

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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NETFLIX, INC. and  
COMCAST CABLE COMMUNICATIONS, LLC,  
Petitioners,

v.

REALTIME ADAPTIVE STREAMING LLC,  
Patent Owner.

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Case IPR2019-00209<sup>1</sup>  
Patent 7,386,046

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**PETITIONER'S NOTICE OF APPEAL**

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<sup>1</sup> Comcast Cable Communications, LLC, which filed a petition in IPR2019-01280, has been joined as a party to this proceeding.

Petitioner Comcast Cable Communications, LLC hereby provides notice of appeal to the United States Court of Appeals for the Federal Circuit pursuant to 35 U.S.C. §§ 141, 142, and 391 and 37 C.F.R. §§ 90.2 and 90.3 from the Final Written Decision of the Patent Trial and Appeal Board on May 26, 2020 (Paper 30), the Decision Denying Petitioner’s Request for Rehearing on July 15, 2020 (Paper 32), and from all underlying orders, decisions, rulings, and opinions in IPR2019-00209. This notice is timely filed within 63 days of action on the request for rehearing. 37 C.F.R. § 90.3(b)(1).

Copies of the Final Written Decision and the Decision Denying Petitioner’s Request for Rehearing are attached.

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

1. Whether the Board erred in determining that claims 1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 26, 27, 29-32, 34, and 35 of the ’046 Patent are not unpatentable under 35 U.S.C. § 103 over Japanese Patent Application Publication No. H11331305 (“Imai”) and U.S. Patent No. 5,596,602 (“Couwenhoven”);
2. Whether the Board erred in determining that claim 24 of the ’046 Patent is not unpatentable under 35 U.S.C. § 103 over Imai, Couwenhoven, and U.S. Patent No. 5,675,789 (“Ishii”); and

3. Petitioner may also raise issues related to the Appointments Clause depending on the outcome of the pending petitions to the United States Supreme Court regarding the Federal Circuit decision in *Arthrex, Inc. v. Smith & Nephew, Inc.*, 941 F.3d 1320 (Fed. Cir. 2019).

A copy of this Notice of Appeal is being filed with the Patent Trial and Appeal Board. In addition, this Notice of Appeal is being filed, along with the required docketing fees, with the Clerk's Office for the United States Court of Appeals for the Federal Circuit.

Dated: September 14, 2020

Respectfully submitted,

/s/ James L. Day  
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Attorney for the Petitioner

**CERTIFICATE OF FILING AND SERVICE**

I hereby certify that on September 14, 2020, in addition to being filed electronically through the Patent Trial and Appeal Board's electronic filing system, the foregoing Notice of Appeal was filed by Federal Express to the Director of the United States Patent and Trademark Office at the following address:

Director of the United States Patent and Trademark Office  
c/o Office of the General Counsel  
Madison Building East, 10B20  
600 Dulany Street  
Alexandria, VA 22314-5793

In addition, I hereby certify that on September 14, 2020, the foregoing Notice of Appeal was electronically filed with the Clerk's Office of the United States Court of Appeals for the Federal Circuit.

In addition, I hereby certify that on September 14, 2020, the foregoing Notice of Appeal was served on the Patent Owner's counsel of record via email, as agreed to by Patent Owner, at the following email addresses:

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/s/ James L. Day  
James L. Day  
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September 14, 2020  
235 Montgomery Street  
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# ATTACHMENTS

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

REALTIME ADAPTIVE STREAMING LLC,  
Patent Owner.

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IPR2019-00209<sup>1</sup>  
Patent 7,386,046 B2

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Before GEORGIANNA W. BRADEN, GREGG I. ANDERSON, and  
CHRISTA P. ZADO, *Administrative Patent Judges*.

BRADEN, *Administrative Patent Judge*.

JUDGMENT  
Final Written Decision  
Determining No Challenged Claims Unpatentable  
*35 U.S.C. § 318(a)*

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<sup>1</sup> Comcast Cable Communications, LLC, which filed a petition in IPR2019-01280, has been joined as a party to this proceeding.

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6, and this Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine Petitioner has not shown by a preponderance of the evidence that claims 1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 24, 26, 27, 29–32, 34, and 35 of U.S. Patent No. 7,386,046 B2 are unpatentable.

## I. INTRODUCTION

### A. *Procedural History*

Netflix, Inc., (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 24, 26, 27, 29–32, 34, and 35 of U.S. Patent No. 7,386,046 B2 (Ex. 1001, “the ’046 patent”). Realtime Adaptive Streaming LLC (“Patent Owner”) timely filed a Preliminary Response (Paper 6, “Prelim. Resp.”). Pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review of all challenged claims on all proposed grounds of unpatentability. *See* Paper 7 (“Dec. to Inst.”), 34–35.

After institution of trial, Patent Owner filed a Patent Owner Response (Paper 13, “PO Resp.”), to which Petitioner filed a Reply (Paper 17, “Reply”). Patent Owner then filed a Sur-Reply (Paper 22, “PO Sur-Reply”).

An oral argument was held on February 18, 2020. A transcript of the oral argument is included in the record. Paper 29 (“Tr.”).

### B. *Real Parties-in-Interest*

Petitioner certifies that it, Netflix Streaming Services, Inc., and Hulu, LLC are real parties-in-interest. Pet. 72. Additionally, joined Petitioner, Comcast Cable Communications, LLC, certifies that it and Comcast Corporation are real parties-in-interest. *See* IPR2019-01280, Paper 1, 72.

*C. Related Matters*

Petitioner informs us of multiple pending district court proceedings involving the '046 patent, some of which involve Petitioner. Pet. 71–74. Patent Owner informs us of five pending district court proceedings involving the '046 patent. Paper 3, 2 (Patent Owner's Mandatory Notices).

*D. The '046 Patent*

The '046 patent was filed on February 13, 2001, and is titled “Bandwidth Sensitive Data Compression And Decompression.” Ex. 1001, code (54). The '046 patent issued on June 10, 2008. *Id.* at code (45).

*1. Written Description*

The specification describes systems and methods directed to “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, 7:53–56, 9:12–14. The '046 patent states “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 1:51–54. The '046 patent also states that it seeks to “provide[] a desired balance between execution speed (rate of compression) and efficiency (compression ratio).” *Id.* at 8:10–12. 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 13:46–54. The '046 patent discloses that it can resolve “bottlenecks” in the



throughput of a system by switching between different compression algorithms applied to data. *Id.* at 9:57–60.

One embodiment of the '046 patent is shown in Figure 2, reproduced below.

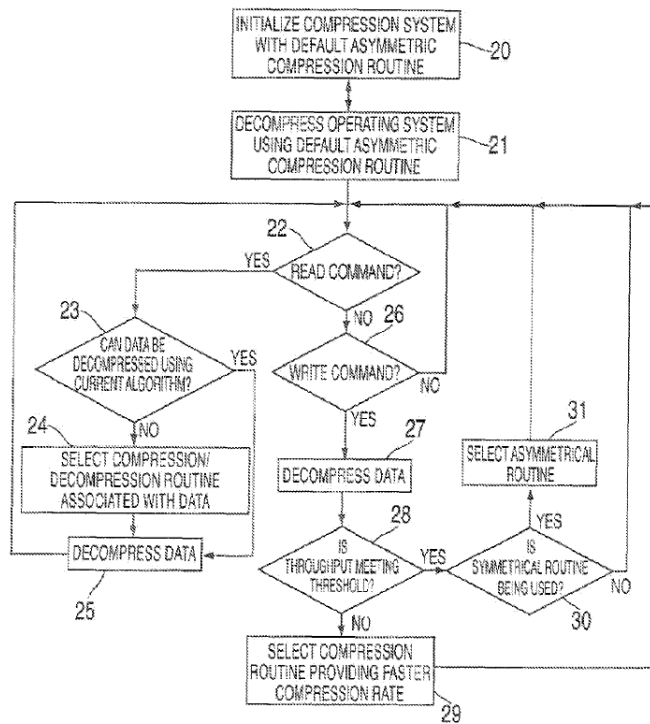


FIG. 2

Figure 2, above, illustrates a method for providing bandwidth sensitive data compression. *Id.* at 12:65–66. 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 13:4–7. According to the '046 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 13:8–18. According to the ’046 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 12:2–6. The ’046 patent notes that symmetric routines “compris[e] a fast compression routine.” *Id.* at 14:2–4. In one embodiment, the ’046 patent discloses a controller “tracks and monitors the throughput . . . of the data compression system 12.” *Id.* at 10:40–42. When the throughput of the system falls below a predetermined threshold, the system generates control signals to enable/disable different compression algorithms. *Id.* at 10:42–45.

