

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ADOBE SYSTEMS INCORPORATED
and
LEVEL 3 COMMUNICATIONS, LLC,
Petitioner,

v.

AFLUO, LLC,
Patent Owner.

Case IPR2014-00154
Patent 5,995,091

Before MICHAEL W. KIM, WILLIAM V. SAINDON, and
TINA E. HULSE, *Administrative Patent Judges*.

HULSE, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
36 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Adobe Systems Incorporated and Level 3 Communications, LLC (collectively, “Petitioner”) filed a Petition requesting *inter partes* review of claims 1 and 4–12 of U.S. Patent No. 5,995,091 (Ex. 1101, “the ’091 patent”). Paper 2 (“Pet.”). Afluo, LLC (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 8. On April 29, 2014, we instituted an *inter partes* review of claims 1, 4, 5, and 8 on certain grounds of unpatentability alleged in the Petition. Paper 9 (“Dec. Inst.”), 25. After institution of trial, Patent Owner filed a Patent Owner Response (Paper 16, “PO Resp.”), to which Petitioner filed a Reply (Paper 20, “Pet. Reply”).

Patent Owner filed a Motion for Observation (Paper 23, “Obs.”) on certain cross-examination testimony of Petitioner’s declarant, and Petitioner filed a Response (Paper 26).

A consolidated oral hearing for this proceeding and Case IPR2014-00153 was held on November 24, 2014, a transcript of which has been entered in the record. Paper 29 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 4, 5, and 8 of the ’091 patent are unpatentable.

A. *Related Proceedings*

Patent Owner has asserted the ’091 patent against Petitioner in a copending district court case, *Afluo LLC v. Adobe Systems Inc.*, 1:12-cv-01459-SLR (D. Del.). Pet. 1–2; Paper 6.

B. The '091 Patent (Ex. 1101)

The '091 patent relates to a multimedia system for providing “consistent, timed, coordinated playback of images and/or sounds despite differences in playback system speed or configuration.” Ex. 1101, 1:6–9. The multimedia system of the '091 patent includes three functional elements: an authoring tool element, an interleaver element, and a playback interpreter element. *Id.* at 3:29–32.

The authoring tool element allows an author to build a presentation “script” that contains a sequence of multimedia data elements, such as images and sounds. *Id.* at 3:32–35. The author also uses the authoring tool element “to specify . . . playback at specified times at a selected system bandwidth.” *Id.* at 3:36–38. The authoring tool then checks to determine if a playback system would have sufficient time to load the data required to play back the multimedia data within the specified bandwidth at the specified times. If there is sufficient time, the authoring tool allows the multimedia data to be interleaved for playback at the specified times. *Id.* at 7:64–8:12.

The interleaver element generates a playback data stream from the presentation script according to the specified playback times. *Id.* at 3:39–52. The interleaver element places the multimedia data elements, such as images and sounds, and commands one after another to form the interleaved playback data stream. *Id.* at 9:44–50.

The playback interpreter element reproduces the images and sounds sequenced in the playback data stream. *Id.* at 5:10–13. The playback interpreter element also interprets the interleaved commands to provide an interactive presentation. *Id.* at 5:13–16.

C. Illustrative Claim

Claims 1, 5, and 8 are independent claims, and claim 4 depends from claim 1. Claim 1 is illustrative and is reproduced below:

1. A computer implemented method for generating a multimedia presentation data stream of at least one of images and sounds for timed, coordinated reproduction of said at least one of images and sounds, comprising the steps of:

generating a list specifying a plurality of data elements representing at least one of images and sounds and, for at least some of said data elements, specifying one or more times for playback of said images and sounds;

selecting a playback bandwidth with which to deliver at least one of said images or sounds;

identifying from said list said data elements and said one or more times for playback of said images and sounds;

dividing each of said data elements into one or more data portions; and

combining said data portions in a multimedia presentation data stream for delivery of said data portions to a computer system within said selected bandwidth for timed coordinated reproduction of said at least one of images and sounds.

