

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NETFLIX, INC.,

Petitioner,

v.

REALTIME ADAPTIVE STREAMING, LLC,

Patent Owner.

Case No. 2018-01187

U.S. Patent 9,769,477

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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I. Introduction

Realtime's POR in this proceeding and the related IPR2018-01630 proceeding raise substantially the same arguments. Realtime's expert admitted that Imai teaches switching compression encoders based on the throughput of a communications channel, that it teaches including multiple encoders in a system, and that each encoder should use a different coding method. Ex. 1029 at 129:11-19, 130:22-131:3, 131:4-17. In addition, Realtime does not dispute the correctness of any of Netflix's claim constructions.

Realtime primarily disputes whether a POSITA would have found it obvious to include in a video/image compression system two different compression encoders that have different data compression rates (for independent claim 1), or two different compression encoders that have different data compression ratios (for independent claim 20). But as Realtime's own expert conceded, encoders (even those implementing the same algorithm) inevitably have different compression rates and ratios. *Id.* at 68:24-70:21, 71:23-72:24. The Board should also reject this argument because at least paragraphs 67-68 of Imai teach arranging five different encoders in a system where two of the encoders vary in their data compression rates and another two encoders vary in their data compression ratios.

Realtime also argues that the Petition does not adequately describe how to combine the references, and does not adequately account for alleged disadvantages

of making the combinations. But, Realtime cannot seriously contend that a POSITA would not know how to select or implement video or image compressor encoders that vary in their data compression rates or compression ratios because the '477 Patent is devoid of any explanation of how to implement any video or image compression encoder, let alone how to vary their data compression rates or compression ratios. *See* Ex. 1003 ¶¶77-80. Finally, there is no merit to Realtime's argument that a POSITA would not have been motivated to make the combinations suggested in the Petition due to the existence of alleged disadvantages because such an analysis is inconsistent with *KSR* and none of the cases cited by Realtime undermine the Petition's showing of motivations.

II. Limitation 1[b] is rendered obvious by Imai and Pauls.

Realtime reprises its argument from the POPR that the Petition does not sufficiently demonstrate that a first asymmetric data compression encoder “is configured to compress data...at a higher data compression rate” than a second asymmetric data compression encoder because “configured to” requires showing that the difference between the encoders' data compression rates must arise by “an intentional design choice” as opposed to arising by “a side effect of *some other design choice*, or by chance.” *Compare* POR 17-19 with POPR 11-15 (emphasis added). The Board should again reject Realtime's arguments because (1) Imai and Pauls teach systems designed to include multiple encoders having different data

compression rates; (2) the cases cited by Realtime do not support its proposed “intentional design choice” requirement; and, in any event, (3) it would have been obvious to a POSITA to intentionally choose a specific first encoder and a specific second encoder that have different data compression rates.

A. Imai and Pauls teach systems designed to include multiple encoders having different data compression rates.

Realtime cannot demand that the data compression rate limitations (1[b]) be shown *in haec verba* because its expert admits that “data compression rate” is not a commonly-used term (Ex. 1029 at 51:4-52:8), and he was unaware of any commonly-used term that captures the ’477 Patent’s manner of measuring data compression rate (*id.* at 62:6-63:25). Nevertheless, it would have been obvious to a POSITA to build a system having at least two encoders where one encoder has a faster data compression rate than the other.

Imai indisputably teaches a system having a plurality of asymmetric data compression encoders. Pet. 16, 20-23; Ex. 1005 at [0067]-[0068]. Imai expressly teaches that the encoders included in a system should vary in a number of ways, such as compression ratio, execution speed, and suitability for compressing particular data-types. Ex. 1005 at [0067]. With respect to execution speed, Imai teaches that the plurality should include a computationally slower encoder and a computationally faster encoder:

a method which requires a larger amount of computation for decoding (such a method usually also requires a larger amount of computation for coding), [and] a method which requires a not so large amount of computation for decoding....

