

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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HULU, LLC,  
AMAZON.COM, INC., and  
NETFLIX, INC.,  
Petitioners,

v.

REALTIME ADAPTIVE STREAMING LLC,  
Patent Owner.

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Case IPR2018-01187  
Patent No. 9,769,477

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**PATENT OWNER'S PRELIMINARY RESPONSE**

**TABLE OF CONTENTS**

I.	Introduction.....	1
II.	Background of the ’477 patent and challenged claims.....	2
III.	Petitioners’ proposed claim constructions.....	6
IV.	Ground 1 fails to explain what would be the “first asymmetric data encoder” and what would constitute the “second asymmetric data compression encoder”.....	6
V.	Ground 1 does not show that Imai discloses or suggests “a first asymmetric data compression encoder . . . <i>configured</i> to compress data blocks containing video or image data <i>at a higher data compression rate</i> than a second asymmetric data compression encoder”.....	11
A.	Limitation 1[B] requires two asymmetric data compression encoders, with the first encoder being <i>configured</i> to compress video or image data <i>faster</i> than the second encoder .....	11
B.	The Petition’s allegations do not even attempt to show one encoder that is “ <i>configured to</i> ” compress at a higher rate than another encoder, and thus cannot demonstrate obviousness.....	15
1.	Petitioners’ argument that limitation 1[B] would be met by chance reads “configured to” out of the limitation.....	16
2.	The Petition’s argument that Imai teaches “different asymmetric data compression encoders” that have “different data compression rates” is both inadequate and unsupported.....	18
3.	The Petition’s suggested modification runs contrary to Imai’s goal of ensuring that audio data can be reproduced in real time.....	22
VI.	Ground 2 fails to show that Pauls teaches or suggests “a first asymmetric data compression encoder . . . configured to compress . . . at a higher data compression rate than a second asymmetric data compression encoder” as required by Claim 1 .....	25
A.	Ground 2 fails to identify what would constitute the “first asymmetric data encoder” and what would constitute the “second asymmetric data compression encoder”.....	26
B.	Ground 2 points to no disclosure or discussion of compression rates of any encoder.....	26

C.	Ground 2 further fails because it also fails to meet the “configured to” requirement of Claim 1 .....	28
VII.	Ground 3 fails to explain why a POSITA would make its alleged modifications .....	29
VIII.	Ground 3 further fails because it does not purport to address any of the flaws in Grounds 1 and 2 .....	37
IX.	Ground 3 and 4 do not explain <i>how</i> a POSITA would combine the references .....	39
X.	Ground 4 does not address the tradeoffs inherent in its motivation to combine.....	42
XI.	Ground 4 further fails because it does not purport to address any of the flaws in Grounds 1- 3 or additional limitations of Independent Claim 20.....	45
XII.	The expert declaration cannot cure the Petition’s deficiencies .....	47
XIII.	Petitioners’ analysis of the dependent claims also fails because the Petition relies on its flawed analysis of the independent claims for the shared limitations.....	48
XIV.	Conclusion .....	49

**EXHIBIT LIST**

<b>Exhibit No.</b>	<b>Description</b>
<b>2001</b>	Declaration of Kayvan B. Noroozi in Support of Motion for Admission <i>Pro Hac Vice</i> .

## **I. Introduction**

Despite presenting four grounds, the Petition fails to show that the prior art—alone or combined—meets the plain language of Claims 1 and 20. Claim 1 requires a specific “first” encoder and a specific “second” encoder that are deliberately “configured” or designed such that the “first” encoder compresses data a higher “rate” (i.e., speed) than the “second” encoder. Section V.A, *infra*. But the Petition never identifies any specific “first” or “second” encoder for purposes of its theories, and certainly never shows that any given encoder was “configured to” compress at a faster speed than another any other encoder, as Claim 1 requires. Sections IV, V.B, VI.A, VI.C, IX, *infra*. To the contrary, the Petition actually alleges that any encoder in the prior art references could have been faster than any other encoder—thus ***admitting that the prior art does not meet Claim 1***. Sections V.B.1, VI.B.C, *infra*.

The Petition suffers even further with respect to the only other challenged independent claim, Claim 20. In addition to failing to identify a “first” and “second” encoder, and the “configured to” requirement of the claim, the Petition simply overlooks and ignores the distinct limitations of Claim 20 that do not match Claim 1, and instead simply tries to incorporate its Claim 1 allegations by reference.

And as this Preliminary Response details, the Petition fails for numerous additional reasons with respect to each challenged claim and each Ground. On this record, the Petition cannot prevail, and institution should be denied.

## II. Background of the '477 patent and challenged claims

Petitioners challenge Claims 1-6, 9-14, 20-22, and 25-27 of U.S. Patent No. 9,769,477. The Petition's challenge is based on the following Grounds:

Ground	References	Basis	Challenged Claims
Ground 1	Imai	Obviousness (§103)	1, 3-5, 12-14
Ground 2	Pauls	Obviousness (§103)	1, 3-6, 9-14
Ground 3	Imai and Pauls	Obviousness (§103)	1, 3-6, 9-14
Ground 4	Imai, Pauls, and Chao	Obviousness (§103)	2, 11, 20-22, 25-27

The '477 patent "is directed to a system and method for compressing and decompressing based on the actual or expected throughput (bandwidth) of a system employing data compression . . . ." Ex. 1001 at 7:66-8:3. The invention 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.

Claim 1 is directed to a system that selects among “asymmetric data compression encoders” where “a first asymmetric data compression encoder . . . is *configured to compress . . . at a higher data compression rate* than a second asymmetric data compression.” Claim 1 of the '477 patent recites:

Element	Claim 1
1[PR]	A system, comprising:
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, and
1[B]	wherein a first asymmetric data compression encoder of the plurality of different asymmetric data compression encoders <i>is configured to compress</i> data blocks containing video or image data <i>at a higher data compression rate</i> than a second asymmetric data compression encoder of the plurality of different asymmetric data compression encoders; and
1[C]	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
1[D]	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.

The specification of the '477 patent makes clear that “data compression rate” refers to the “execution speed of the algorithm.” *Id.* at 1:63-67. Thus, Claim 1 and its dependents require a “first asymmetric data compression encoder” that is “configured to compress” at a *higher execution speed* than a “second asymmetric data compression encoder.”

Independent Claim 20, by contrast, requires “a first video data compression encoder . . . *configured to compress* at a higher compression *ratio* than a second data compression encoder.” Thus, unlike Claim 1, which recites a compression *rate* (i.e., speed), Claim 20 recites compression *ratio* (i.e., size of the compressed data compared to the uncompressed data). Claim 20 further requires “at least one of the video data compression encoders” to be “configured to utilize an arithmetic data compression algorithm.” Claim 20 recites:



Element	Claim 20
20[PR]	A system comprising;
20[A]	a plurality of video data compression encoders;
20[B]	wherein at least one of the plurality of video data compression encoders is configured to utilize an asymmetric data compression algorithm, and
20[C]	wherein at least one of the plurality of video data compression encoders is configured to utilize an <i>arithmetic data compression algorithm</i> ,
20[D]	wherein a first video data compression encoder of the plurality of video data compression encoders is <i>configured to compress at a higher compression ratio</i> than a second data compression encoder of the plurality of data compression encoders; and
20[E]	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
20[F]	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.