## 2. *Illustrative Claims*

As noted above, Petitioner challenges claims 1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 24, 26, 27, 29–32, 34, and 35, with claims 1, 8, 11, 14, 17, 19, 23, 24, 26, 27, 29, 34, and 35 being independent. Independent claims 1 and 24 are illustrative of the challenged claims and are reproduced below:

1. A method comprising:  
compressing data using a first compression routine providing a first compression rate, wherein the first compression routine comprises a first compression algorithm;  
tracking the throughput of a data processing system to determine if the first compression rate provides a throughput that meets a predetermined throughput threshold, wherein said tracking throughput comprises tracking a number of pending requests for data transmission; and  
when the tracked throughput does not meet the predetermined throughput threshold, compressing data using a second compression routine providing a second compression rate that is greater than the first compression

rate, to increase the throughput of the data processing system to at least the predetermined throughput level, wherein the second compression routine comprises a second compression algorithm.

Ex. 1001, 20:14–32.

24. A system comprising:
- a data compression system for compressing and decompressing data input;
  - a plurality of compression routines selectively utilized by the data compression system;
  - a controller for tracking throughput and generating a control signal to select a compression routine based on the throughput,
- wherein when the controller determines that the throughput falls below a predetermined throughput threshold, the controller commands the data compression engine to use one of the plurality of compression routines to provide a faster rate of compression so as to increase the throughput;
- and
- a plurality of access profiles, operatively accessible by the controller, to determine a compression routine that is associated with a data type of data to be compressed.

*Id.* at 23:37–53.

*E. Evidence of Record and Asserted Challenges to Patentability*

Petitioner asserts the following grounds of unpatentability:

<b>Claim( Challenged</b>	<b>35 U.S.C. §<sup>2</sup></b>	<b>References/Basis</b>
1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 26, 27, 29–32, 34, and 35	103	Imai <sup>3</sup> and Couwenhoven <sup>4</sup>
24	103	Imai, Couwenhoven, and Ishii <sup>5</sup>

Pet. 5.

Petitioner submits (i) the Declaration of James A. Storer, Ph.D. (“Dr. Storer”) in Support of Petition for *Inter Partes* Review (Ex. 1003) and (ii) the Declaration of Sylvia D. Hall-Ellis, Ph.D (“Dr. Hall-Ellis”) (Ex. 1017) regarding the public availability of certain prior art references. Patent Owner submits the Declaration of Kenneth A. Zeger, Ph.D. (“Dr. Zeger”) in Support of Patent Owner’s Response (Ex. 2001).

## II. ANALYSIS

### *A. Legal Standards*

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

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<sup>2</sup> The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (September 16, 2011) (“AIA”), included revisions to 35 U.S.C. § 100 *et seq.* effective on March 16, 2013. Because the ’046 patent issued from an application filed before March 16, 2013, we apply the pre-AIA versions of the statutory bases for unpatentability.

<sup>3</sup> Japanese Patent Application Publication No. H11331305, published Nov. 30, 1999 (Ex. 1004, with corresponding English translation Ex. 1005, “Imai”).

<sup>4</sup> U.S. Patent No. 5,596,602, issued Jan. 21, 1997 (Ex. 1008, “Couwenhoven”).

<sup>5</sup> U.S. Patent No. 5,675,789, issued Oct. 7, 1997 (Ex. 1007, “Ishii”).

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). “[I]t is error to reach a conclusion of obviousness until all [the *Graham*] factors are considered.” *Apple v. Samsung Elecs. Co., Ltd.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc) (citations omitted). “This requirement is in recognition of the fact that each of the *Graham* factors helps inform the ultimate obviousness determination.” *Id.*

“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 final stage, we determine whether a preponderance of the evidence of record shows that the challenged claims would have been obvious over the cited prior art.

*B. 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). The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). The level of ordinary skill in the art may be reflected by the prior art of record. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *GPAC*, 57 F.3d at 1579. In a given case, one or more factors may predominate. *Id.* Generally, it is easier to establish obviousness under a higher level of ordinary skill in the art. *Innovention Toys, LLC v. MGA Entm’t, Inc.*, 637 F.3d 1314, 1323 (Fed. Cir. 2011) (“A less sophisticated level of skill generally favors a determination of nonobviousness . . . while a higher level of skill favors the reverse.”).

Petitioner argues that a person of ordinary skill in the art relevant to the '046 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 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.

Patent Owner does not contest Petitioner’s definition of a person of ordinary skill in the art, but rather adopts it “[f]or purposes of this IPR proceeding.” PO Resp. 8. Dr. Zeger also adopts Petitioner’s definition of a person of ordinary skill in the art for his analysis. Ex. 2001 ¶ 26.

Based on our review of the '046 patent, the types of problems and solutions described in the '046 patent and cited prior art, and the testimony of Dr. Storer and Dr. Zeger, 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 a master’s degree in electrical engineering, computer science, or a similar field with a specialization in data compression.”

### *C. Claim Construction*

For petitions filed before November 13, 2018, we interpret the claims of an unexpired patent that will not expire before issuance of a final written decision using the broadest reasonable interpretation in light of the

specification.<sup>6</sup> See 37 C.F.R. § 42.100(b) (2018); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016); see also Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,340 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018).

Under that standard, claim terms are presumed to be given their ordinary and customary meaning, as would have been 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 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) (overruled by *Aqua Products, Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017) on other grounds).

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<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) (now codified at 37 C.F.R. § 42.100(b) (2019)).



Our review does not identify any term whose construction is necessary to our analysis. Accordingly, we decline to construe any claim terms of the '046 patent. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’”).

*D. Alleged Obviousness of Claims 1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 26, 27, 29–32, 34, and 35 of the '046 patent in View of Imai and Couwenhoven*

Petitioner contends claims 1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 26, 27, 29–32, 34, and 35 of the '046 patent are unpatentable under 35 U.S.C. § 103 as obvious in view of Imai and Couwenhoven. Pet. 12–66; Reply 1–22. Patent Owner disputes Petitioner’s contentions. PO Resp. 14–41; Sur-Reply 1–14. For reasons that follow, we determine Petitioner has not established by a preponderance of the evidence that claims 1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 26, 27, 29–32, 34, and 35 of the '046 patent are unpatentable under 35 U.S.C. § 103 as obvious in view of Imai and Couwenhoven.

*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

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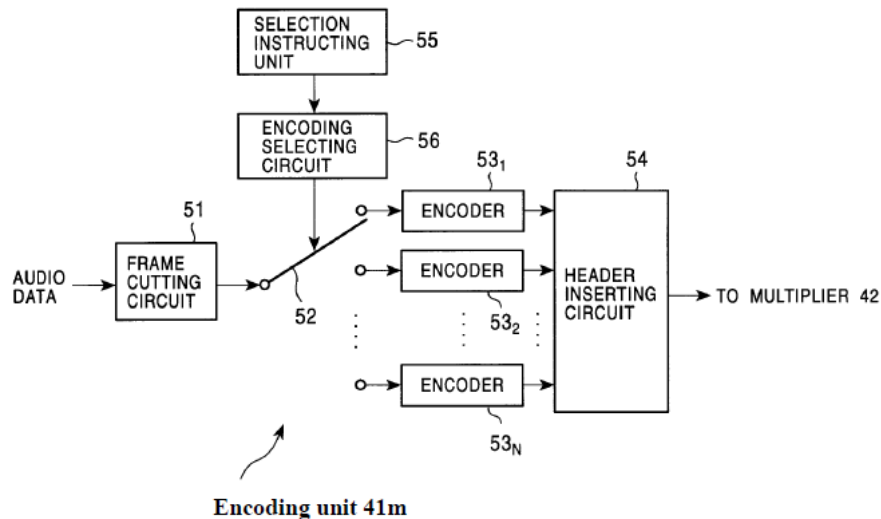
<sup>7</sup> The original application is in Japanese and provided in the record as Exhibit 1004. A certified English language translation of Imai is provided in

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. *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 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.*

