combination of Imai and Pauls but, rather, offers only conclusory statements that Imai could be modified for video encoding and that a person of ordinary skill in the art would use the encoders taught by Pauls. *Id.* at 31.

We have considered carefully all arguments and supporting evidence regarding the rationale for combining Imai and Pauls with Chao. At this stage of the proceeding, we are persuaded by Petitioner’s analysis that a person of skill in the art would have had reason to combine the cited prior art and would have arrived at the claimed inventions recited in the challenged claims for the same reasons provided above in Section II.F.2., and because Chao demonstrates that certain algorithms taught in Pauls are replaced easily with arithmetic algorithms such as the asymmetric entropy compression algorithm of Chao as required by the challenged claims. *See* Ex. 1016, 5:3–9, 14:16–23; Ex. 1003 ¶¶ 232–234).

Accordingly, on this record and for purposes of this Decision, we are persuaded Petitioner presents sufficient evidence to establish a reasonable likelihood it would prevail in showing that claims 2, 11, 20–22, and 25–27 would have been obvious under 35 U.S.C. § 103 in view of Imai, Pauls, and Chao.

### III. CONCLUSION

For the foregoing reasons, we determine Petitioner has demonstrated there is a reasonable likelihood it would prevail in establishing the unpatentability of claims 1–6, 9–14, 20–22, and 25–27 of the ’477 patent as (1) obvious in view of Imai, (2) obvious in view of Pauls, and (3) obvious in view of Imai and Pauls. We further determine Petitioner has demonstrated

there is a reasonable likelihood it would prevail in establishing the unpatentability of claims 2, 11, 20–22, and 25–27 of the '477 patent as obvious in view of Imai, Pauls, and Chao.

At this stage of the proceeding, the Board has not made a final determination as to the patentability of any challenged claim.

#### IV. ORDER

For the reasons given, it is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted as to claims 1–6, 9–14, 20–22, and 25–27 of the '477 patent on all grounds presented in the Petition, namely:

- (1) Claims 1, 3–5, 12–14 under 35 U.S.C. § 103 as unpatentable over Imai;
- (2) Claims 1, 3–6, 9–14 under 35 U.S.C. § 103 as unpatentable over Pauls;
- (3) Claims 1, 3–6, 9–14 under 35 U.S.C. § 103 as unpatentable over Imai and Pauls; and
- (4) Claims 2, 11, 20–22, 25–27 under 35 U.S.C. § 103 as unpatentable over Imai, Pauls, and Chao;

FURTHER ORDERED that the trial is limited to the grounds identified above, and no other grounds are authorized; and

FURTHER ORDERED that 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, the trial commencing on the entry date of this Decision.

IPR2018-01187  
Patent 9,769,477 B2

PETITIONER:

Harper Batts  
hbatts@sheppardmullin.com

Christopher Ponder  
cponder@sheppardmullin.com

PATENT OWNER:

Joel Stonedale  
joel@noroozipc.com

William Rothwell  
william@noroozipc.com

Kayvan Noroozi  
kayvan@noroozipc.com

Neil Rubin  
nrubin@raklaw.com

Kent Shum  
kshum@raklaw.com