### **III. Petitioners' proposed claim constructions**

The Board does not construe claim terms unnecessary to resolve the controversy. *Shenzhen Liown Electronics Co. v. Disney Enterprises, Inc.*, IPR2015-01656, Paper 7 at 10 (Feb. 8, 2016) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioners have proposed constructions for the terms “asymmetric data compression encoder[s]” and “data blocks.” Pet. 7-9. These terms do not require construction in order to resolve the parties' dispute. Rather, as this Preliminary Response demonstrates, the Board should deny institution in full regardless of Petitioners' proposed constructions of “asymmetric data compression encoder[s]” or “data blocks.” Accordingly, the Board need not construe “asymmetric data compression encoder[s]” or “data blocks.”

### **IV. Ground 1 fails to explain what would be the “first asymmetric data encoder” and what would constitute the “second asymmetric data compression encoder”**

A Petition cannot establish unpatentability, based on anticipation or obviousness, where it fails to articulate *how* the prior art teaches a particular claim limitation. *See, e.g., Comcast Cable Commc'ns, LLC v. Rovi Guides, Inc.*, IPR2017-00956, 2017 WL 4102214, at \*6 (Sept. 15, 2017) (“Comcast does not explain how this disclosure meets the claim limitation of control circuitry on a mobile device processing data ‘to identify content’ of television programming ‘to

generate a first graphical user interface.”); *Arris Int’l Plc v. Sony Corp.*, IPR2016-00827, 2016 WL 6594910 (Sept. 28, 2016); *Cao Grp., Inc. v. The Proctor & Gamble Company*, IPR2014-00797, 2014 WL 6706553, at \*5 (Nov. 26, 2014) (“Patent Owner contends that the Petitioner has not established anticipation of every element of the claims because Petitioner does not adequately explain how Gaglio discloses either the pressure limitation or the viscosity and tackiness limitation that is required by each of the claims. We agree.”).

Where a Petition relies on a combining elements of the prior art, it must explain “how any specific combination would operate or read on” the claims. *ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1327-28 (Fed. Cir. 2012). In other words, it is not enough for the Petition to simply point to some aspect of the prior art and allege that it teaches or suggests given limitation in the challenged claim; the Petition fails unless it further explains *how* the cited aspect of the prior art in fact teaches the limitation in question. Conclusory or vague assertions will not do. *KSR Intern. Co v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (“Rejections on obviousness grounds cannot be sustained by mere conclusory statements.”); *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (“It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition *identify*

*‘with particularity’* the ‘evidence that supports the grounds for the challenge to each claim.’”) (emphasis added) (quoting 35 U.S.C. § 312(a)(3)).

Thus in *Harmonic Inc. v. Avid Tech., Inc.*, the Federal Circuit affirmed the Board’s finding that the Petition’s mere reference to certain teachings in the prior art, without an explanation as to how those teachings met the elements of the challenged claim, were fatally conclusory:

Harmonic relies on the presence of a demultiplexer in Haskell together with the ability of its encoders to control the bit rate of bit-streams destined to its decoders. But Harmonic’s discussion of these features of Haskell is conclusory. Harmonic does not relate what appears to be generic multiplexing and bit rate adjustment to what is recited in claim 11. Specifically, Harmonic ***does not explain how Haskell’s control of bit rate teaches the specific claim limitation*** of commanding the input switch to provide video data to a second decompression array a prior defined period of time after a first decompression array begins receiving data. Harmonic’s expert testimony in support of this theory is equally unavailing, adding nothing beyond the conclusory statements in Harmonic’s petition.

815 F.3d 1356, 1363 (Fed. Cir. 2016) (emphasis added).

To the same effect, the Federal Circuit made clear in *Magnum Oil Tools Int'l, Ltd.* that “[t]o satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements.” 829 F.3d 1364, 1380 (Fed. Cir. 2016). “The petitioner must instead articulate ***specific reasoning***, based on evidence of record, to support the legal conclusion of obviousness.” *Id.* (emphasis added).

The Board has therefore not hesitated to reject a petition's allegations where they are found to be conclusory, and the Federal Circuit has routinely affirmed such Board decisions. *Harmonic*, 815 F.3d at 1363; *Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1286 (Fed. Cir. 2017); *Securus Techs., Inc. v. Glob. Tel\*Link Corp.*, 701 F. App'x 971, 976–77 (Fed. Cir. 2017); *Duke Univ. v. BioMarin Pharm. Inc.*, 685 F. App'x 967, 978–79 (Fed. Cir. 2017).

Here, limitation 1[B] requires specifying which of at least two encoders is the “first asymmetric data compression encoder” that is “configured to compress . . . video or image data” and which is the “second asymmetric data compression encoder” that is configured to likewise compress video or image data. Ex. 1001 at Cl. 1[B]. Moreover, the two recited encoders cannot simply be interchanged because they have differing characteristics. Namely, the “first asymmetric data compression encoder” must be “configured to compress . . . video or image data at *a higher data compression rate* than a second asymmetric data compression encoder.” *Id.* (emphasis added).

But the Petition never even attempts to specify any encoder that would constitute the “first” encoder for purposes of the claims, or any encoder that would constitute the “second” encoder. Instead, the Petition simply proposes “incorporating video encoders” into Imai’s otherwise audio-encoding-only system. Pet. 18-20. Those allegations are inadequate because they fail to specify a “first” encoder and a “second” encoder, as the claims require.

Ground 1 should thus be rejected for the simple reason that the Petition does not even identify the requisite encoders. *See, e.g., Comcast Cable Commc’ns, LLC v. Rovi Guides, Inc.*, IPR2017-00956, 2017 WL 4102214, at \*6 (Sept. 15, 2017); *Arris Int’l Plc v. Sony Corp.*, IPR2016-00827, 2016 WL 6594910 (Sept. 28, 2016); *Cao Grp., Inc. v. The Proctor & Gamble Company*, IPR2014-00797, 2014 WL 6706553, at \*5 (Nov. 26, 2014); *ActiveVideo v. Verizon*, 694 F.3d 1312, 1327-28 (Fed. Cir. 2012) (a party asserting obviousness must “explain . . . how any specific combination would operate or read on the asserted claims”).

- V. **Ground 1 does not show that Imai discloses or suggests “a 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”**

- A. **Limitation 1[B] requires two asymmetric data compression encoders, with the first encoder being *configured* to compress video or image data *faster* than the second encoder**

Claim 1 further requires that its “first asymmetric data compression encoder” be *configured* to compress data “at a higher data compression rate” than the “second asymmetric data compression encoder.” See Ex. 1001 at Cl. 1[B] (“a first asymmetric data compression encoder . . . *configured* to compress . . . *at a higher data compression rate* than a second asymmetric data compression encoder”). Petitioners define “data compression rate” as “the execution or algorithmic speed of a compression encoder.” Pet. 20 (citing Ex. 1001 at 2:63–67; 8:10–18; 14:11–38; Ex. 1003 at 124). They further contend that “it is the throughput of the asymmetric data compression encoder **measured by the amount of input data that it can compress per unit of time** at a given compression ratio.” *Id.* at 21 (emphasis added). Thus, under Petitioners’ definition of “data compression rate,” Claim 1 requires “a first asymmetric data compression encoder” that is configured to compress more *input data* per unit of time at a given compression ratio than a “second asymmetric data compression encoder.”

Moreover, the requirement that the “first asymmetric data compression encoder” is “*configured* to compress . . . at a higher data compression rate than a second asymmetric data compression encoder” means the relationship between the first and second encoders’ compression rates cannot arise by mere happenstance. Rather, the claim’s recitation of “*configured*” requires that the “first encoder” must, *by design*, compress at a higher rate than the “second encoder.”