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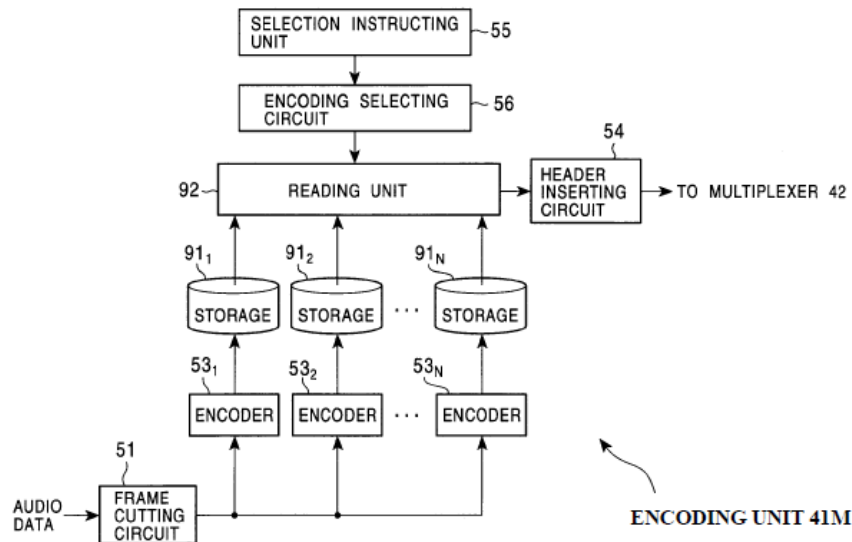
the record as Exhibit 1005. All citations to Imai in the Petition, Patent Owner Response, and this Decision are made to Exhibit 1005.

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



As shown above in Figure 5, Imai's coding unit encodes audio signals 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 of the 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  $53_1$ – $53_N$  and stored in storage  $91_1$ – $91_N$ . *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. Overview of Couwenhoven (Ex. 1008)

Couwenhoven is a U.S. Patent titled “Data Compression Rate Control Method And Apparatus.” Ex. 1008, code(54). Couwenhoven is related to data compression, specifically controlling a fixed rate output of a variable rate data compression module that is capable of operating in a number of different configurations, where the bit rate for each configuration may be controlled over some finite range by a control signal supplied by a rate controller. Ex. 1008, 1:18–24. According to Couwenhoven, “in many applications the transmission channel is a fixed rate link, which means that a

method of coupling the output of the variable rate data compression module into the fixed rate channel is required.” *Id.* at 1:42–45.

One embodiment of Couwenhoven is shown in Figure 1, reproduced below.

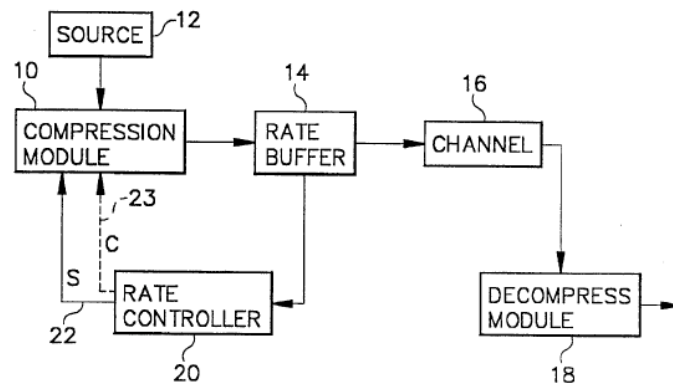
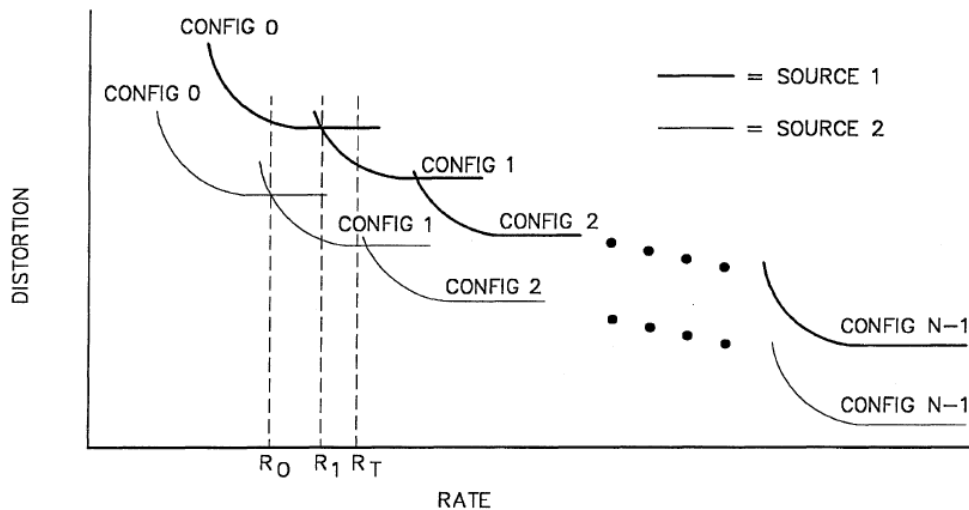


FIG. 1

Couwenhoven discloses, with reference to Figure 1, that a known solution in the prior art is to provide rate buffer 14 and rate controller 20 “which feeds a control signal S on line 22 back to the compression module, modifying its output bit rate.” *Id.* at 1:60–62. Couwenhoven also teaches that the overall performance of a compression technique can be characterized by a rate distortion curve. *Id.* at 2:5–7. “For a rate controlled compression technique, the value of the control signal S is correlated with the bit rate 20 and signal distortion that the compression technique delivers, and hence defines the point on the rate distortion curve where the compression technique will perform.” *Id.* at 2:18–22. Couwenhoven further teaches that “more advanced compression techniques will often contain several distinct operating configurations, each of which is designed to achieve a certain average bit rate or distortion level.” *Id.* at 2:41–44. Thus, “[t]he task of the rate controller in a more advanced compression technique with multiple

configurations now becomes more complex, as the rate controller must determine when it is appropriate to switch between the available configurations as well as modulate the bit rate within a given configuration.” *Id.* at 2:57–62.

Another embodiment of Couwenhoven is shown in Figure 5, reproduced below.



Couwenhoven notes, with reference to Figure 5, that “[s]witching between these configurations based on the fill conditions of the buffer is effective at controlling the rate, but is not optimal from a rate distortion standpoint due to the fact that different sources will produce different sets of rate distortion curves.” *Id.* at 3:4–9. Couwenhoven notes that “discontinuous jumps in the bit rate will make the process more difficult to control, and discontinuous jumps in the reconstructed signal quality are undesirable.” *Id.* at 3:14–17.

To address these problems, Couwenhoven provides

a data compression system that can operate in a number of different configurations, and wherein the bit rate produced by a given configuration can be controlled over some finite range by a control signal from a rate controller for smoothly transitioning

between the configurations so that discontinuous jumps in bit rate and distortion are minimized.

*Id.* at 3:29–35. The system in Couwenhoven accomplishes this “by determining thresholds on the feedback control signals, the thresholds being used to determine when to switch in or out of each configuration; the thresholds furthermore being determined from the intersection points of the rate distortion curves for the available configurations.” *Id.* at 3:35–40. Couwenhoven discloses two “major advantages” of this solution. “[F]irst, since the output bit rate of the compression technique now varies smoothly across the mode transition boundary, then the controllability of the compression technique is increased.” *Id.* at 3:51–54. “Secondly, the distortion level also varies smoothly across the mode transition boundary, so the configuration transition is not perceived as a discontinuous jump in the quality of the reconstructed signal.” *Id.* at 3:54–57. This second advantage is especially significant “when the source is image data, as the human observer will not detect the configuration transition as a quality change in the reconstructed image.” *Id.* at 3:59–61. The Couwenhoven system accomplishes this by determining minimum (SMIN) and maximum (SMAX) values of the control signal for each configuration from the intersection points of the rate distortion curves. *Id.* at 5:61–65. “If the value of the control signal becomes less than the minimum value or greater than the maximum value, then the rate controller changes the configuration appropriately by changing the value of the configuration select signal C to correspond to the new configuration.” *Id.* at 6:8–12. “Coincident with the configuration change, the rate controller changes the value of the control signals so that the performance point of the compression technique remains

at the intersection point of the rate distortion curves of the old and new configurations after the configuration change.” *Id.* at 6:12–17. According to Couwenhoven, “[t]his ensures that the configuration change will not create discontinuous jumps in the rate or distortion level of the reconstructed signal, which is advantageous over the methods described in the prior art.” *Id.* at 6:39–42.