Id. at [0067]. Dr. Storer testified that this teaching of “coding methods that differ in the amount of computation required...is directly related to execution speed or data compression rate.” Ex. 1003 ¶136. ATRAC is given as an example of a faster compression rate encoder: “[o]ne example of the coding method, which requires a not so large amount of computation for decoding, is ATRAC.” Ex. 1005 at [0068]; Ex. 1003 ¶138. Realtime cannot dispute that this evidence teaches using encoders with different execution speeds because Dr. Zeger admitted that the plain and ordinary meaning of execution speed of a compression algorithm relates to measuring the amount of computation: “Ultimately, it’s a measure of something, whether it be data process—how much data is processed, how many seconds it takes for something to happen, how many CPU cycles are used, something of that nature.” Ex. 1029 at 65:5-66:22.

Further evidence that a POSITA would have found it obvious to implement the data compression rate limitations is Imai’s suggestion of using several ATRAC2 encoders that operate at different bit rates. Ex. 1005 at [0069]. Dr. Storer provided several paragraphs of explanation for why a POSITA would have understood that this teaches encoders with different data compression rates.

Ex. 1003 ¶¶139-42. Realtime's response is that the specific numbers used to quantify the ATRAC 2 encoders (e.g., 64, 32, or 24 kbps) are measurements of output data rates and are not measurements of data compression rates. POR 28-30. However, this argument misses the mark because a POSITA would have understood Imai's differing rates indicate that the different encoders are operating at different data compression rates. For example, Dr. Storer explained how modifying an encoder to operate at a different execution speed produces the different output rates. Ex. 1003 ¶141. Moreover, Realtime's expert admitted that the general relationship between data compression rate (as used in the '477 Patent) and the output rate is that an increase in the data compression rate increases the output rate of the encoder:

Q. So if you use a faster data compression rate, you achieve a higher output rate?

A. Well, if you use a faster data compression rate — if you go back to the definition of data compression rate as measuring the amount of input data that can compress per unit of time at a given compression ratio, so if you increase the data compression rate, you're pulling in more input data per unit time at a given compression ratio. So that would — in general, that would increase the output rate of the encoder, so you'd be having to send more data across the channel.

Ex. 1029 at 148:13-24. Realtime's expert admitted that the reverse is true: a lower data compression rate generally reduces the output bit rate of an encoder. *Id.* at

149:13-23. Given these general understandings of the relationship between data compression rate and output bit rate, a POSITA would have understood that Imai's description of encoders having different bit rates suggests encoders having different data compression rates.

A POSITA would have also found the data compression rate limitations (1[b]) obvious in view of Pauls' teachings. Similar to Imai, Pauls teaches a system that has multiple, different encoders, which include H.263, MPEG, and MPEG2 encoders. Pet. 39; Ex. 1007 at [0010], FIG. 5. Dr. Storer explained that a POSITA would have understood that the H.263, MPEG, and MPEG2 encoders have different data compression rates based upon Pauls' teaching that each of the encoders "have associated different levels or percentages of compression," Pauls' teaching that each of the encoders have different bit rates, and a POSITA's own knowledge of the performance of these well-known standardized encoders. Ex. 1003 ¶¶176-78.

Realtime states that this evidence does not teach the data compression rate limitations based on its arguments that a compression ratio or an output bit rate does not demonstrate different data compression rates. The Board should reject Realtime's argument for at least the reason that Dr. Zeger admitted that there is a relationship between an encoder's output bit rate and its data compression rate, which supports Dr. Storer's opinion. *See* Ex. 1029 at 148:13-24, 149:13-23. In

addition, the POR does not respond to Dr. Storer's opinion that a POSITA would have understood that the data compression rate limitations are present in light of a POSITA's own knowledge concerning the performance of the well-known H.263, MPEG, and MPEG2 encoders. Ex. 1003 ¶¶176-78. The Board credited Dr. Storer's testimony "regarding the compression rates of the asymmetric algorithms of MPEG, MPEG2, and H.263 and the impact of such rates" (ID 27-28), and the POR provides no principled reason for the Board to change its finding.

B. Realtime's argument that the term "configured to" requires showing an "intentional design choice" is not supported.

The Board should reject Realtime's invitation to interpret the claim language "configured to" to require a nebulous "intentional design choice." Realtime's argument is particularly problematic because it does not provide any objective standard by which to judge whether a particular design choice is within the scope of the claims. For example, Realtime states that its interpretation of "configured to" limitation "cannot be met by...a difference in compression rates arising as a side effect of some other design choice." POR 20.