D. Grounds of Unpatentability Instituted for Trial

We instituted trial based on the following grounds of unpatentability:

Claims	Basis	Reference
1 and 4	§ 102(b)	Little ¹

¹ Thomas D.C. Little & Arif Ghafoor, *Multimedia Synchronization Protocols for Broadband Integrated Services*, 9 IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS 1368 (1991) (Ex. 1103).

Claims	Basis	Reference
5	§ 102(e)	Azadegan ²
8	§ 102(e)	Adams ³

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, the Board interprets claim terms in an unexpired patent according to the broadest reasonable construction in light of the specification of the patent in which they appear. *See In re Cuozzo Speed Techs., LLC*, No. 2014-1301, 2015 WL 448667, at *5–8 (Fed. Cir. Feb. 4, 2015); 37 C.F.R. § 42.100(b). Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms must be set forth with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

The parties disagree on the construction of “selecting a playback bandwidth with which to deliver at least one of said images or sounds,” which appears in claim 1. In the Decision to Institute, we construed this limitation as “selecting a range of rates within which to deliver at least one of said images or sounds for playback.” Dec. Inst. 9. Petitioner does not

² Azadegan et al., US 5,819,004, filed June 6, 1995, and issued Oct. 6, 1998 (Ex. 1104).

³ Adams et al., US 5,541,662, filed Sept. 30, 1994, and issued July 30, 1996 (Ex. 1106).

contest this claim construction, stating that it is proper under the broadest reasonable interpretation standard. Pet. Reply 1. Patent Owner asserts that this limitation should be construed as “choosing a rate in preference to other rates with which to deliver said at least one of images or sounds.” PO Resp. 3.

1. *“playback bandwidth with which to deliver at least one of said images or sounds”*

Patent Owner first takes issue with our preliminary construction that a “playback bandwidth” is a “range of rates” within which to deliver multimedia objects. *Id.* at 4. In the Decision to Institute, we construed the limitation as a range of rates due to the Specification’s consistent reference to the delivery of multimedia objects “*within* an author-selected bandwidth.” Dec. Inst. 9; Ex. 1101, 3:64–4:1, Abstract. Patent Owner and its declarant, Dr. Kevin C. Almeroth, contend that a person of ordinary skill in the art would understand “within,” as used in the Specification, to mean “less than or equal to.” PO Resp. 7; Ex. 2002 ¶ 39 (“[R]eferring to transfer of data ‘within’ a bandwidth is equivalent to referring to transfer of data at a rate less than or equal to the selected playback bandwidth.”). Petitioner and its declarant, Dr. Borko Furht, appear to agree with Patent Owner on this point. Pet. Reply 2; Ex. 1109 ¶ 18 (“Although the selected ‘playback bandwidth’ may be a single value, it identifies the upper limit on a range of expected reliable delivery rates.”). After considering the parties’ positions and weighing the supporting evidence, we determine that the parties’ positions are correct. Accordingly, we modify our original construction of “playback bandwidth with which to deliver at least one of said images or sounds” to “a rate at or less than which to deliver at least one of said images or sounds for playback.”

2. “selecting”

Patent Owner also argues that the term “selecting” requires construction. PO Resp. 9. Patent Owner contends that the ordinary and customary meaning of the word “select” as understood by a person of ordinary skill in the art is “to make a choice in preference to other available alternatives.” *Id.* As support, Patent Owner cites the testimony of its declarant and a dictionary defining the term “select” as “to choose in preference to another or others; pick out.” *Id.* (citing Ex. 2002 ¶ 41; Ex. 2007).

Petitioner disagrees with Patent Owner’s proposed construction of “selecting,” asserting that Patent Owner’s proposal is too narrow. Pet. Reply 3. Petitioner notes that the Specification explains that the selection of the playback bandwidth is made upon “consideration of network and/or playback system limitations.” *Id.* at 3–4 (citing Ex. 1101, 4:1–5). The Specification, Petitioner argues, does not state that there must be multiple playback bandwidth options from which the user can select. *Id.* at 4. Petitioner also asserts that the dictionaries cited by Patent Owner define “select” more broadly as allowing one to make a “choice,” without requiring multiple options. *Id.* (citing Exs. 2007, 2008).