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

- a. *“compressing data using a first compression routine providing a first compression rate, wherein the first compression routine comprises a first compression algorithm”*

Independent claim 1 recites “compressing data using a first compression routine providing a first compression rate, wherein the first compression routine comprises a first compression algorithm.”

Ex. 1001, 20:15–18.

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 “[a person of ordinary skill in the art] would have understood that Imai’s encoders compress data because they represent data using fewer bits, and because they include MPEG and other well-known compression standards.” Pet. 21–22 (citing Ex. 1005, Fig. 5 and ¶¶ 65–72; Ex. 1003 ¶ 118).

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



Based on the entire record before us, including Imai's disclosure of "a plurality of coding methods corresponding to the encoders 53<sub>1</sub> to 53<sub>N</sub>" (Ex. 1005 ¶¶ 65–72, Fig. 5), we determine Petitioner has shown by a preponderance of the evidence that the combined teachings from Imai and Couwenhoven satisfy the challenged claim limitation.

*b. "tracking a number of pending requests for data transmission"*

Claim 1 recites "tracking the throughput of a data processing system to determine if the first compression rate provides a throughput that meets a predetermined throughput threshold, wherein said tracking throughput comprises tracking a number of pending requests for data transmission." Ex. 1001, 20:23–25.

Petitioner contends Couwenhoven teaches this limitation, because Couwenhoven discloses "tracking the number of units in the rate buffer that are pending transmission across the channel" and "[a person of ordinary skill in the art] would have understood that each unit of data in the rate buffer is a request for data transmission because the data was placed in the buffer for the purpose of being transmitted across the channel." Pet. 25 (citing Ex. 1008, Fig. 1, 1:54–62, 4:43–47, 8:1–5; Ex. 1003 ¶ 135). Petitioner argues that the items in Couwenhoven's buffer are "units of data." Reply 5 (citing Ex. 2002, 38:9–19). According to Petitioner, "[b]y placing a data unit in the buffer, the system is requesting for the data unit to be transmitted across the channel." Pet. 25 (citing Ex. 1003 ¶ 135). Petitioner relies on the testimony of Dr. Storer to support its position. Dr. Storer testifies that "[t]he amount of data or number of data units in the buffer represent the number of pending requests for transmission across the channel." Ex. 1003 ¶ 135.

Petitioner also contends that the units of data can be packets of data, where the packets are pending transmission. Tr. 9:13–22; Reply 5–6 (citing Ex. 1003 ¶ 135). Petitioner then argues a person of ordinary skill in the art at the time of the '046 patent “would have found it obvious for units of data in Couwenhoven’s rate buffer to be the size of packets when combined with Imai’s teachings of a packetized network.” Reply 5–6 (citing Ex. 2002, 46:15–47:12, 82:21–83:14, 53:22–54:10, 55:22–56:6, 57:7–13). Dr. Storer further testifies that “each buffered data packet is a pending request for data transmission and Couwenhoven teaches tracking the buffered requests.” Ex. 1003 ¶ 135. According to Petitioner, “[t]racking the number of pending requests for data transmission refers to ‘track[ing] the number that are ready to go out.’” Reply 12 (citing Ex. 1003 ¶ 135; Ex. 2002, 19:15–23). Petitioner specifically argues that “[f]or packets, this includes tracking the number of packets in the output buffer that have been filled to the ‘maximum transmission unit’ (MTU) and are ‘ready to go out’—each such packet is a pending request for data transmission.” *Id.* (citing Ex. 2002, 47:9–12; 57:15–23, 18:18–20:5).

Petitioner further contends that Couwenhoven’s rate controller monitors the fill conditions of its rate buffer and creates a control signal S and a configuration select signal C, which are fed back to compression module 10. Tr. 8:7–11 (citing Ex. 1008, 4:41–54, Fig. 1). According to Petitioner, Cowenhoven’s compression module is responsive to the signals generated by the rate controller and results in changes to its compression rate. *Id.* at 8:12–14. Petitioner again relies on Dr. Storer, who testifies:

Monitoring buffer occupancy measures compression rate because, with the fixed transmission rate systems taught by

Couwenhoven (Ex. 1008, 1:41–45, 1:54–58, 4:41–46, 31:2–22, 32:9–26), the buffer is emptied at a fixed rate, meaning the number of pending transmission requests in the buffer depends on the rate at which the compressor can fill it. Couwenhoven thus teaches using a rate buffer to measure throughput based on the amount of input data a compressor can compress and make available to the rate buffer for data transmission per unit of time at a given compression ratio.

Ex. 1003 ¶ 137.

Petitioner analogizes Couwenhoven’s module 10 to the ’046 patent’s teaching regarding controller 11 (Reply 3 (citing Ex. 1001, 9:53–60, 10:40–45)) and argues that “[i]n both cases, a controller in the transmitter tracks pending requests for data transmission, based the fullness or emptiness of the output buffer, and changes the configuration of the encoder for rate control purposes” (*id.* at 3–4 (citing Ex. 2002, 23:7–25:6, 59:17–22, 41:15–42:10)).

Patent Owner contests Petitioner’s reliance on Imai and Couwenhoven to meet the limitations of claim 1 for several reasons. PO Response 16–28. Patent Owner first contends “Couwenhoven never describes or defines a ‘unit of data’ in the rate buffer.” *Id.* at 16–17. Patent Owner argues that the number of units of data in Couwenhoven’s buffer do not equate to the number of pending transmission requests because these two things are different concepts and there is no necessary relationship between the two. *Id.* at 18. According to Patent Owner, “a buffer could contain many units of data and be subject to a single pending transmission request” and conversely a “single unit of data in a buffer could be subject to multiple access requests from a particular controller or multiple controllers.” *Id.* at 18–19 (citing Ex. 2001 ¶¶ 54–55). Patent Owner cites to the ’046 patent to support its

position, because the specification describes that “the controller may track the number of pending disk accesses (access requests) to determine whether a bottleneck is occurring.” *Id.* at 20 (citing Ex. 1001, 13:44–47). Patent Owner notes that the ’046 patent never discusses “units of data” or suggests that it is a metric used for tracking throughput. *Id.* at 20. Patent Owner contrasts the disclosure in the ’046 patent with the fact that Couwenhoven does not describe pending transmission requests at all. PO Response 20.

Patent Owner next contends Couwenhoven does not disclose the challenged limitation because it only teaches variable rate compression and each item placed in the buffer is a variable length binary word. *Id.* at 20. Patent Owner argues that Couwenhoven’s teachings are specific to a variable rate compressor being output to a fixed rate buffer. *Id.* at 21 (citing Ex. 2001 ¶¶ 58–62). According to Patent Owner, Couwenhoven’s buffers are a means for achieving conversion from a variable rate sequence of compressed data to a fixed rate sequence of transmitted data. Ex. 2001 ¶¶ 69–74. Patent Owner then argues that “the number of items in the Couwenhoven rate buffer (i.e. 7) does not indicate how full the buffer is.” *Id.* at 23 (citing Ex. 2001 ¶ 73). Rather, per Patent Owner, Couwenhoven teaches

keeping track of the “fill fraction” of the buffer (in this example  $10/20 = 0.5$ ), not the number of items in the buffer (i.e. 7). *Id.* Couwenhoven’s teaching would make sense to a [person of ordinary skill in the art at the time of the invention] since the number of bits in the buffer directly indicates how likely it is to overflow, whereas the number of items in the buffer does not.

*Id.* Patent Owner argues that the person of ordinary skill in the art at the time of the invention would have understood Couwenhoven’s “‘buffer fill conditions’ or ‘buffer fill fraction’ to mean at most the fraction or percentage of a buffer that is filled.” *Id.* at 25 (citing Ex. 2001 ¶ 84).

Patent Owner relies on the testimony of Dr. Zeger to support its position. Dr. Zeger testifies that “buffer fill fraction” is

calculated as the number of bits (or bytes) of data in the buffer divided by the maximum number of bits (or, respectively, bytes) that could fit in the buffer. That is, the buffer fill fraction would measure a quantity related to counting the number of bits (or bytes) in it, not counting the number of items, or units of data, (i.e. variable length binary codes) in the buffer.

Ex. 2001 ¶ 84. Dr. Zeger walks through Couwenhoven’s computer codes for calculating the “buffer fill fraction.” *See id.* ¶¶ 84–88. Dr. Zeger further testifies that Couwenhoven’s “buffer fill fraction is taught to be a number between 0 and 1,” “indicat[ing] that the monitored buffer fill conditions count how many bits are in the buffer pending transmission, not the number of items of units of data (i.e. variable length binary codes).” *Id.* ¶¶ 89–90 (citing Ex. 1008, 6:48–50).