Moreover, the cases cited by Realtime do not support its narrow interpretation of "configured to." In *Aspex*, the plaintiff challenged the district court's construction of the term "adapted to," arguing that the court construed the phrase "adapted to" too narrowly; [and] that phrase, should be interpreted to mean "suitable for" rather than "made to." The court disagreed and stated "in this case,

we conclude that the narrower meaning is correct,” explaining that while it could have a broader meaning, “[t]he way the phrase is used in [the claim] supports the districts court’s conclusion that a narrower definition, such as ‘configured to,’ applies here.” *Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1349 (Fed. Cir. 2012). *Aspex* does not support the intent requirement suggested by Realtime because the Federal Circuit was construing the term “adapted to” and not “configured to.” *Id.* The Court also stated that its construction was specific to the facts of the case and that patent. *Id.*

Realtime also advocates for a limitation absent from the claims – that a system must switch from an encoder with a relatively slow compression rate to an encoder having a faster rate of compression, otherwise “[t]he invention would not function if the relationship were reversed.” POR 20-21. Instead, the claims require selecting an encoder based upon other parameters other than compression rate, such as the “throughput of a communications channel.” Ex. 1001, cls. 1, 20. Realtime’s argument also fails as a matter of logic: If it were beneficial to only switch from a slower compression rate to a faster compression rate, why would anyone ever use the slower compression rate encoder?

C. The difference in the encoders’ data compression rates do not arise “by happenstance” nor “as a side effect.”

The Board should find that a POSITA would have found it obvious to intentionally include a first asymmetric data encoder that has a faster data

compression rate than a second asymmetric data encoder because (1) Imai teaches combining encoders in that way, (2) Imai teaches that it is beneficial to combine encoders in that way, and (3) a POSITA would have understood Imai's teaching to use different encoders means that the encoders would have different data compression rates.

1. The prior art teaches intentionally using two encoders having different data compression rates.

A POSITA would have found it obvious to intentionally choose to include two different encoders that have different data compression rates in a system built according to the principles taught by the prior art. As explained above in Section II.A, a POSITA would have understood that Imai's description of an encoder that uses a larger amount of computation and an encoder that uses "a not so large amount" of computation teaches encoders that have different data compression rates. Moreover, those same portions of Imai teach that including two encoders having different data compression rates is an intentional design choice:

[T]he encoders 53₁ to 53_N are prepared by using encoders which perform encoding ... with various coding methods, including a method which provides a relatively large (high) bit rate of the resulting coded data..., a method which can provides a relatively small (low) bit rate of the resulting coded data..., a method which requires a larger amount of computation for decoding (such a method usually also requires a larger amount of computation for coding), a method which requires a not so large amount of

computation for decoding, and a method particularly suitable for coding a voice....

Ex. 1005 at [0067]. In addition, Section II.A above also explains how Imai's description of multiple ATRAC2 encoders with different bit rates teaches using encoders with different data compression rates. Paragraph 69 describes that arrangement, and it thus teaches a POSITA to build a system that has encoders that differ in their data compression rates. *Id.* at [0069]. Finally, the Petition explains that a POSITA would have also found it obvious to select among different encoders having higher and lower data compression rates in order to better match the incoming data stream to the throughput of the communication channel. Pet. 22.

The Board considered and credited this evidence in the Institution Decision where it rejected the same argument that Realtime is now raising, finding that "the Petition's citations to these encoders and Imai's teachings regarding the function of encoders 53₁ to 53_N that would render one of them a 'first encoder' and another one a 'second encoder' [as] required by the claim." ID 19. The Board also found that "Imai specifically discloses that the encoders are constructed to encode the audio signal with different coding methods from each other, thus, the different rates of encoding would not be happenstance." *Id.* The POR does not identify a specific flaw in either finding, and the Board should again reject Realtime's arguments.

2. The prior art teaches that choosing between encoders that have different data compression rates allows a system to better match an incoming data stream to the rate of a communications channel.