To that effect, the Federal Circuit has distinguished “configured to” as narrower than “capable of” or “suited to.” For instance, in *Apex Eyewear*, the court distinguished “configured to” from the broader terms “capable of” or “suitable for.” See *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.”). It thus concluded that an apparatus or method that “simply . . . can be made to serve [the] purpose” recited in the claim is *not* a method that is “*configured to accomplish the specified objective*” of the claim. *Id.* (emphasis added).

The Federal Circuit has likewise contrasted “configured to” and “capable of” or “suited for” in other decisions. See *In re Man Mach. Interface Techs. LLC*, 822 F.3d 1282, 1286 (Fed. Cir. 2016) (distinguishing between “configured to” and



“capable of” or “suited for”) (citing *Apex*); *In re Giannelli*, 739 F.3d 1375, 1379 (Fed. Cir. 2014) (same).

And district courts have also construed “configured to” in a manner that requires purposeful design and excludes a happenstance arrangement or capability. *See, e.g., Intellectual Ventures I LLC v. Altera Corp.*, No. CV 10-1065-LPS, 2013 WL 3913646, at \*7 (D. Del. July 26, 2013) (construing “configured to” as “to set up for operation especially in a particular way”); *SIPCO, LLC v. Abb, Inc.*; No. 6:11-CV-0048 LED-JDL, 2012 WL 3112302, at \*7 (E.D. Tex. July 30, 2012) (construing “configured to” as “actually programmed or equipped with hardware or software to”).

Here too, the meaning of “configured to” requires that the “first asymmetric data compression encoder” be ***designed*** to accomplish the specified objective of “compress[ing] . . . at a higher data compression rate than a second asymmetric data compression encoder.”

That understanding is further supported by the specification of the '477 patent itself, which uses “configured to” to convey a purposeful design rather than an accidental arrangement. For example, the specification describes design features that can more efficiently use space on a disk, followed by the statement: “In this way, a system can be configured to achieve greater speed, while not sacrificing disk space.” Ex. 1001 at 18:26-41. Similarly, the specification describes a

“programmable logic device” being “configured for its environment.” *Id.* at 16:37-

40. A “programmable” device is not “configured *for its environment*” on accident, but rather is intentionally programmed to operate in a specific and consistent manner with that environment in mind. Thus, in both these instances, the “configuring” is an intentional design choice through programmed logic rather than mere happenstance.

Moreover, 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 the “first asymmetric data compression encoder” and the “second asymmetric data compression encoder.” The invention would not function if the relationship were reversed. Specifically, 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.” Ex. 1001 at 8:12-18. If 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. Thus, the specification’s description of the invention makes clear that the predictable arrangement of the encoders is crucial, and that a happenstance difference in two

encoders' compression rates would not suffice for the "first asymmetric data compression encoder" and the "second asymmetric data compression encoder" to serve their purposes.

Accordingly, limitation 1[B] requires (1) "a first asymmetric data compression encoder" that is (2) designed to (3) compress more input data per unit of time than (4) "a second asymmetric data compression encoder."

**B. The Petition's allegations do not even attempt to show one encoder that is "*configured to*" compress at a higher rate than another encoder, and thus cannot demonstrate obviousness**

Limitation 1[B] specifically requires compressing "video or image data."

The Petition implicitly recognizes that Imai contains no such teaching. So the Petition proposes to modify Imai to include video encoders. Pet. 19-20, 24.

By contrast, however, the Petition never even attempts to demonstrate that Imai—either unmodified or modified—would meet the requirement of having a specific "first" encoder that is *configured to* compress the video or image data at a higher rate than a specific "second" encoder. Instead, the Petition alleges that Imai *might sometimes* compress data at a higher rate with one encoder than another one if Imai were to use at least two encoders. Pet. 21. As demonstrated below, that theory fails to meet the claim. The Petition thus cannot prevail as to Claim 1.

**1. Petitioners' argument that limitation 1[B] would be met by chance reads "configured to" out of the limitation**

Rather than showing how Imai teaches or suggests limitation 1[B], the Petition argues if Imai were to use at least two encoders, it is likely that *one of them would be faster than another* by mere happenstance. *See* Pet. 21 ("A POSITA would have understood that it is only a remote possibility that any two different asymmetric data compression encoders would have the same execution speed, and therefore the obvious result of including two or more different asymmetric compression encoders is that one encoder would have a higher data compression rate than another encoder.").

But as explained above, caselaw from the Federal Circuit and district courts, and the patent's specification confirm that "configured to" is used to show purposeful design rather than chance arrangements. *See supra* at Section V.A.

Thus, a system that includes two asymmetric data compression encoders that *happen* to compress at different rates would not have a "***first*** asymmetric data compression encoder" that is "***configured*** to compress . . . at a higher data compression rate than a ***second*** asymmetric data compression encoder" as required by limitation 1[B].

Indeed, by stating that *either* of Imai's encoders could compress at a faster rate than the other one, the Petition *actually concedes that Imai cannot meet*

***Claim 1.***

The Board's decision in *Commvault v. Realtime Data*, IPR2017-02178, is instructive. There, the Board addressed the obviousness of a system claim which, under the Board's construction, recited a processor configured to make a "binary choice between compressing a given data block using the single data compression encoder and compressing that data block using the one or more content-dependent data compression encoders." Paper 13 at 4-5 (July 19, 2018). The petition offered an example of a circumstance where the reference would choose only one of the two types of encoders to compress a data block—a page of either text or image data. *Id.* The Board rejected the theory because "[e]ven if Petitioner is correct that it is *possible, under the right circumstances*, for the [asserted reference] to operate in a way that results in compressing an entire page of text or in compressing an entire page of non-text data, [the reference] *does not teach or suggest* the required binary choice between those two outcomes because its system is capable of compressing portions of a page using one method and other portions of the same page using a different method." *Id.* at 5-6 (emphasis added).

Here too, the mere *possibility* that Imai *might* sometimes operate with one encoder that operates at a higher compression rate than another encoder (and at

other times operate with the other encoder operating at a higher rate) does not teach or suggest a “*first* asymmetric data compression encoder” that is “*configured* to compress . . . at a higher data compression rate than a *second* asymmetric data compression encoder.”

The Board should thus find that the Petition cannot meet Claim 1 because the Petition fails to meet the requirement of a *first* encoder that is *configured to* compress at a higher rate than a *second* encoder.

**2. The Petition’s argument that Imai teaches “different asymmetric data compression encoders” that have “different data compression rates” is both inadequate and unsupported**

The Petition further argues that a POSITA “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.” Pet. 22.

As a threshold matter, that allegation is again inadequate: it does not demonstrate that Imai has a specific *first* encoder that is *configured to* compress at a higher rate than a specific *second* encoder, as Claim 1 requires. *See supra* at Section V.B.1.

Moreover, none of the Petition’s citations in support of its allegation that Imai teaches “asymmetric compression encoders that have different execution

speeds,” Pet. 21, actually contain such a teaching. In fact, the Petition points to no teaching in Imai regarding compression *rate* according to their own definition, *i.e.*, *speed* of compression measured by input data compressed per unit of time. *See supra* at Section V.A.

Instead, the Petition obfuscates and misdirects with a specious quotation from Imai that uses the term “compression rate” but *not in the way the ‘477 patent does*. Specifically, the Petition states that Imai “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].’” Pet. 21 (citing Ex. 1005 at [0068]). On that basis it concludes that Imai teaches “a first encoder that uses an asymmetric compression algorithm (MPEG layer 3) and is configured to compress data at a higher compression rate than a second encoder using another asymmetric algorithm (ATRAC 2).” *Id.* at 22.