Petitioner contends Patent Owner’s variable rate argument is irrelevant. Reply 11–13. Petitioner first argues that the units of data in Couwenhoven’s output buffer are subdivided into packets. *Id.* at 12. Petitioner then argues that “[t]racking the number of pending requests for data transmission refers to ‘track[ing] the number that are ready to go out’” and that “[f]or packets, this includes tracking the number of packets in the output buffer that have been filled to the ‘maximum transmission unit’ (MTU) and are ‘ready to go out’—each such packet is a pending request for

data transmission.” *Id.* (citing Ex. 1003 ¶ 135; Ex. 2002, 18:18–20:5, 19:15–23, 47:9–12; 57:15–23). Petitioner next argues that Couwehoven establishes a threshold number that is monitored and such threshold is comparable to tracking a number because Couwehoven must be tracking an explicit number in order to determine if the threshold is met. Tr. 16:17–17:11. Petitioner further notes that if the threshold is not met, then the encoder configuration and compression rate are changed. *Id.*

We find that Couwehoven monitors the rate at which its output buffer fills and the output data could be subdivided into packets. We do not agree, however, that Couwehoven’s teachings regarding the items in its output buffer would be understood by a person of ordinary skill in the art to qualify as a “tracking a pending number of requests for data transmission” as required by the challenged claim limitation. Rather, we understand Couwehoven to teach the monitoring of the fill rate fraction for its output buffer, which would neither provide an indication of the exact number of items in the buffer nor the exact number of pending requests for data. Couwehoven is directed at ensuring that its output buffer does not overflow and, therefore, only monitors the fill rate and fill percent. Monitoring these characteristics of Couwehoven’s output buffer does not require the tracking of a specific quantity or number of pending requests. Petitioner presents insufficient evidence that a person of ordinary skill in the art would understand how to correlate the items in Couwehoven’s output buffer with an exact number of pending requests for data transmission. The plain language of the claim requires the “tracking a number,” not tracking of a different qualitative property or a fraction of a buffer. Testimony from both

Dr. Zeger and Dr. Storer supports the reading of the claim to mean tracking or recording a specific number. *See* Ex. 2001 ¶ 73; Ex. 2002, 18:23–19:1.

Accordingly, we determine Petitioner has not shown by a preponderance of the evidence that Couwenhoven’s disclosure of “tracking the number of units in the rate buffer that are pending transmission across the channel” satisfies the challenged claim limitation.

- c. *“when the tracked throughput does not meet the predetermined throughput threshold, compressing data using a second compression routine providing a second compression rate that is greater than the first compression rate, to increase the throughput of the data processing system to at least the predetermined throughput level”*

Claim 1 recites “when the tracked throughput does not meet the predetermined throughput threshold, compressing data using a second compression routine.” Ex. 1001, 20:25–32. Petitioner contends this limitation is met by “at least three disclosures” in Couwenhoven, specifically (1) the prior art teachings, (2) the disclosed rate controls, and (3) the disclosed danger thresholds to guard against overflow and underflow. Pet. 27–37 (citing Ex. 1003 ¶¶ 138–154; Ex. 1008, 1:59–2:4, 3:36–38, 4:43–54, 5:24–30, 32:9–26, 3:36–38).

Patent Owner contends the combined teachings of Imai and Couwenhoven fail to meet this challenged limitation for several reasons. PO Resp. 28–32.

As discussed previously, we find that Petitioner fails to demonstrate that Couwenhoven teaches “tracking throughput” because it does not teach “tracking a number of pending requests for data transmission.” *See supra*, Section II.D.3.b. Because Couwenhoven does not teach “tracked

throughput,” it cannot teach compressing data in response to said tracked throughput failing to meet a predetermined throughput threshold.

Accordingly, we determine Petitioner has failed to establish by a preponderance of the evidence that Imai and Couwenhoven must respond “when the tracked throughput does not meet the predetermined throughput threshold, [by] compressing data using a second compression routine providing a second compression rate that is greater than the first compression rate” as required by the challenged claim.

*d. “wherein the second compression routine comprises a second compression algorithm”*

Claim 1 recites “wherein the second compression routine comprises a second compression algorithm.” Ex. 1001, 20:32–33.

Petitioner contends Imai teaches this limitation, because Imai discloses “Imai’s encoders 53<sub>1</sub> to 53<sub>N</sub> employ ‘different coding methods from each other’ including different algorithms such as MPEG layers 1, 2, 3; ATRAC; ATRAC 2; HVXC; and ‘various coding methods’” and “[a person of ordinary skill in the art] would have understood that Imai’s ‘encoders’ use compression routines to compress data, and that the different encoders include different compression algorithms.” Pet. 37–38 (citing Ex. 1005 ¶¶ 67–71, 172; Ex. 1003 ¶¶ 156–159).

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.

Having reviewed the entirety of the record and cited evidence, we determine Petitioner has shown Imai’s disclosure of “different algorithms



such as MPEG layers 1, 2, 3; ATRAC; ATRAC 2; HVXC” satisfies the challenged claim limitation. *See* Ex. 1005 ¶¶ 67–71, 172.

*e. Summary regarding Independent Claim 1*

Based on the foregoing, we conclude Petitioner has not demonstrated by a preponderance of the evidence that challenged independent claim 1 would have been obvious under 35 U.S.C. § 103 in view of the combined teachings of Imai and Couwenhoven.

*4. Analysis of Cited Art as Applied to Independent Claims 8, 11, 14, 17, 19, 23, 26, 27, 29, 34, and 35*

Petitioner contends independent claims 8, 11, 14, 17, 19, 23, 26, 27, 29, 34, and 35 of the '046 patent are unpatentable under 35 U.S.C. § 103 as obvious in view of Imai and Couwenhoven, and provides specific arguments for each challenged claim. Pet. 38–66. Patent Owner does not address the additional limitations of independent claims 8, 11, 14, 17, 19, 23, 26, 27, 29, 34, and 35, but states that Petitioner fails to meet its burden with regards to these claims for the same reason as put forth for claim 1 above. PO Resp. 38–41. Additionally, the burden nonetheless 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 independent claims 8, 11, 14, 17, 19, 23, 26, 27, 29, 34, and 35, including testimony from Dr. Storer (*see* Ex. 1003 ¶¶ 170–241) and Dr. Zeger (*see* Ex. 2001 ¶¶ 147–148). Although these claims do not depend from claim 1, they each require “tracking the throughput of a data processing system” similar to claim 1. Therefore, for the same reasons Petitioner fails to meet its burden with regards to claim 1, we determine Petitioner fails to meet its burden with regards to these

specific claims. Accordingly, we conclude Petitioner has failed to demonstrate by a preponderance of the evidence that challenged claims 8, 11, 14, 17, 19, 23, 26, 27, 29, 34, and 35 would have been obvious under 35 U.S.C. § 103 in view of Imai and Couwenhoven.

*5. Analysis of Cited Art as Applied to Dependent Claims 4, 10, 13, 16, 21 and 30–32*

Petitioner contends dependent claims 4, 10, 13, 16, 21 and 30–32 of the '046 patent are unpatentable under 35 U.S.C. § 103 as obvious in view of Imai and Couwenhoven and provides specific arguments for each challenged claim. Pet. 51–52, 63–64 (citing Ex. 1003 ¶¶ 163–66, 230–32). Patent Owner does not address the additional limitations of dependent claims 4, 10, 13, 16, 21 and 30–32, but states that Petitioner fails to meet its burden with regards to these claims for the same reason as put forth for claim 1 above. PO Resp. 39. Additionally, the burden nonetheless 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 4, 10, 13, 16, 21 and 30–32, including testimony from Dr. Storer (*see* Ex. 1003 ¶¶ 162–167) and Dr. Zeger (*see* Ex. 2001 ¶¶ 147–148). Although these claims do not all depend from claim 1, they each require “tracking the throughput of a data processing system” similar to claim 1. Therefore, for the same reasons Petitioner fails to meet its burden with regards claim 1, we determine Petitioner fails to meet its burden with regards to these specific claims. Accordingly, we conclude Petitioner has failed to demonstrate by a preponderance of the evidence that challenged claims 4, 10, 13, 16, 21

and 30–32 would have been obvious under 35 U.S.C. § 103 in view of Imai and Couwenhoven.