Upon considering the claim language and the Specification, we determine that Patent Owner’s proposed construction of “selecting” is too narrow. To the extent that Patent Owner argues that its proposed construction requires a user to make a specific choice between a menu of playback bandwidths, we do not agree that that is the broadest reasonable interpretation in light of the Specification. In particular, nothing in the Specification requires a user to choose specifically from a list of multiple playback bandwidths. As support, Patent Owner asserts that an object of the

invention is to permit a user to select a playback bandwidth to generate a “bandwidth-controlled presentation data stream, thereby controlling network load and providing predictable performance on a variety of playback systems.” PO Resp. 9 (quoting Ex. 1101, 2:61–67). Patent Owner also notes that the Specification explains that the selection of the playback bandwidth is made upon “consideration of network and/or playback system limitations.” *Id.* at 10; Ex. 1101, 4:1–5. These disclosures, however, do not require that a user identify a specific list of playback bandwidths and then affirmatively choose one over another. Rather, this disclosure simply suggests that a user choose a playback bandwidth that will achieve these goals. Moreover, we agree with Petitioner that the choice need not be limited to choosing between specific alternative delivery rates. Pet. Reply 3–4. As Petitioner’s declarant states, the choice may be between different ways to determine a playback bandwidth, as each may result in a different playback bandwidth value. Ex. 1109 ¶ 24.

3. *Conclusion*

Thus, after considering the complete record, we modify our construction and determine that the broadest reasonable interpretation of “selecting a playback bandwidth with which to deliver at least one of said images or sounds” is “choosing a rate at or less than which to deliver at least one of said images or sounds for playback.”

B. Principles of Law

To prevail in its challenges to the patentability of the claims, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). To establish anticipation, each limitation in a claim must be found in a single prior art reference, arranged as recited in the claim. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359,

1369 (Fed. Cir. 2008). While the limitations must be arranged or combined in the same way as in the claim, identity of terminology is not required. *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009); *In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990). Moreover, a reference anticipates a claim “if it discloses the claimed invention such that a skilled artisan could take its teachings in combination with his own knowledge of the particular art and be in possession of the invention.” *In re Graves*, 69 F.3d 1147, 1152 (Fed. Cir. 1995). Thus, “it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.” *In re Preda*, 401 F.2d 825, 826 (CCPA 1968).

We analyze the instituted grounds of unpatentability in accordance with the above-stated principles.

C. Anticipation of Claims 1 and 4 by Little (Ex. 1103)

Petitioner contends that Little anticipates claims 1 and 4. Pet. 27–33. Petitioner offers the Declaration (Ex. 1107) and Reply Declaration (Ex. 1109) of Dr. Furht. Patent Owner disagrees with Petitioner’s assertions (PO Resp. 11–18), relying on the Declaration of Dr. Almeroth (Ex. 2002).

1. Little

Little discloses protocols for synchronizing multimedia data streams. Ex. 1103, Abstract. Little teaches two protocols: a network synchronization protocol (“NSP”) and an application synchronization protocol (“ASP”). *Id.* The NSP “provides functionality to establish and maintain individual connections with some specified synchronization characteristics.” *Id.* The ASP “supports an integrated synchronization service for multimedia applications.” *Id.*

To illustrate the synchronization of objects in a multimedia presentation, Little refers to an object composition Petri net (“OCPN”). *Id.* ¶ 20. The OCPN captures temporal relationships between multimedia objects in a presentation. *Id.* Little also teaches using the OCPN to determine a list of playout times for presenting each multimedia object. *Id.* ¶ 24. Little then uses the list of playout times to generate a production schedule, which specifies when the multimedia objects must be retrieved to meet the playout time. *Id.* ¶ 36.

2. Analysis

Petitioner contends that Little anticipates claims 1 and 4. Pet. 27–33. We have reviewed Petitioner’s detailed explanation identifying where each limitation allegedly appears in Little, along with the testimony of Petitioner’s declarant, Dr. Furht. *See id.*; Pet. Reply 4–9; Ex. 1107 ¶¶ 127–145; Ex. 1109 ¶¶ 31–51. We have also reviewed Patent Owner’s assertions and evidence as to why Petitioner’s explanations and evidence are deficient. PO Resp. 11–18; Ex. 2002 ¶¶ 44–54. On this record, we are persuaded that Petitioner has shown by a preponderance of the evidence that Little discloses each limitation of claims 1 and 4.