But the full quoted sentence reads: “Furthermore, example of the coding method, which provides **a relatively less bit rate of the resulting coded data (i.e., which provides a high compression rate)**, are MPEG layer 3 and ATRAC 2.” Ex. 1005 at [0068] (emphasis added). The reference to “a relatively less bit rate” makes clear that Imai’s use of “compression rate” refers to the compression *ratio*, *i.e.*, to *how much* the data was compressed, rather than the compression *rate* in the

undisputed meaning of the '477 patent and Claim 1, i.e., *how quickly* the data was compressed. Notably, the cited passage says nothing about “compression rate” as defined in the Petition itself, i.e., the “the execution or algorithmic speed of a compression encoder,” Pet. 20, or the “amount of *input data* that it can compress per unit of time.” *Id.* at 21 (emphasis added). Thus, despite the specious word matching, the cited teachings do not pertain to the encoders’ “compression rate” under the undisputed definition of “compression rate” in the '477 patent and Claim 1, including the Petition’s own definition. *See supra* at Section V.A.

Next, the Petition argues that ATRAC is “a relatively faster compression algorithm” and that “Imai teaches including asymmetric compression encoders that have different execution speeds.” *Id.* at 21. But the only evidence the Petition points to is Imai’s statement that ATRAC “requires a not so large amount of computation for **decoding**.” *Id.* (quoting Ex. 1005 at [0068]) (emphasis added). Again, that is not a teaching regarding the speed of *encoding*, i.e., “compression rate.” The quoted sentence is describing the computation necessary for “decoding.” And, according to the Petition, “compression rate” refers to the “algorithmic speed of a compression **encoder**,” rather than the speed of a *decoder*. Pet. 20 (emphasis added). Thus, the Petition’s discussion of ATRAC is entirely off the mark.

The Petition also asserts that “Imai explains that ATRAC 2 can encode at various compression rates (*e.g.*, ‘64 Kbps, 32K bps, 24 Kbps’).” Pet. 22 (quoting



Ex. 1005 at [0069]). The quoted sentence in Imai, however, actually states:

“Therefore, here, for example, all the encoders 531 to 53N perform encoding with ATRAC 2, while data rates of **coded data outputted from the encoders** are 64 Kbps, 32 Kbps, 24 Kbps, . . . , respectively.” Ex. 1005 at [0069] (ellipsis original) (emphasis added). Thus, the bitrates do not describe “compression rates,” as the Petition asserts, but *output* rates from the encoder. Output rates do not meet the Petition’s definition of “compression rate” because they do not describe the “amount of *input* data that [the encoder] can compress per unit of time.” Pet. 21 (emphasis added). The Petition provides no argument or evidence to the contrary.

Thus, the Petition’s argument that a POSITA would include encoders of varying compression rates fails at two levels. First, it is irrelevant because it does not even allege that a specific encoder would be **configured to** compress at a higher rate than another specific encoder, as the claim requires. Second, it is also inadequate because the assertion relies on a crucial unproven and entirely unsupported statement: that Imai teaches or suggests using encoders with varying compression rates. Under similar circumstances, the Federal Circuit has made clear that the obviousness theory cannot be accepted. *In re Magnum Oil Tools International, Ltd.*, 829 F.3d at 1380 (“To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements.”).

**3. The Petition's suggested modification runs contrary to Imai's goal of ensuring that audio data can be reproduced in real time**

Finally, the Petition argues that a POSITA would have included “encoders having higher and lower data compression rates” because he “would have recognized that adjusting the output rate of the compression encoder would impact the throughput of the compression encoder, particularly if the compression ratio of the encoder is fixed.” Pet. 22-23. But the only support it offers is Imai's teaching of lowering the output bit rate to accommodate a slow network to ensure the client can “reproduce the transmitted signals in real time.” *Id.* at 22 (noting that Imai recognizes that the “transmission rate of a communication channel . . . ‘varies due to the amount of traffic’” and thus “Imai selects a ‘coding method which can provide the coded data having a bit rate not higher than the detected transmission rate’”) (citing Ex. 1005 at [0145]). The Petition points to no evidence that Imai teaches lowering the output rate by modifying the *speed* of compression, as Claim 1 requires. Nor does it offer any reason *why* a POSITA would solve the problem of a slow *network* by varying the *compression rate* as opposed to the *compression ratio*.

Moreover, Imai in fact teaches reducing the output bitrate by compressing the data *more*—not faster or slower. Because the data encoded at a lower bit rate is more compressed, the encoding method that “provides a relatively small (low) bit

rate . . . reproduces an audio signal with relatively poor reproducibility” and the method “which provides a relatively large (high) bit rate . . . can reproduce an audio signal with relatively good reproducibility.” Ex. 1005 at [0067]. In other words, Imai increases the *compression ratio* at the expense of audio quality so that the bitrate is reduced to a rate that can be transmitted by the network in real time. Imai’s teaching thus provides no support for modifying the speed of compression, as the Petition suggests, “particularly if the compression ratio of the encoder is fixed.” Pet. 22-23.

In contrast to Imai’s solution of increasing the *degree* of compression, the Petition’s suggested approach of modifying the *speed* of compression would be ineffectual at best and counterproductive at worst.

As the Petition acknowledges, Imai is concerned with the situation in which the *network*—not the *encoder*—forms a bottleneck and slows the transmission such that the audio cannot be reproduced in real time. *Id.* at 22 (“Imai explains that the transmission rate of a communication channel between the server and client ‘varies due to the amount of traffic’ being sent across the channel, and that this can impact the ability of the client to reproduce the transmitted signals in real-time.”) (citing Ex. 1005 at [0145]). Specifically, Imai is concerned that “if the transmission rate of the network 2 is reduced down smaller than the data rate of the coded data,

transmission of the coded data becomes so late that audio signals cannot be reproduced in real time.” Ex. 1005 at [0145].

Lowering the output rate of the encoder by *slowing* it would only *delay* the arrival of the data, further preventing it from being “reproduced in real time.” *Id.* Dr. Storer’s suggestion of lowering the speed of compression to reduce output rate provides an illustration. *See* Ex. 1003 at ¶ 141 (“[A] 32 kbps encoder could be created using a 64 kbps encoder that runs at half its normal execution speed. It would follow that the 64kbps encoder would have a higher data compression rate than the 32 kbps encoder.”). If an audio file encoded at 64 kpbs cannot be “reproduced in real time” because the “transmission rate of the network is . . . smaller than the data rate of the encoded data,” then the network is not capable of transmitting at 64 kbps. *See* Ex. 1005 at [0145]. If the encoder were modified to output the same 64 kbps audio at 32 kbps, the data would only be *sent more slowly*. It would not arrive any more quickly. And it could not be “reproduced in real time,” because the 64 kpbs audio would be *sent* at 32 kbps, half the rate necessary to reproduce it in real time. Thus, reducing the output of the encoder by slowing it would be *counterproductive*. That is so “particularly if the compression ratio of the encoder is fixed,” as the Petition suggests. *Id.* at 22-23.

Thus, modifying compression speed of one encoder while keeping a constant compression ratio would only further bottleneck transmission—the very problem

Imai sought to solve—and hinder the ability of the system to send audio data that could be reproduced in real time—the goal Imai sought to achieve. Neither Imai nor Petitioners suggest a beneficial reason why a “POSITA would have recognized that adjusting the output rate of the compression encoder would impact the throughput of the compression encoder, particularly if the compression ratio of the encoder is fixed.” Pet. 22-23.