Choosing between encoders that have different data compression algorithms is an intentional design choice that achieves the goal of better matching an incoming data stream to the rate of the communications channel. The Petition explains that a POSITA would have found it obvious to select among different encoders having higher and lower data compression rates to better match the incoming data stream to the throughput of the communication channel.” Pet. 22. The Board credited that rationale at institution. ID 20 (“Petitioner’s rationale for selecting different encoders in Imai with higher and lower data compression rates to better match the transmission rate of the communication channel [is] adequate for institution.”) (citation omitted).

In addition to the evidence submitted with the Petition, Dr. Storer explained at his deposition how Imai works and why it teaches choosing between encoders having different data compression rates in order to achieve real-time encoding of a data, transmission to a client, and decoding at the client:

Imai actually describes an end-to-end system...[that] has to take into consideration both speed and compression ratio and other factors in order to actually ensure a real time system.... And so Imai actually shows and describes having multiple encoders and choosing an encoder in order to achieve this goal of throughput...[W]hat affects

throughput is both the speed of the encoder and the compression ratio ...you need to encode in such a way that you both have speed that's appropriate and a compression ratio that is appropriate.

See Ex. 2003 at 62:22-66:3.

Dr. Storer goes on to explain why Imai's system needs encoders with different data compression rates in order to achieve real-time encoding and decoding:

Really fast doesn't help you if the compression ratio is not enough because it won't go over the channel, and really good compression doesn't help you if you don't do it fast enough...**So Imai has multiple...encoders that have different properties in terms of speed and compression ratio and, of course, data type...Imai talks specifically how a different encoder may do a better job with one data type than the other....** It's actually taking into account...several considerations, including both speed and compression ratio, because they are related...in fact, **Imai even goes further to talk about measuring the speed of the decoder because that's also necessary as part of the chain in order to guarantee the end-to-end throughput.**

Id. at 65:2-65:19.

Lastly, Realtime argues that Dr. Storer suggests lowering an encoder's compression speed to reduce an output bitrate to better match the needs of real-time reproduction. POR 32-33. But, the opinions Realtime points to describe one way of modifying the compression rate of an encoder, not Dr. Storer's opinion for

how Imai teaches switching between encoders based upon the throughput of a communications channel (*see* Ex. 1003 ¶154).

3. A POSITA would have understood that different encoders (such as those described in Imai) would have different data compression rates.

Trying to distract the Board, Realtime suggests that the prior art only teaches or suggests data compression encoders with different data compression rates by “mere happenstance.” POR 22. Thus, Realtime portrays Imai as having speculative teachings regarding the use of various encoders, leaving a reader to guess how the system operates. *Id.* at 16 (“[Imai] discloses encoders by referring to their encoding standards and output rates, and does not permit any finding that any one of Imai’s encoders would be ‘configured’ to be faster than any other on a systematic and predictable basis”); *id.* at 24 (“the mere *possibility* that Imai *might* sometimes operate [as recited in Claim 1]”) (emphasis in original).

But the Petition does not rely on the mere possibility that two of Imai’s encoders will have different data compression rates to establish unpatentability. Rather, the Petition observes that a POSITA would have understood that it is exceedingly unlikely that any two different encoders have the same data compression rate. Pet. 40. That fact is just one additional piece of evidence that a POSITA would have understood from Imai’s description of different encoders that

vary in relative computational intensity and bit rate (explained above in §II.A) teaches using encoders that have different data compression rates. Pet. 22.

Imai teaches a system specifically designed to have encoders with varying characteristics and capabilities (including data compression rate), in order to allow the system to select a particular encoder. *See* §II.A; Ex. 1003 ¶¶136, 142-43. Dr. Storer explained that a POSITA would have understood that any two different encoders in Imai would have different data compression rates because “it is only a remote possibility (i.e., exceedingly unlikely) that two different implementations of even the same compression algorithm would have the same execution speed or data compression rate.” *Id.* at ¶137. He explained that it is well-known in computer science that “the structure and ordering of computation steps of a program” (such as an implementation of a compression algorithm) “has an impact on speed.” *Id.* Thus, factors such as a particular programmer’s style affects execution speed. *Id.* He further explains that the potential for creating a better implementation of even a well-known algorithm explains why companies spend money developing their own implementations. *Id.*

Dr. Zeger supported Dr. Storer’s opinion when he conceded that separately-written encoders implementing the same compression algorithm are not certain to have the same execution speed:

Q. If two persons of ordinary skill in the art wrote their own implementations of a compression algorithm, will they have the same execution speed?