For example, claim 1 requires generating a list specifying data elements representing images and sounds and playback times. Petitioner asserts that Little discloses using a Serialize-Net algorithm that generates a list of playout times for each media object (i.e., a playout schedule) from the OCPN. Pet. 28–29 (citing Ex. 1103 ¶ 25). According to Petitioner, the playout schedule defines when media elements will be presented to a user. *Id.* at 29 (citing Ex. 1103 ¶¶ 25, 51).

Claim 1 further requires selecting a playback bandwidth with which to deliver the images and sounds. Petitioner asserts that Little discloses a Net-

Control-Time algorithm for constructing a production schedule that defines the production times for each media element. *Id.* at 29 (citing Ex. 1103 ¶ 36). According to Petitioner, the algorithm calculates the production time based on the time required to transfer that item. *Id.* at 30 (citing Ex. 1103 ¶¶ 34–36.) Petitioner further asserts that the time to transfer each media item is calculated based on the selected channel capacity and the number of packets required to transport each item. *Id.* at 30 (citing Ex. 1103 ¶¶ 31, 32).

Claim 1 further requires identifying from the list the data elements and the times for playback of the images and sounds. Petitioner asserts that Little discloses identifying data elements from a list of playout times and generating a production schedule of production times for each object. Pet. 31–32 (citing Ex. 1003 ¶¶ 13, 36).

Claim 1 also requires dividing each of the data elements into one or more data portions. Petitioner asserts that Little discloses protocols for use within a packet switched network and divides transmitted media objects into a number of packets for transport. Pet. 32 (citing Ex. 1003, Abstract, ¶ 32).

Finally, claim 1 requires combining the data portions in a multimedia presentation data stream for delivery to a computer within the selected bandwidth. Petitioner asserts that Little discloses that the NSP protocol transmits a data stream in accordance with the production times for the individual media objects. Pet. 32–33 (citing Ex. 1103 ¶ 60). Petitioner further asserts that the software at the receiving presentation terminal releases the received data to the application at the time indicated by the playout time. As such, according to Petitioner, the image and sound data carried in the multimedia presentation data stream is presented to the user in a coordinated manner at the times specified in the playout schedule. *Id.* at 33 (citing Ex. 1103 ¶¶ 24, 25, 64). Thus, Petitioner concludes that the ASP

protocol generates “streams of distinct synchronized data traffic which can then be routed to specific output (workstation) devices for presentation.” *Id.* (quoting Ex. 1103 ¶ 62).

Claim 4 depends from claim 1 and further requires the step of accessing the multimedia presentation data stream to reproduce the images and sounds at the specified times. Petitioner asserts that Little discloses that the NSP protocol transfers the media elements identified in the OCPN according to the production schedule. Pet. 33 (citing Ex. 1103 ¶ 60). Petitioner further asserts that the receiving computer receives the data and then releases the data to the application at times indicated by the appended deadlines for presentation. *Id.* (citing Ex. 1103 ¶ 61).

In response, Patent Owner contends that Little does not disclose the step of “selecting a playback bandwidth with which to deliver at least one of said images or sounds” for two reasons. PO Resp. 11–18. First, Patent Owner argues that Little does not disclose “selecting” a playback bandwidth. *Id.* at 11–14. Second, Patent Owner argues that Little does not disclose selecting a “playback bandwidth.” *Id.* at 14–18. We address each of these arguments in turn.

Patent Owner argues that Little does not disclose “selecting” a playback bandwidth because the channel capacity of Little is a fixed value dictated by the distribution network, and, thus, there is no choice involved in selecting its value. PO Resp. 11–14; Ex. 2002 ¶¶ 49–50. We are not persuaded. As explained above, we do not limit “selecting a playback bandwidth” to choosing from a specific list of playback bandwidths. Rather, “selecting a playback bandwidth” may encompass a choice between different ways to determine the playback bandwidth.