Simply put, the Petition *gives no reason at all* for the actual modification on which its obviousness theory relies. The Petition’s silence on that crucial point is fatal. *See In re Nuvasive, Inc.*, 842 F.3d 1376, 1384 (Fed. Cir. 2016) (reversing finding of motivation to combine where there was no articulation why the proposed modification “would benefit a PHOSITA”). There is thus no dispute of material fact here: there is *no evidence or argument* as to any potential benefit the POSITA would achieve by seeking to increase *or* decrease the compression rate of an encoder to address a slow network. Moreover, such a modification would in fact be counterproductive or pointless.

**VI. Ground 2 fails to show that Pauls teaches or suggests “a first asymmetric data compression encoder . . . configured to compress . . . at a higher data compression rate than a second asymmetric data compression encoder” as required by Claim 1**

As with Ground 1, Ground 2 also fails to meet limitation 1[B], namely (1) “a first asymmetric data compression encoder” that is (2) designed to (3) compress

more input data per unit of time than (4) “a second asymmetric data compression encoder.” *Supra* at Section V.A.

**A. Ground 2 fails to identify what would constitute the “first asymmetric data encoder” and what would constitute the “second asymmetric data compression encoder”**

As with Ground 1, Ground 2 again fails to specify any encoder that would constitute the “first” encoder and any encoder that would constitute the “second” encoder for purposes of meeting Claim 1’s requirements, and should be rejected on that basis alone.

**B. Ground 2 points to no disclosure or discussion of compression rates of any encoder**

The Petition’s Ground 2 cannot show that Pauls meets limitation 1[B] for the additional reason that it points to no disclosures at all from Pauls regarding “compression rates” according to its own definition, i.e., “the execution or algorithmic speed of a compression encoder” “measured by the amount of input data that it can compress per unit of time at a given compression ratio.” Pet. 20-21.

As alleged evidence that Pauls teaches encoders with various compression rates, the Petition points to Pauls’s disclosures regarding compression *ratios*, repeating the same error discussed above with respect to Imai and Ground 1. *Id.* at 39-40. Specifically, the Petition points to Pauls’s statement that “[e]ach of the aforementioned encoding algorithms have associated different levels or

percentages of compression.” *Id.* at 39 (quoting Ex. 1007 at [0010]). The Petition also points to the rate at which the encoders “render” or output video. *Id.* (“For example, FIG. 5 teaches 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.”) (emphasis added).

Both of those assertions fail to demonstrate that Pauls meets limitation 1[B] under the Petition’s own definition of “compression rate.”

First, Pauls’s discussion of “different levels or percentages of compression” has no connection to “compression *rate*,” i.e., compression *speed*, as Claim 1 requires. Instead, “different levels or percentages of compression” is a clear reference to compression *ratio*, which Claim 1 does not recite. That is evident from the preceding sentences, which refer to “reducing the amount of data to be transmitted” and “associated loss that may adversely affect data quality.” Ex. 1007 at [0010].

Second, the Petition’s description of the speeds at which the encoders mentioned in Fig. 5 “render,” or output, video also fails to describe their compression rates. Pet. 39. Indeed, Pauls’s description of Fig. 5 explicitly states that it depicts “encoding algorithms and the bit rate of the data *after* encoding (or compression).” Ex. 1007 at [0024] (emphasis added). And the Petition admits the compression rate of an encoder is “measured by the amount of **input** data it can

compress per unit of time”—not the rate at which it outputs that data. Pet. 21

(emphasis added). Thus, Pauls's description of the bitrate of compressed, *output* data does not disclose the speed at which an encoder compresses *input* data.

Accordingly, Pauls also cannot demonstrate unpatentability of Claim 1 because the Petition's Ground 2 theory likewise fails to demonstrate that limitation 1[B] is met.

**C. Ground 2 further fails because it also fails to meet the “configured to” requirement of Claim 1**

As with Ground 1, the Petition's Ground 2 theory again alleges that Paul meets limitation 1[B] through happenstance. Pet. 40 (“POSITA would have understood that it is only a remote possibility that any two different asymmetric data compression encoders would have the same execution speed, and therefore the obvious result of including two or more different asymmetric compression encoders is that one encoder would have a higher data compression rate than another encoder.”).

But as demonstrated, the “*configured to*” requirement of Claim 1 cannot be met by mere happenstance. Rather, it demands deliberate configuration. *See supra* at Section V.A. Thus, by arguing that Pauls arrives at the limitation by chance, the Petition actually admits that Pauls does not disclose limitation 1[B]. The Petition's Ground 2 theory should be rejected on that additional basis.



**VII. Ground 3 fails to explain why a POSITA would make its alleged modifications**

An obviousness combination must be made with respect to particular combinations of art and provide specific motivations for *why* a POSA would combine that art. *In re Nuvasive*, 842 F.3d 1376, 1384 (Fed. Cir. 2016) (where a petition merely states that a POSA would have been motivated to combine the prior art references but fails to articulate a “reason *why*,” the petition’s “arguments amount to nothing more than conclusory statements” that cannot support a finding of obviousness) (emphasis original); *Commvault Systems, Inc. v. Realtime Data LLC*, IPR 2017-2007, Paper 11 at 16 (March 15, 2018) (“The failure of Petitioner to address, let alone argue, why a person of ordinary skill would combine [the references] is enough to deny the petition”).

The articulated reason to combine must be in reference to the specific combination of prior art elements the POSA would allegedly bring together, and the manner in which he or she would do so. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418-19 (2007) (“[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.”).

It is not sufficient to allege that the prior art *could* be combined; rather, the petition must show why it *would* be combined. *See Personal Web Tech. v. Apple*,

848 F.3d 987, 993-94 (Fed. Cir. 2017) (“Obviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.”) (emphasis original; internal citations and quotations omitted); *Apple, Inc. v. Realtime Data LLC*, IPR 2016-01737, Paper 57 at 59 (March 13, 2018) (granting motion to amend in full in part because petitioner did not adequately “articulate a *reason why* a person of ordinary skill in the art would combine the prior art references”) (emphasis original).

Moreover, “[r]ejections on obviousness grounds cannot be sustained by mere conclusory statements.” *KSR Intern. Co v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *In re Magnum Oil Tools International, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016) (“To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.”).

Ground 3 suggests that a POSITA would incorporate the video encoders mentioned in Pauls into Imai’s system. Pet. 53 (“A POSITA would thus 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.”).

At the same time, Ground 3 *also* argues that a POSITA would modify Pauls to incorporate “Imai’s detailed teachings regarding determining the bandwidth of a communications channel to Pauls’ system that selects from multiple video data compression encoders to fine-tune Pauls’ video transmission system.” *Id.*

Thus the Petition proposes to combine certain elements from Pauls into Imai, and certain elements from Imai into Pauls. But the Petition does not explain why a POSITA would have been motivated to make such a combination. For instance, the Petition does not explain why the POSITA would modify Pauls at all, much less to incorporate Imai’s “detailed teachings regarding determining the bandwidth of a communications channel.” *Id.*

Instead, the Petition notes that Imai states that it *could* be modified for video encoding “to create a video encoding and transmission system” and then jumps to the conclusion that a POSITA *would* use the encoders mentioned in Pauls. *See Id.* 53 (“As Imai explicitly applies its teachings to video encoding, a POSITA would logically *look towards* other prior art references involving data encoding and video encoding techniques to create a video encoding and transmission system. **One such prior art reference is Pauls**, which includes extensive teachings specific to video.”) (emphasis added).