*6. Alleged Reasons to Combine the Teachings of Imai and Couwenhoven*

Petitioner contends a person of ordinary skill in the art would have had many reasons to combine Imai and Couwenhoven. Pet. 13–18. Petitioner provides distinct rationales to combine Imai with Couwenhoven’s “embodiment-related teachings” and “prior art-related teachings.” *Id.* at 15. Specifically, Petitioner argues that a person of ordinary skill in the art would have had reason to combine the systems of Imai and Couwenhoven “because they are directed to similar streaming media systems and naturally complement each other.” *Id.* at 13 (citing Ex. 1003 ¶ 107). According to Petitioner, a person of ordinary skill in the art would have been “motivated to apply Couwenhoven’s teachings to Imai because Imai suggests the rate of compression should be controlled, and Couwenhoven provides numerous teachings for doing so.” Reply 17 (citing Ex. 1003 ¶ 109). Petitioner relies on the testimony of Dr. Storer to support its position. Specifically, Dr. Storer testifies that “the teachings of both references would have motivated [a person of ordinary skill in the art] to combine the teachings to improve the bit rate control of the combined system.” Ex. 1003 ¶ 107 (citing Ex. 1005 ¶ 66; Ex. 1008 3:29–39).

Petitioner further contends that the respective teachings of Imai and Couwenhoven “provide complimentary aspects of media streaming, with Imai providing a plurality of selectable encoders and Couwenhoven providing selection mechanisms for controlling throughput.” Reply 17 (citing Ex. 1003 ¶ 109). It is Petitioner’s position that a person of ordinary

skill in the art would have “appreciated the synergistic benefits of the combination, particularly for CPU constrained workloads on streaming media servers.” *Id.* at 17–18 (citing Ex. 1003 ¶ 110).

Petitioner then contends Couwenhoven does not teach away from multiple compressors. *Id.* at 18. Rather, according to Petitioner, “Couwenhoven then proceeds to teach compression techniques with multiple configurations, despite the increased complexity.” *Id.* (citing Ex. 1008, 2:57–62, 3:29–36). Petitioner argues that “[t]he combination of Imai and Couwenhoven provides additional functionality, for example by selecting optimal encoders based on content and CPU workload.” *Id.* (citing Ex. 1003 ¶ 110).

Patent Owner contests Petitioner’s position, arguing that Petitioner fails to provide an adequate rationale as to why a person of ordinary skill in the art would have combined the system of Imai with Couwenhoven. PO Resp. 32–38. Patent Owner first argues that a person of ordinary skill in the art “would *not* have understood and found it obvious that switching between configurations in Couwenhoven includes switching between compression routines” because Couwenhoven never discloses nor suggest using (1) separate compression routines or (2) more than one compression routine, specifically DPCM. PO Resp. 34 (citing Ex. 2001 ¶ 128; Pet. 30). Therefore, according to Patent Owner, a person of ordinary skill in the art would not have had any reason to modify Couwenhoven from using one compressor form using one compressor in different configurations to a multi-compressor system like Imai. *Id.*

Patent Owner further contends a person of ordinary skill in the art would not have been motivated to combine Couwenhoven’s specific rate

control teachings with Imai's system because Couwenhoven's teachings are inapplicable or incompatible with Imai. *Id.* at 35. Patent Owner argues that "Couwenhoven teaches only one specific method of rate control, whose applicability is limited to the very specific variable rate DPCM system to which Couwenhoven is focused on." *Id.* at 36 (citing Ex. 2001 ¶ 136). Patent Owner then argues "there are no teachings in Couwenhoven for a non-DPCM rate controller." *Id.* at 36 (citing Ex. 2001 ¶¶ 138–141). In particular, Patent Owner argues "Couwenhoven's teachings about how rate control is implemented (multiplying a DPCM difference signal by a control signal S) is specific to DPCM and does not generally apply in other compression systems." *Id.* at 36 (citing Ex. 2001 ¶ 142; Ex. 1008, 8:13–15).

Patent Owner then contends Couwenhoven teaches away from using multiple compressors because of concerns about additional complexity. *Id.* at 35 (citing Ex. 1008, 2:57–62). Patent Owner then argues that a person of ordinary skill in the art would have needed to "do substantial modification" to Couwenhoven in order to apply it to Imai's system. PO Resp. 38 (citing Ex. 2001 ¶ 147). Patent Owner concludes that "[s]uch a system would go beyond the teachings of Imai or Couwenhoven, and certainly not be obvious." *Id.*

We have considered carefully all arguments and supporting evidence regarding the rationale for combining Imai and Couwenhoven. Given the level of skill in the art at the time of the invention, we find that Couwenhoven does not teach away from using multiple configurations. Additionally, we find Imai and Couwenhoven both are directed to similar purposes, such as encoding data for streaming media. Pet. 13 (citing Ex. 1003 ¶ 107). These reference, however, are directed to different problems

and use different rate control systems. Specifically, Imai is directed to providing coding methods that will provide coded data having a bit rate corresponding to a detected transmission rate. Ex. 1005, Abstract, ¶ 146. Couwenhoven, on the other hand, monitors its rate buffer in relation to fill thresholds to determine when to switch compression configurations in order to minimize discontinuous jumps in bit rate so that distortion is reduced. Ex. 1008, 3:29–41, 3:46–50, 4, 43–46.

For its obviousness challenge, Petitioner appears to bring in Couwenhoven to provide a more specific teaching of tracking throughput using a throughput threshold for Imai’s system using compression algorithms directed to image data blocks because Couwenhoven teaches use of well-known compression techniques for image data compression. *Id.* Dr. Storer testifies that “Imai suggests the rate of compression should be controlled, and Couwenhoven provides numerous teachings for doing so.” Ex. 1003 ¶ 109. Yet, Imai already provides a method whereby server 1 is designed to detect the transmission rate so that it can change or alter the encoding schedule in order to (1) use the most efficient encoder for a particular data block and (2) not produce a bit rate higher than the detected transmission of network 2. *See* Ex. 1004 ¶ 146, Fig. 1.

When questioned on this issue, Petitioner’s counsel argued that Couwenhoven’s rate control solutions are simple, well-known in the art, and easy to implement. Tr. 85:14–21. According to Petitioner, Imai’s method involves round trip processing delays, so using Couwenhoven would provide a tighter feedback loop that would enhance Imai. Tr. 85:21–5; *see also* Ex. 1003 ¶ 109 (discussing Couwenhoven’s feedback loop). Thus, Petitioner concludes that a person of ordinary skill in the art would have

“found it obvious to use Couwenhoven’s teachings to select an encoder from Imai’s plurality of encoders.” Pet. 14–15 (citing Ex. 1003 ¶ 109).

Even though a person of ordinary skill in the art could have applied the teachings of Couwenhoven to Imai’s system, we find Petitioner’s position lacking insofar as it fails to explain how Couwenhoven’s additional steps of monitoring of a rate buffer in relation to fill thresholds for an output buffer create a tighter feedback loop and why a person of ordinary skill in the art would forego the explicit teachings of Imai. Given Imai’s express teaching of controlling the rate of compression and providing its own method of doing so, we do not agree with Petitioner’s position that a person of ordinary skill would have been motivated to turn to Couwenhoven’s monitoring of a rate buffer in relation to fill thresholds for an output buffer for use with Imai’s system.

Based on the entirety of the record, we find Petitioner does not provide sufficient rationale for why 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. Accordingly, for this additional reason, we determine Petitioner has not established by a preponderance of the evidence that claims 1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 26, 27, 29–32, 34, and 35 would have been obvious under 35 U.S.C. § 103 in view of Imai and Couwenhoven.

*E. Alleged Obviousness of Claim 24 of the '046 patent in View of Imai, Couwenhoven, and Ishii*

Petitioner contends claim 24 of the '046 patent is unpatentable under 35 U.S.C. § 103(a) in view of Imai, Couwenhoven, and Ishii. Pet. 70–71. Patent Owner disputes Petitioner’s contentions. PO Resp. 41–46. For the

reasons that follow, we determine Petitioner has not established by a preponderance of the evidence that claim 24 would have been obvious under 35 U.S.C. § 103 in view of Imai, Couwenhoven, and Ishii.

*1. Prior Art Overview*

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

*See supra* Section II.D.1.