A. They could.

Q. Are they certain to have the same execution speed?

A. No.

Q. Why are they not certain to have the same execution speed?

A. You're giving me a hypothetical without knowing the details, but, you know, conceivably they have different processors. Depends how you define "execution speed" also. They might have written a program in a different way. There is many reasons.

Ex. 1029 at 68:24-69:12. He also admitted that a programmer may write an implementation of a compression algorithm that is "very efficient software" while another programmer may write an implementation that is inefficient. *Id.* at 69:13-70:15. Dr. Zeger noted that there are a number of factors that impact the efficiency of software code, such as the ability of the programmer, or different ways of writing software code.

Q. Okay. How is it possible that a person of ordinary skill in the art implementing a compression algorithm can write it more efficiently versus less efficiently?

A. Well, a person could use good programming skills or poor programming skills.

Id. at 70:16-21; *see also id.* at 72:7-24. More incredibly, he could not say whether well-known compression algorithms are typically asymmetric, even though he

considers himself a person of “beyond ordinary” skill. Ex. 1028; Ex. 1029 at 37:5-38:25, 48:16-21.

Thus, contrary to Realtime’s suggestion that two of Imai’s different encoders will have different data compression rates “by happenstance,” a POSITA would have instead understood that two different encoders are extremely unlikely to have the same data compression rate and therefore are most likely to have different data compression rates.

III. A POSITA would have been motivated to combine Imai and Pauls.

Realtime concedes that “the motivation to combine inquiry is necessarily fact-specific” and that a “simpler combination entails a lower hurdle than a more complex one.” POR 2. Realtime proceeds to ignore both axioms and argues the Petition does not establish an adequate motivation to combine based on strict legal tests proposed by Realtime. The Board should reject Realtime’s arguments because the Petition describes why a POSITA would be motivated to combine the teachings of Imai and Pauls, and Realtime’s arguments are not supported by law.

Imai teaches a system with encoders 53₁ to 53_N that can include asymmetric encoders. Pet. 11. It includes a broad teaching of using various encoders in its system to allow for selection between encoders with different characteristics and functionality, and explains that while examples in the specification address audio coding, its teachings are equally applicable to video. Ex. 1005 at [0172]. Pauls,

another reference that like Imai teaches a system containing a multitude of encoders that can be selected from, is used to provide specific examples of video encoders that existed at the time that could be used with the teachings of Imai.

Pet. 13, 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. *Id.* at 53 (citing Ex. 1003 ¶¶211-14).

The Petition's stated motivation to combine supports a finding of obviousness. "It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements." *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (collecting cases). "Rather, the test for obviousness is what the combined teachings of the references would have suggested to those having ordinary skill in the art." *Id.* at 1333. As the Petition shows, the combination of Imai's and Pauls' teachings would have predictable results and a reasonable expectation of success given the similarities in the systems, and given that audio and video compression technologies were well-known and related at the time of the alleged invention. Pet. 53 (citing Ex. 1003 at 213).

Contrary to Realtime's assertions in its POR, none of the cited cases undermine the Petition's stated motivation to combine. First, Realtime errs in its

reliance on *Winner International Royalty Corp. v. Wang*, 202 F.3d 1340 (Fed. Cir. 2000) to create a new requirement of showing that “the benefits justify the costs” of making the combination. POR 54. But, *Winner* was decided under the TSM test of yore, 202 F.3d at 1348 (looking for “[e]vidence of a suggestion, teaching, or motivation to combine prior art references”) and its analysis pertains to an obsolete approach to the obviousness inquiry. To the extent *Winner* imposes a benefits-cost test, it is the same sort of “rigid rule” that improperly limits the question of obviousness that the Supreme Court rejected in *KSR*. See *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007).

In any event, Realtime distorts the case. In *Winner*, while the court accepted the trial court’s finding of a teaching away, it made sure to caution that “[t]he fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another.” 202 F.3d at 1349 n.8; see also *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165, (Fed. Cir. 2006) (explaining *Winner* as “disadvantages ... do[] not necessarily obviate motivation to combine,” just as a single reference teaching away does not mandate a finding of non-obviousness). Thus, the *Winner* court’s call for “benefits, both lost and gained, should be weighed against one another” is a caution to not ignore the benefits of making a combination rather than dictating a rigid balancing test.