That reasoning amounts to no more than an assertion that a POSITA—in the Petition’s words—would “look towards” Pauls. *Id.* But the Federal Circuit has

made clear that that is not enough. The appellate court's decision in *Personal Web Techs. v. Apple*, 848 F.3d 987 (Fed. Cir. 2017), directly controls. There, the Board concluded that a POSA would have been motivated to combine two references, Wodhill and Stefik, because "the combination of Woodhill and Stefik *would have allowed for* the selective access features of Stefik to be used with Woodhill's content-dependent identifiers feature." *Id.* at 993 (emphasis original). The Federal Circuit rejected that reasoning, and held: "***that is not enough***: it does not imply a motivation to pick out those two references and combine them to arrive at the claimed invention." *Id.* at 993-94 (emphasis added).

Here, as in *Personal Web*, the conclusion of the Petition's logic is simply that a POSA would "look towards" Pauls, *i.e.*, that the POSA perhaps ***could have*** incorporated Pauls's encoders into Imai. But the Petition's logic does not lead to the conclusion that the POSITA ***would have*** done so, and certainly provides no reason ***why*** the POSITA would have been motivated to do so. Instead, the Petition's logic simply rests on the assertion that video encoders ***could*** be used in Imai, which cannot support the conclusion that a POSITA ***would*** have sought to use the particular encoders mentioned by Pauls. *Personal Web*, 848 F.3d at 993-94.

And any allegation that a POSITA seeking to modify *Imai* to include video encoders cannot justify modifying *Pauls* at all. Thus, it cannot provide a reason why a POSITA would modify Pauls to incorporate Imai's "detailed teachings

regarding determining the bandwidth of a communications channel.” *See In re Nuvasive, Inc.*, 842 F.3d 1376, 1384 (Fed. Cir. 2016) (reversing finding of motivation to combine where there was no articulation why the proposed modification “would benefit a PHOSITA”).

Rather than providing an actual motivation for its *specific* proposed modifications, the Petition merely relies on two generic alleged reasons why the POSITA would have *generally* combined Imai and Pauls. Both are inadequate.

The Petition first argues that a motivation to combine exists because Imai and Pauls address a similar problem with similar solutions. Pet. 52 (“Indeed, 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.”); *id.* (“They both teach encoding the data using encoding methods that achieve data compression using asymmetric techniques.”); *id.* (“Also, both references choose an encoding method based upon the type of data being transmitted.”); *id.* (“Further, both teach choosing the encoding method based upon a throughout of the communications channel connecting the client.”); *id.* (“Imai and Pauls discuss implementing their inventions on known computer systems.”).

But simply alleging that two prior art references are directed to the same general field of art and the same general problem is not evidence of a motivation to combine, as the Federal Circuit has held. *Securus Tech., Inc. v. Global Tel\*Link*

*Corp.*, No. 2016-2573, 2017 WL 2992516, at \*4 (Fed. Cir. July 14, 2017) (holding that “a broad characterization” of two prior references “as both falling within the same alleged field of ‘telecommunications monitoring and control,’ without more, is not enough for Securus to meet its burden of presenting a sufficient rationale to support an obviousness conclusion.”) (citing *Microsoft Corp. v. Enfish, LLC*, 662 F. App’x 981, 990 (Fed. Cir. 2016) (“[The] Board correctly concluded that [the petitioner] did not articulate a sufficient motivation to combine. With respect to [certain challenged claims], [the petitioner] gave no reason for the motivation of a person of ordinary skill to combine [the two references] except that the references were directed to the same art or same techniques. . . .”). Rather, the Petition’s statements simply allege that the references pertain to the same broad subject matter—the entire field data encoding and transmission systems. As the Federal Circuit has emphasized, “[s]uch short-cut logic would lead to the conclusion that **any and all** combinations of elements known in this broad field would automatically be obvious, without the need for any further analysis”—a clearly absurd and untenable result. *Id.* (emphasis added). In sum, the mere fact that two references broadly deal with related material is not evidence of a motivation to combine. *Id.* Rather, such “generic” evidence is inadequate because it “bears no relation to any **specific combination** of prior art elements.” *ActiveVideo Networks v. Verizon*, 694 F.3d 1312, 1328 (Fed. Cir. 2012) (emphasis added). Simply put,

the allegation that the references pertain to similar subject matter is not a reason why a POSITA would have been motivated to combine specific elements of those references to arrive at the claimed inventions, as the Petition has alleged.

Accordingly, the Petition's reliance on mere similarities between Imai and Pauls is not a basis for a motivation to implement the specific encoders mentioned by Pauls into Imai's system, or Imai's bandwidth teachings into Pauls. *Securus Techs., Inc. v. Global Tel\*Link Corp.*, 701 Fed. Appx. 971, 974 (Fed. Cir. 2017) (affirming Board's finding of non-obviousness where petitioner "only offered conclusory testimony from its expert . . . that the skilled artisan would combine the references because they were in the same field of art").

The Petition next argues that a POSITA would combine the references because she "would have a reasonable expectation of success . . . given that audio and video compression technologies were well known . . . ." and doing so would be "simple" and "would have predictable results." Pet. 53; *see also id.* at 54 ("A POSITA would have found it obvious to incorporate Pauls' videos-specific compression encoders into Imai using her ordinary skill because a POSITA at the time of the alleged invention would have known how to make use of off-the-shelf implementations of standards-based video encoders and could use those encoders within Imai's multi-compressor system.").

But again, the Petition's allegations as to the reasonable expectation of success or predictability of results say nothing about why a POSITA would combine the elements "in the way the claimed new invention does." *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418-19 (2007). Standing alone, they are allegations about "what a skilled artisan would have been *able* to do, rather than what a skilled artisan would have been *motivated* to do at the time of the invention." *Polaris Industries, Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1068-69 (Fed. Cir. 2018).

And the assertion that the proposed combination would have been "simple" is likewise a legally inadequate basis to find a motivation to combine. *InTouch Techs., Inc. v. VGO Commc'ns, Inc.*, 751 F.3d 1327, 1348-49 (Fed. Cir. 2014) ("Dr. Yanco's testimony was nothing more than impermissible hindsight; she opined that all of the elements of the claims disparately existed in the prior art, but failed to provide the glue to combine these references. While she opined that the references were like separate pieces *of a simple jigsaw puzzle*, she did not explain what reason or motivation one of ordinary skill in the art at the time of the invention would have had to place these pieces together.") (emphasis added); *In re Van Os*, 844 F.3d 1359, 1361 (Fed. Cir. 2017) ("This type of finding, without more, tracks the *ex post* reasoning *KSR* warned of and fails to identify any actual *reason* why a skilled artisan would have combined the elements in the manner



claimed.”) (emphases original); *In re Stepan Co.*, 868 F.3d 1342, 1346 (Fed. Cir. 2017) (rejecting the Board’s reliance on a “routine optimization” rationale as an inadequate basis for a motivation to combine) (collecting cases).

No matter how “simple” it would have been to incorporate encoders mentioned in Pauls into Imai, that is not a *reason why* a POSA would have done so. At best, the alleged simplicity of the proposed substitution—if accepted—“say[s] no more than that a skilled artisan, once presented with the two references, would have understood that they *could be* combined. And that is not enough: it does not imply a motivation to pick out those two references and combine them to arrive at the claimed invention.” *Pers. Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 993–94 (Fed. Cir. 2017) (emphasis original).

In sum, Ground 3 fails because it does not explain *why* a POSITA would make either of the modifications it alleges.