*b. Overview of Couwenhoven (Ex. 1008)*

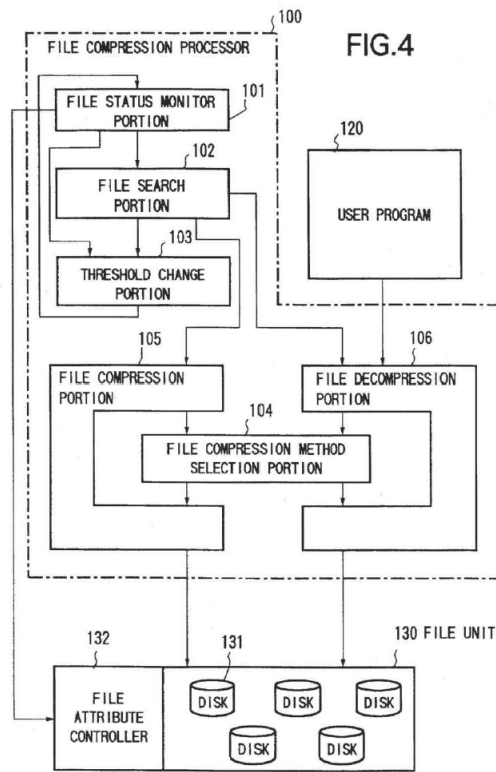
*See supra* Section II.D.2.

*c. Overview of Ishii (Ex. 1007)*

Ishii is a U.S. Patent titled “File Compression Processor Monitoring Current Available Capacity And Threshold Value.” Ex. 1007, codes (54), (57). Ishii discloses a file attribute controller that stores “control information” for files “including the last access date, the number of accesses, whether the file is already compressed or not and a search portion which searches for files not yet compressed with low access frequency based on the control information so as to select files to be compressed.” *Id.* at code (57).

One embodiment of Ishii’s system is illustrated in Figure 4, reproduced below.





Ishii's file processing system comprises file compression processor 100, user program 120, and file unit 130. *Id.* at 5:20–22. File compression processor 100 provides automatic file compression and decompression processing asynchronously with user program 120 for disk 131 in the file unit 130. *Id.* at 5:23–26. File compression processor 100 comprises file status monitor portion 101, file search portion 102, file compression method selection portion 104, file compression portion 105, and file decompression portion 106. *Id.* at 5:32–36. Ishii's file unit 130 is controlled by file attribute controller 132. *Id.* at 5:38–39. File attribute controller 132 contains file control information, including a list of file names and directories, last access data, and the number of accesses of each file. *Id.* at 5:51–54. When available capacity in the file unit becomes lower than a

threshold value, files are compressed. *Id.* at 7:4–5. At step 220, a search for files to be compressed is conducted based on the file control information of file attribute controller 132. *Id.* at 7:6–8. 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. *Id.* at 7:16–20. Ishii discloses:

In selecting a data compression method, the file compression method selection portion 104 selects the one suitable for the applicable data attribute by checking the data attribute held by the file attribute controller 132. Next, the access frequency is determined from the last access date and the number of accesses at the file attribute controller 132. The file compression method with a shorter decompression time is selected for files with higher access frequency and the file compression method with a higher compression ratio is selected for files with lower access frequency.

*Id.* at 7:21–31.

2. *Analysis of the Prior Art as Applied to Independent Claim 24*

Independent claim 24 recites similar limitations as claim 1 (albeit in system form), with the additional limitation of “a plurality of access profiles, operatively accessible by the controller, to determine a compression routine that is associated with a data type of data to be compressed.” Ex. 1001, 23:51–53.

Petitioner contends Ishii teaches this additional limitation because Ishii teaches “select[ing] an appropriate data compression method for compression” based on the “*access frequency* and *file type*” of the file (data type) to be compressed. Pet. 70 (citing Ex. 1007, 5:60–6:6; Ex. 1003 ¶ 255). According to Petitioner, the “*access frequency* of a file [in Ishii] is determined based on the last access date and the *number of accesses* for that

file.” *Id.* (citing Ex. 1007, 5:54–6:6; Ex. 1003 ¶ 255). Thus, Petitioner concludes that Ishii’s file control information teaches this element. *Id.* (citing Ex. 1003 ¶ 255). Alternatively, Petitioner contends Ishii teaches this limitation because Ishii teaches a classification system that assigns a particular profile to data. *Id.* at 71 (citing Ex. 1007 5:54–59, 6:12–17).

Patent Owner contests Petitioner’s position, arguing that the proposed combination does not satisfy the “access profile” limitation. PO Resp. 42–43.

As discussed previously, *see supra* Section II.A.2, we determine that “access profile” encompasses “information, such as the number or frequency of reads or writes, that enables the controller to select a suitable compression algorithm.” Based on the explicit disclosure in Ishii, we agree with Petitioner that Ishii satisfies the additional limitation of “a plurality of access profiles, operatively accessible by the controller, to determine a compression routine that is associated with a data type of data to be compressed” as recited in claim 24. *See* Ex. 1007, 5:54–6:6.

Claim 24 additionally recites “a controller for tracking throughput and generating a control signal to select a compression routine based on the throughput.” Ex. 1001, 23:51–53. For this limitation, Petitioner relies on its arguments regarding claim 26, and indirectly its arguments regarding claim 23. *See* Pet. 58, 70. Petitioner explicitly states that this limitation “can at least be satisfied by ‘tracking a number of pending requests for data transmission.’” Pet. 58.

As discussed previously, we find Petitioner fails to demonstrate that Couwenhoven teaches “tracking a number of pending requests for data transmission.” *See supra*, Section II.D.3.b. Additionally, we also find

Couwenhoven does not teach “tracked throughput.” *See supra*, Section II.D.3.c. Accordingly, it cannot teach “a controller for tracking throughput and generating a control signal to select a compression routine based on the throughput” as required by claim 24.

3. *Rationale to Combine Imai, Couwenhoven, and Ishii*

As discussed previously in Section II.D.6, Petitioner contends one of ordinary skill would have been motivated to combine the teachings of Imai with Couwenhoven in order to extend Imai’s system to select an encoding method based on tracking throughput, as taught by Couwenhoven. Pet. 13–18. According to Petitioner, a person of ordinary skill in the art would have been motivated to apply Ishii’s teachings related to file control information to the encoder-selection process taught by Imai and Couwenhoven. *Id.* at 66–70.

Patent Owner contests Petitioner’s position, arguing it provides almost no evidence about (a) what the proposed combination is, (b) why a POSITA would be motivated to make the combination, or (c) how the proposed combination is supposed to work. PO Resp. 42–43 (citing Ex. 2001 ¶ 154).

We have considered carefully all arguments and supporting evidence regarding the rationale for combining Imai and Couwenhoven with Ishii. For the same reasons provided above in Section II.D.6, we determine Petitioner does not provide sufficient rationale for why a person of skill in the art would have combined the teachings from Imai and Couwenhoven, and therefore does not provide sufficient rationale for making the combination argued by Petitioner to arrive at the inventions recited in the challenged claim. Accordingly, we determine Petitioner has not established

by a preponderance of the evidence that claim 24 would have been obvious under 35 U.S.C. § 103 in view of Imai, Couwenhoven, and Ishii.

### III.CONCLUSION<sup>8</sup>

Based on the full record before us, we determine Petitioner has failed to show by a preponderance of the evidence that claims 1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 26, 27, 29–32, 34, and 35 of the '046 patent would have been obvious in view of Imai and Couwenhoven. In addition, we determine Petitioner has not shown by a preponderance of the evidence that claim 24 would have been obvious under 35 U.S.C. § 103 in view of Imai, Couwenhoven, and Ishii. In summary:

<b>Claims</b>	<b>35 U.S.C. §</b>	<b>References/ Basis</b>	<b>Claims Shown Unpatentable</b>	<b>Claims Not Shown Unpatentable</b>
1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 26, 27, 29–32,	103	Imai, Couwenhoven		1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 26, 27, 29–32, 34, and 35

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<sup>8</sup> 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*, 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).

34, and 35				
24	103	Imai, Couwenhoven, Ishii		24
<b>Overall Outcome</b>				1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 24, 26, 27, 29–32, 34, and 35

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has not shown by a preponderance of the evidence that claims 1, 4, 8, 10, 11, 13, 14, 16, 17, 19, 21, 23, 24, 26, 27, 29–32, 34, and 35 of the '046 patent are unpatentable; and

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

IPR2019-00209  
Patent 7,386,046 B2

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

REALTIME ADAPTIVE STREAMING LLC,  
Patent Owner.