Second, the Board’s decision in *Apple, Inc. v. Realtime Data LLC* does not apply to the facts of this proceeding. In *Apple*, the patent owner provided evidence that DRAM was more expensive than (or at least as expensive as) Flash memory, which contradicted the petitioner’s rationale for combination—that DRAM would be a more cost effective solution. IPR 2016-01737, Paper 57 at 58. Here, Realtime does not introduce evidence contradicting the motivation to improve compression quality, it merely alleges there would be “decreased speed” and reduced “compatibility.” POR 57. In fact, Realtime does not even claim that the costs outweigh the benefits. Instead, Realtime asserts in a conclusory manner that it is “fatal” that the Petition did not “consider” whether the benefits of arithmetic encoding “justify” the alleged costs based on an imaginative but incorrect legal theory. *Id.*

Another false analogy is drawn to *PersonalWeb Techs., LLC v. Apple, Inc.*, 848 F.3d 987 (Fed. Cir. 2017), where the prior art taught disparate solutions directed toward different problems. In *PersonalWeb*, one reference was directed to a system for backing up or restoring data, while the other was directed to a system for managing rights to access data. *Id.* at 989. Here, the combination simply substitutes one element from a similar technology functioning in a similar manner (Paul’s video encoders for the audio encoders in Imai). This is not the kind of “complexity or obscurity ... mak[ing] more detailed explanations necessary,” *id.* at

994, as in *PersonalWeb*. In that case, the court’s finding was further based on the Board’s lack of “explain[ing], or cit[ing] evidence showing, how the combination of the two references was supposed to work.” *Id.* This is unlike here where Petitioner has both demonstrated a motivation to combine as well as how Pauls would work with Imai.

IV. The additional limitations of claim 20 are rendered obvious by Imai and Pauls.

A. Imai teaches intentionally including two encoders that have different compression ratios, in addition to encoders that have varying compression rates.

Realtime cannot dispute that Imai teaches a POSITA to build a system that includes encoders that have different compression ratios. Given the substantial similarity between claims 1 and 20, the Petition and Dr. Storer’s declaration focused on the key difference between claims 1 and 20 – namely, that claim 20 adds the requirement of using an arithmetic coding method. *See* Ex. 1003 ¶230. Nevertheless, the Petition and Dr. Storer presented evidence in the analysis of claim 1 that expressly teaches a POSITA to include encoders that have different “compression ratios” as well as “compression rates.” For example, Dr. Storer explained how Imai’s paragraphs 67 to 68 teaches a POSITA to include a plurality of encoders in a system in order to achieve its goal of real-time encoding at a server, transmission to a client, and decoding at the client. Ex. 1003 ¶¶134-36. The Petition and Dr. Storer cite Imai’s paragraph 67, which expressly teaches

including a variety of encoders that vary based on compression ratios, computational intensity, and data-type. *See, e.g.*, Ex. 1003 ¶¶136, 139; Pet. 31-32, 40 (citing Ex. 1005 at [0067]). The very first two types of encoders described by Imai differ in their compression ratios, while the subsequent two encoders differ in their compression rates:

[T]he encoders 53₁ to 53_N are prepared by using encoders..., including *a method which provides a relatively large (high) bit rate of the resulting coded data...., a method which can provides a relatively small (low) bit rate of the resulting coded data....*, a method which requires a larger amount of computation for decoding..., a method which requires a not so large amount of computation for decoding, and a method particularly suitable for coding a voice....

Ex. 1005 at [0067] (emphasis added).

At his deposition, Realtime's expert admitted that Imai teaches switching between encoders that have different compression ratios:

Q. So is it your position that Imai teaches switching between encoders that have different compression ratios?

A. That's basically correct.

Ex. 1029 at 139:19-22. Thus, the Board should find Claim 20 unpatentable at least for the reason that Imai teaches intentionally including encoders that have different compression ratios, in addition to including encoders that have different compression rates.