#### **VIII. Ground 3 further fails because it does not purport to address any of the flaws in Grounds 1 and 2**

Ground 3 provides no additional analysis of Claim 1’s limitations other than to argue that the modifications render obvious the “compress . . . video or image data” element. Pet. 54 (“To the extent Patent Owner argues that Imai does not adequately teach compressing video or image data, Claim 1 is still obvious in view of the combination of Imai with Pauls, which has extensive teachings directed to

video compression.”). It otherwise relies on the Ground 1’s flawed analysis of Claim 1 and thus fails to show obviousness for the same reasons as Ground 1. *Id.* (As explained in Ground 1, Imai teaches all limitations of Claim 1.”).

Moreover, Ground 3’s modification to Imai does not address the Petition’s failure to show that Imai teaches or suggests the limitations of 1[B]. Even if the combination is accepted—which it should not be—and the encoders mentioned in Pauls are included in Imai, Pet. 53, the combination would still fail because the Petition fails to make the necessary showings with respect to *Pauls*’s encoders as well as Imai’s. *Supra* at Sections V, VI. Thus, including Pauls’s encoders could not address the Imai’s failures because neither reference teaches or suggests the elements of limitation 1[B].

As with Grounds 1 and 2, Ground 3 fails because it (1) does not point to any teachings regarding compression rates in Imai or Paul, *supra* at Sections V.B.2 and VI.B; (2) suggests no reason why a POSITA would *configure* either system with “a 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”, *supra* at Sections V.B.1 and VI.C; and (3) does not indicate which encoder from Pauls would constitute the “first asymmetric data compression encoder” and which would constitute a “second asymmetric data compression encoder,” *supra* at Sections IV and VI.A.

And Ground 3's second modification, incorporating Imai's teachings regarding determining bandwidth in Pauls, Pet. 53, does not address the elements of limitation 1[B] at all.

Accordingly, Ground 3 must fail even if the combination is accepted.

**IX. Ground 3 and 4 do not explain *how* a POSITA would combine the references**

To support an allegation of obviousness, it is not sufficient for a petition to merely show that all of the elements of the claims at issue are found in separate prior art references. *Personal Web Tech. v. Apple*, 848 F.3d 987, 991 (Fed. Cir. 2017) (holding that such evidence "would not be enough").

After all, "[i]nventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known . . . ." *KSR Int'l v. Teleflex*, 550 U.S. 398, 418-19 (2007).

The petition must thus go further, (1) "to explain how specific references could be combined," (2) "which combination(s) of elements in specific references would yield a predictable result," and (3) "how any specific combination would operate or read on" the claims. *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1327-28 (Fed. Cir. 2012); *Dell, Inc. v. Realtime Data, LLC*, IPR2016-01002, Paper 71 at 15 (October 31, 2017) (upholding validity of all

claims because petitioner's combination theory failed to articulate "how specific references could be combined, which combination(s) of elements in specific references would yield a predictable result, or how any specific combination would operate or read on the asserted claims," citing *ActiveVideo*); *Commvault Systems, Inc. v. Realtime Data LLC*, IPR 2017-2007, Paper 11 at 13 (March 15, 2018) (declining to institute a trial where the petition "fails to demonstrate how a person of ordinary skill in the art could combine the prior art").

Grounds 3 and 4 fail to explain *how* a POSITA would combine the references because neither Ground states how any encoders in the resulting combination would map onto the encoders recited in the claims.

Ground 3 alleges that a POSITA would "incorporate Pauls' video-specific compression encoders into Imai" system. Pet. 54. But it does not indicate which of those encoders would constitute the "first asymmetric data compression encoder," or which would constitute the "second asymmetric data compression encoder" recited by Claim 1 and its dependents.

Ground 4 alleges that a "POSITA would have been motivated to combine Chao's arithmetic video data compression encoder with the systems of Imai and Pauls," Pet. 62, but provides no indication whether Chao would operate as the "first asymmetric data compression encoder" or the "second asymmetric data compression encoder" for purposes of the claims that depend from Claim 1. It

likewise fails to say which encoder would constitute “a first video data compression encoder” or “a second data compression encoder,” as required by Claim 20 and its dependents. *See* Ex. 1001 at Cl. 20[D].

Ground 4 also states that “Pauls teaches using asymmetric video compression algorithms including H.263 and JPEG, which both have optional arithmetic algorithm modes” without indicating which algorithm would be modified to use its “optional arithmetic mode,” or which other encoders would be included in the resulting system. Pet. 59; *see also id.* at 61 (listing additional encoders mentioned in Pauls without saying which would be included or modified to use an “optional arithmetic encoding mode”). As with the modification involving Chao, Ground 4 offers no indication of how the Paul’s encoder modified to use “optional arithmetic encoding” would map onto Claims 1 and 20 or their dependents. It does not say whether Paul’s modified encoder would be a “first asymmetric data compression encoder” or a “second asymmetric data compression encoder” for purposes of the claims that depend from Claim 1, or whether it would be “a first video data compression encoder” or “a second data compression encoder,” as required by Claim 20 and its dependents. Ex. 1001 at Cl. 20[D].

Accordingly, Grounds 3 and 4 cannot meet Petitioners’ burden to explain “how any specific combination would operate or read on” the claims, and must be rejected. *ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312,

1327-28 (Fed. Cir. 2012); *see also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418-19 (2007) (“[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field *to combine the elements in the way the claimed new invention does.*”) (emphasis added); *Dell, Inc. v. Realtime Data, LLC*, IPR2016-01002, Paper 71 at 15 (October 31, 2017); *Dell, Inc. v. Realtime Data, LLC*, IPR2016-00972, Paper 71 at 10-11, 15-16 (May 15, 2018); *Commvault Systems, Inc. v. Realtime Data LLC*, IPR 2017-2007, Paper 11 at 13 (March 15, 2018).

**X. Ground 4 does not address the tradeoffs inherent in its motivation to combine**

Where the benefit motivating a combination entails costs as well, Petitioners must show that the benefits justify the costs. A motivation to combine cannot be sufficiently alleged based merely on the purported benefits that would result from a proposed trade off; obviousness cannot be found where the petition fails to consider—much less evaluate—the countervailing harms or losses from the proposed tradeoff. *See Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n. 8 (Fed. Cir. 2000) (“*the benefits, both lost and gained, should be weighed against one another.*”) (emphasis added); *Id.* at 1349 (“Trade-offs often concern what is feasible, not what is, on balance, desirable. Motivation to combine requires the latter.”).

For example, in *Apple v. Realtime Data*, IPR2016-01737, Paper 57 (March 13, 2018), Apple's expert opined that making a modification to the base reference would save time and reduce the amount of flash memory need by using more RAM instead. *Id.* at 57. Apple contended the modification would be "cost-effective." *Id.* at 58. But the Board found that RAM was more expensive than flash memory at the time of the invention, so using RAM instead of flash memory would increase costs, undercutting Apple's cost effectiveness rationale. *Id.* Because Apple did not show the benefits were worth the costs, the Board found that Apple had failed to show *why* the combination would be made. *Id.* at 58-59.

Both Ground 4 theories suggest that a POSITA would configure the system to use an arithmetic algorithm, whether by configuring it to use the "arithmetic mode" of an algorithm mentioned in Pauls or by combining it with Chao. *See* Pet. 60 ("A POSITA would have known of arithmetic data compression encoders . . . 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 61 (alleging that "Pauls teaches asymmetric data encoders that have optional arithmetic coding modes"); *id.* at 63 (alleging "it would have been obvious to substitute Chao's video encoder for Pauls' H.263 video encoder").

According to the documents Petitioners cite to describe the benefits of arithmetic encoding, such encoding also entails costs in the form of reduced speed.