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IPR2019-00209<sup>1</sup>  
Patent 7,386,046 B2

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Before GEORGIANNA W. BRADEN, GREGG I. ANDERSON, and  
CHRISTA P. ZADO, *Administrative Patent Judges*.

BRADEN, *Administrative Patent Judge*.

DECISION  
Denying Petitioner's Request for Rehearing  
*37 C.F.R. § 42.71*

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<sup>1</sup> Comcast Cable Communications, LLC, which filed a petition in IPR2019-01280, has been joined as a party to this proceeding.

## I. INTRODUCTION

Netflix, Inc., (“Petitioner”) timely filed a Request for Rehearing under 37 C.F.R. § 42.71(d) on June 18, 2020. Paper 31 (“Req. Reh’g”). Petitioner’s Request for Rehearing seeks reconsideration of our Final Written Decision (Paper 30, “Decision”) entered on May 26, 2020. Petitioner disagrees with the Decision due to alleged errors in (1) the obviousness analysis of Couwenhoven, (2) not accepting Dr. Storer’s testimony as establishing obviousness under the *KSR* framework, (3) failing to find a motivation to replace Imai’s rate control system with Couwenhoven’s teachings, and (4) requiring proof that Couwenhoven’s teachings were superior to Imai’s teachings. Reh’g Req. 1.

For the reasons provided below, we *deny* Petitioner’s request with respect to making any change thereto.

## II. ANALYSIS

A request for rehearing “must specifically identify all matters the party believes the Board misapprehended or overlooked, and the place where each matter was previously addressed in a motion, an opposition, or a reply.” 37 C.F.R. § 42.71(d). The party challenging a decision bears the burden of showing the decision should be modified. *Id.*

Petitioner contends “[t]he unrebutted evidence provided by Netflix and Dr. Storer establishes that the claimed step of “tracking a number of pending requests for data transmission” would have been obvious when combining Couwenhoven’s rate-control teachings with Imai’s networking environment. Reh’g Req. 2 (citing Pet. 25; Ex. 1003 ¶¶ 134–137; Reply 5–6). According to Petitioner, the “Board erred by not adopting Dr. Storer’s unrebutted opinions.” *Id.* at 7–9 (citing Ex. 1003 ¶¶ 106–113).

Petitioner further contends “the only rebuttal from Patent Owner was based on improper bodily incorporation arguments.” *Id.* (citing Reply 9). Petitioner argues that the evidence cited by the Board (i.e., Dr. Zeger’s testimony) only analyzed Couwenhoven in isolation and never in combination with Imai’s networked environment. *Id.* at 5–6 (citing Ex. 1019, 19:4–9, 17:3–9, 42:15–43:3; Reply 9). According to Petitioner,

Dr. Zeger contradicted *KSR* and engaged in impermissible bodily incorporation by limiting his analysis to the implementations of Couwenhoven’s explicitly disclosed embodiments, such as Couwenhoven’s source code for fixed rate, direct transmission embodiments, without considering what would have been obvious when Couwenhoven’s *teachings*—as opposed to its specific physical implementation—are combined with Imai’s networked environment.

*Id.* at 6. Thus, Petitioner further argues “the Board erred by focusing on the bodily incorporation of Couwenhoven’s embodiments into Imai.” Reh’g Req. 4.

Petitioner lastly contends it established a motivation to combine the teachings of Imai and Couwenhoven. Reh’g Req. 9. Petitioner argues it and Dr. Storer explained why a person of ordinary skill in the art would have been motivated to apply Couwenhoven’s teachings to improve Imai, even in view of Imai’s existing technique but the Decision overlooked these explanations. *Id.* Petitioner further argues that the Board improperly required “Petitioners to prove that Couwenhoven’s teachings are superior to Imai’s existing technique.” *Id.*

First, the Board’s analysis was not premised on a bodily incorporation of Couwenhoven’s embodiment into Imai. Rather, as explained in the Decision, the Board analyzed Couwenhoven’s teachings and found

Couwenhoven to teach the monitoring of the fill rate fraction for its output buffer, which would neither provide an indication of the exact number of items in the buffer nor the exact number of pending requests for data. Couwenhoven is directed at ensuring that its output buffer does not overflow and, therefore, only monitors the fill rate and fill percent.

Decision 25. The Board further found that “[m]onitoring these characteristics of Couwenhoven’s output buffer does not require the tracking of a specific quantity or number of pending requests.” *Id.* As stated in the Decision, “[p]etitioner presents insufficient evidence that a person of ordinary skill in the art would understand how to correlate the items in Couwenhoven’s output buffer with an exact number of pending requests for data transmission.” Decision 25. The Board’s analysis, as reiterated here, does not rely on incorporating Couwenhoven’s embodiments directly into Imai’s system, but relies on the specific language of Couwenhoven’s teachings in comparison to the challenged claim’s limitation. Although the Board’s holding in the Decision is in the context of Imai’s system in view of Couwenhoven’s teachings, its’ language regarding this particular limitation is directed to Couwenhoven because the Petitioner only relies on Couwenhoven’s teachings and Dr. Storer’s testimony to support its arguments for this limitation. *See* Pet. 24–26 (citing Ex. 1008, 1:54–62, 1:59–2:4, 3:36–41, 3:62–4:2, 4:42–54, 5:24–30, 5:62–6:7 8:1–5; Ex. 1003 ¶¶ 134–137).

Second, we remain unpersuaded that Dr. Storer’s testimony is un rebutted.<sup>2</sup> Although Petitioner argues Dr. Zeger “admitted he never

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<sup>2</sup> As the trier of fact, we determine “the weight to be accorded even un rebutted expert testimony.” *Bradshaw v. United States*, 443 F.2d 759, 772 (D.C. Cir. 1971) (citations omitted).

considered Couwenhoven’s teachings in combination with Imai’s networked environment,” such testimony relates to the use of a data packet (as taught by Imai) being a request for data transmission. *See* Ex. 1019, 17:3–9, 19:4–9, 42:15–43:3. As explained in the Decision, we find that Couwenhoven’s “output data could be subdivided into packets.” Decision 25. But, as the Decision notes that “[t]estimony from both Dr. Zeger and Dr. Storer supports the reading of the claim to mean tracking or recording a specific number.” *Id.* at 25–26 (citing *See* Ex. 2001 ¶ 73; Ex. 2002, 18:23–19:1). Accordingly, we hold in the Decision “[t]he plain language of the claim requires the ‘tracking a number,’ not tracking of a different qualitative property or a faction of a buffer.” Nothing presented in the Request for Rehearing persuasively cites to any misapprehended or overlooked arguments or evidence that would warrant a different holding.

Third, contrary to Petitioner’s arguments, we considered Petitioner’s argument (and the cited supporting evidence) with respect to a rationale to combine Couwenhoven’s teachings with Imai’s system. Decision, 30–34. Specifically, we found Petitioner failed to provide sufficient rationale for why 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. *Id.* at 34. As noted in the Decision, we determined that the references are directed to different problems and use different rate control systems. *Id.* at 32–33. We further stated that “[g]iven Imai’s express teaching of controlling the rate of compression and providing its own method of doing so, we do not agree with Petitioner’s position that a person of ordinary skill would have been motivated to turn to Couwenhoven’s monitoring of a rate

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buffer in relation to fill thresholds for an output buffer for use with Imai's system." *Id.*

Contrary to Petitioner's argument here, our analysis only requires a rationale to combine the teachings of the cited references; it does not require a showing that the proposed combine be better than alternatives.

Furthermore, we note that merely disagreeing with our analysis or conclusions does not serve as a proper basis for a rehearing, because it does not show an overlooked or misapprehended matter.

For the forgoing reasons, Petitioner has not shown that the Board misapprehended or overlooked arguments or evidence in analyzing Petitioner's proposed rational to combine the teachings of Couwenhoven with Imai. For the same reasons as discussed in the Decision, Petitioner's Request for Rehearing similarly is not persuasive as to Petitioner's position on the same. Petitioner's arguments regarding its proffered reasons to combine the prior art teachings fail to identify what we misapprehended or overlooked as required by 37 C.F.R. § 42.71(d). Thus, Petitioner has not carried its burden of demonstrating that the Board's Decision should be modified. *See* 37 C.F.R. § 42.71(d).

#### IV. ORDER

It is hereby ORDERED that Petitioner's request for rehearing is *denied*.

IPR2019-00209  
Patent 7,386,046 B2

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