B. A POSITA would have known how to use JPEG to encode video.

Contrary to Realtime's argument (POR 59), there is ample evidence that a POSITA would have known that JPEG can be used to encode video. Dr. Storer expressly stated that JPEG is an asymmetric video compression algorithm: "Pauls teaches using asymmetric video compression algorithms including H.263 and JPEG." Ex. 1003 at ¶227.

Other evidence in the record demonstrates that it was known that JPEG can be used to encode video. The Lai reference states that "In a QUICK TIME formatted file, for example, video can be compressed in accordance with ... JPEG...." Ex. 1025 at 20:29-33. Westwater's book entitled "Real-Time Video Compression" also references JPEG's use in video encoding. Table 1.1, captioned "Overview of video compression algorithms," includes "Motion JPEG" and mentions that it "[u]ses 2-D DCT to encode individual frames." Ex. 1010 at 2. Westwater further states that "The Motion JPEG (M-JPEG) uses the JPEG compression for each frame." *Id.* at 3. Westwater also observes that MPEG's "I (Intraframe) picture format substantially corresponds to the JPEG format." *Id.* at 20. Thus, the evidence shows that a POSITA would have known that JPEG can be used to encode video data.

V. A POSITA would have been motivated to combine Chao with Imai and Pauls.

Realtime once again includes an extra requirement for the motivation to combine analysis and alleges that Netflix does not indicate whether Chao or Pauls would operate as the first or second encoder. POR 53. First, the claims do not require the arithmetic algorithm to be any particular encoder; the claims only require “at least one” of the encoders to utilize an arithmetic algorithm. *See e.g.*, Ex. 1001, cls. 2, 20.

Second “[i]t is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements.” *In re Mouttet*, 686 F.3d at 1332. “Rather, the test for obviousness is what the combined teachings of the references would have suggested to those having ordinary skill in the art.” *Id.* at 1333. The Petition explains in details what the combined teachings of Imai, Pauls, and Chao would have suggested to a POSITA. Pet. 59-63. Pauls teaches using asymmetric video compression algorithms including H.263 and JPEG, which both have optional arithmetic algorithm modes, while Chao teaches an asymmetric video compression algorithm that uses an arithmetic algorithm. *Id.* at 59 (citing Ex. 1003 ¶227; Ex. 1016 at 7:5-8). Furthermore, arithmetic data compression encoders were well-known in the prior art years before the filing of the ’477 Patent. *Id.* (citing Ex. 1003 ¶228; Ex. 1018 at 14-15).

As the Petition explains, A POSITA would have been motivated to combine Chao's arithmetic video data compression encoder with the systems of Imai and Pauls because Chao teaches that its approach can improve upon the compression ratio and speed of existing H.263 and MPEG encoders, which are the same standards used in Pauls, and it would be a simple and reasonable substitution. *Id.* at 62-63 (citing Ex. 1016 at 5:3-11, Ex. 1018 at 14-15).

Realtime next relies on *Winner* and *Apple* to argue that the Petition must show that "the benefits justify the costs" in making the combination. But, as discussed in the context of the motivation to combine argument for Imai and Pauls, *Winner* and *Apple* do not create any such requirement. *See supra* §III. Same as before, Realtime does not introduce evidence showing that a POSITA would be dissuaded from making the combination due to costs in the form of "decreased speed" and reduced "compatibility." POR 57. In fact, Realtime does not even claim that the costs outweigh the benefits. Instead, Realtime asserts in a conclusory manner that it should be "fatal" that Petitioner fails to "consider" the benefits of arithmetic encoding to "justify" the alleged costs based on an imaginative but incorrect legal theory. *Id.*

VI. Conclusion

The Board should find claims 1-6, 9-14, 20-22, and 25-27 unpatentable.

Date: August 9, 2019

Respectfully submitted,
/Harper Batts/

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that the foregoing Reply to Patent Owner's Response contains 5,575 words and therefore complies with the 5,600 word type-volume limit specified by 37 C.F.R. § 42.24(c)(1). The word count does not include those portions excepted by 37 C.F.R. § 42.24(a)(1) and was calculated by Microsoft Word 365.

Date: August 9, 2019

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that on August 9, 2019, complete copies of the foregoing Reply to Patent Owner's Response and Exhibits 1025–1029 were served via email to all parties to this proceeding at the addresses indicated:

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