For example, Petitioners cite the '477 patent's statement that algorithmic encoding "possess the highest degree of algorithmic effectiveness," Pet. 60, but omit the end of that sentence, which states that it "is the slowest to execute." Ex. 1001 at 5:11-13. *See also* Ex. 1018 at 39 ("[Arithmetic coding's] [r]untime performance is significantly slower than Huffman coding, however, due to the computational burden imposed on the encoder and decoder.") (emphasis original). Chao also raises the concern of reduced speed, stating that the choice whether to use "either Arithmetic, Run Length, or Huffman, of [sic] Huffman and Run Length combined" depends on "the amount of compression desired against the invested time required to get that level of compression." Ex. 1016 at 54.

Moreover, the H.263 specification states that its arithmetic coding option does "not apply to certain types of pictures." Ex. 1020 at 38 (listing several types of for which Arithmetic coding cannot be used). Nor can it be "used in combination with certain other modes." *Id.* at 39.

But the Petition makes no attempt to explain *why* a POSITA would consider the benefits of arithmetic encoding to justify the costs of decreased speed and compatibility. Instead, it assumes that the correct balance between encoding speed and algorithmic effectiveness is whatever leads to its combination—a strong indicator of hindsight bias. The Petition's failure to consider the costs of arithmetic encoding is fatal to its motivation to use Chao's encoder and its motivation to



configure the Imai/Pauls system to use the arithmetic option of other encoders. *See Winner Int'l Royalty Corp*, 202 F.3d at 1349.

**XI. Ground 4 further fails because it does not purport to address any of the flaws in Grounds 1- 3 or additional limitations of Independent Claim 20**

Ground 4 provides no additional analysis of Claim 1's limitations. And the only analysis of independent Claim 20's limitations is directed to the limitation reciting "at least one of the plurality of different asymmetric data compression encoders is configured to utilize an arithmetic algorithm." Pet. 61-63. Ground 4 otherwise relies the flawed analysis of Claim 1 in Grounds 1-3, and thus cannot meet the burden to show obviousness for the same reasons. *Id.* at 61. As explained in Section VIII with respect to Ground 3, merely modifying the encoders does not address the Petition's failure to show that Imai or Pauls teach or suggest the limitations of 1[B].

And Ground 4's reliance on Grounds 1-3 is especially inadequate because those Grounds only address Claim 1 and its dependents, whereas Ground 4 also alleges obviousness of *independent* Claim 20 and its dependents. Pet. 3. Ground 4 totally overlooks Claim 20's limitations other than the requirement of an encoder "configured to utilize an arithmetic algorithm." *Id.* at 61 ("*Claim 20* and Claim 2 include all limitations of independent Claim 1 and have the additional requirement

that ‘at least one of the plurality of different asymmetric data compression encoders is configured to utilize an arithmetic algorithm.’”) (emphasis added).

For instance, independent Claim 20 differs from Claim 1 in that it requires “a plurality of *video* data compression encoders; wherein” “a first *video* data compression encoder . . . is configured to compress at a *higher compression ratio* than a second data compression encoder . . . .” *Compare* Ex. 1001 at Cl. 20[A],[D] *with* Ex. 1001 at Cl. 1[B] (emphasis added).

As explained above, “configured to” in the claims indicates intentional design rather than happenstance capability. *See supra* at Section V.A. Thus, the Petition must explain why a POSITA would *configure* “a first video data compression encoder” to compress “at a higher *compression ratio* than a second data compression encoder.” Ground 4 contains no discussion at all of the “compression ratio” limitation—not present in Claim 1—much less any explanation of *why* a POSITA would *configure* the system to meet the limitation. Ground 4 should be rejected as to Claim 20 and its dependents on that basis alone.

Ground 4 also fails to address Claim 20’s recitation of “a plurality of *video* data compression encoders” or “a first *video* data compression encoder,” neither of which is recited by Claim 1. *Compare* Ex. 1001 at Cl. 20[A],[D] *with* Ex. 1001 at Cl. 1. Moreover Ground 4 relies in part on Pauls’s disclosure of JPEG as an encoder that uses has an “optional arithmetic algorithm” mode, Pet. 59, 60, but

points to no indication that JPEG is a “video data compression encoder.” And the title of the JPEG standard Petitioners rely on is “JPEG *Still Image Data Compression Standard*,” strongly indicating it is not a “*video* data compression encoder.” Ex. 1008 at 2.

Thus, in addition to failing to remedy the failures of Grounds 1-3 with respect to Claim 1, Ground 4 fails show that the combination renders obvious (1) “a plurality of video data compression encoders” wherein (2) a “first video data compression encoder”; is (3) “configured to compress,” (4) “at a higher compression ratio than a second data compression encoder” as required by Claim 20.

Accordingly, the Petition offers no theory of how Ground 4’s combination or modifications could read on the claims, as it must. *ActiveVideo v. Verizon*, 694 F.3d 1312, 1327-28 (Fed. Cir. 2012) (a party asserting obviousness must “explain . . . how any specific combination would operate or read on the asserted claims”).

## **XII. The expert declaration cannot cure the Petition’s deficiencies**

Petitioners cannot make their *prima facie* showing of obviousness through incorporation by reference. *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1366 (Fed. Cir. 2016) (recognizing that “37 C.F.R. § 42.6(a)(3) [ ] states that ‘arguments must not be incorporated by reference from one document into another document.’”); *Cisco Sys., Inc. v. C-Cation Techs., LLC*,

IPR2014-00454, Paper 12 at 9-10 (Aug. 29, 2014) (citing 37 C.F.R. § 42.6(a)(3)

and denying institution, explaining that the “practice of citing the Declaration to support conclusory statements that are not otherwise supported in the Petition [] amounts to incorporation by reference” and that the Board “will not consider arguments that are not made in the Petition, but are instead incorporated by reference”).

Thus, Petitioners cannot satisfy their burden by making conclusory statements in the Petition and incorporating their arguments by reference from the expert declaration.

Moreover, the cited portions of the expert declaration here do not fill the void left by the Petition's conclusory statements but instead parrot the statements made in the Petition. *See e.g.*, Pet. 52 (citing ¶ 179 of Declaration to support statement that “Pauls teaches this limitation because the access server performs ‘adaptive communications formatting’ (Ex. 1007 at [0009]) and the access server is a computer (Ex. 1007 at [0005]). A POSITA would have understood that a ‘computer’ contains one or more processors.”); Ex. 1003 at ¶ 179 (same).

**XIII. Petitioners' analysis of the dependent claims also fails because the Petition relies on its flawed analysis of the independent claims for the shared limitations**

All of the remaining challenged claims depend from Claims 1 or 20 and thus share their limitations. In its analysis of the dependent claims, the Petition alleges

that references disclose only the additional limitations of each claim without providing further analysis of how the references disclose the limitations shared with Claims 1 or 20. *See* Pet. 28-35, 43-51, 54-59, 61-66. Because the Petition does not show the references alone or in combination disclose the limitations of the independent claims for the reasons explained above, the Petition must also fail with respect to the dependent claims.

#### **XIV. Conclusion**

For the reasons above, institution should be denied in full.

Respectfully submitted,

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Date: November 9, 2018

### **CERTIFICATION OF WORD COUNT**

The undersigned hereby certifies that the portions of the above-captioned **PATENT OWNER'S PRELIMINARY RESPONSE** specified in 37 C.F.R. § 42.24 have 11,029 words, in compliance with the 14,000 word limit set forth in 37 C.F.R. § 42.24(b)(1). This word count was prepared using Microsoft Word 365.

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## **CERTIFICATION OF SERVICE**

The undersigned hereby certifies that the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE** was served electronically via e-mail on November 9, 2018, on the following counsel of record for Petitioner, Netflix, Inc.:

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