Patent Owner argues that there is no evidence in the record supporting the conclusion that channel capacity is selectable in Little. PO Resp. 11. Little, however, teaches using the channel capacity in an algorithm for determining the delivery schedule. Ex. 1103 ¶¶ 31–33, 36. We credit the testimony of Petitioner’s declarant, who testified that selecting the value of the channel capacity to use in the algorithm involves an exercise of engineering judgment. Ex. 1109 ¶¶ 27, 28, 35, 37. As Dr. Furht explains, the user will have to select from among multiple possible values, and ultimately will choose a value based on how much risk of service failure is worth accepting and what transfer rates are required. *Id.* ¶ 37. Although Little may not expressly discuss the “engineering judgment” that is used to determine the channel capacity, we read Little not only for its specific teachings, but also for “the inferences which one skilled in the art would reasonably be expected to draw therefrom.” *Preda*, 401 F.2d at 826. Thus, we are persuaded that Little’s disclosure of inputting the channel capacity to determine a playout schedule discloses “selecting a playback bandwidth,” as recited by the claim.

Patent Owner also argues that the channel capacity is not a rate at which the particular presentation is delivered, but a measure of the total amount of information that can be reliably communicated over a given communication channel. *Id.* at 14 (citing Ex. 2002 ¶ 52). According to Patent Owner, Petitioner fails to identify any disclosure in Little that describes the value of the delivery rate being equal to the channel capacity of the network. *Id.* at 15; Ex. 2002 ¶ 53 (stating that the transfer rate in Little cannot be equal to the channel capacity C because the propagation delay will always be greater than zero). As Petitioner and Patent Owner’s declarant note, however, the claim does not require actual transmission and, therefore,

the playback bandwidth does not have to be the actual delivery rate. Ex. 1109 (Furht Reply Decl.) ¶¶ 16–17; Ex. 1110 (Almeroth Dep.), 33:8–12 (“Since Claim 1 doesn’t specifically require actually doing the transmission, if the transmission ends up not actually occurring at that playback bandwidth, it may or may not meet the claim.”). Moreover, as noted above, we have construed “playback bandwidth” as a “rate at or less than which to deliver” the images or sounds for playback. Accordingly, even if Patent Owner were correct that the transfer rate cannot be equal to the channel capacity, that does not preclude delivery from occurring *within* the channel capacity (i.e., at or less than the channel capacity), as claimed. Thus, even if the propagation delay were greater than zero, as Patent Owner suggests, the transfer rate would be less than the channel capacity, which is encompassed by the claims. We are, therefore, not persuaded by Patent Owner’s arguments.

After considering the arguments and evidence presented by Petitioner and Patent Owner, we determine that Petitioner has shown by a preponderance of the evidence that Little anticipates claims 1 and 4.

D. Anticipation of Claim 5 by Azadegan (Ex. 1104)

Petitioner contends that Azadegan anticipates claim 5 of the ’091 patent. Pet. 43–46. Petitioner offers the Declaration (Ex. 1107) and Reply Declaration (Ex. 1109) of Dr. Furht. Patent Owner disagrees with Petitioner’s assertions (PO Resp. 18–33), relying on the Declaration of Dr. Almeroth (Ex. 2002).

1. Azadegan

Azadegan relates to video encoding systems where a user can manually control a quality of an encoded video. Ex. 1104, 1:32–35. A video is initially encoded, and then the user manually indicates, within a

frame of video, the quality of specific regions that are to be altered. *Id.* at 2:8–12. Specifically, the user indicates whether to increase the quality of one region by reducing the bits in another region. According to Azadegan, such a tradeoff is necessary because storage mediums have a finite storage capacity such that the total number of bits for the encoded video is limited. *Id.* at 2:19–24.

After the user assigns quality priorities to different regions, new quantizer values for this new encoding are calculated based on the user input and old quantizer values of the old encoding. *Id.* at 2:24–28. Based on the new quantizer values, a new total number of bits for each frame is calculated. *Id.* at 2:28–29. The new total number of bits for each frame of the new encoding is compared to the number of bits in the old encoding. *Id.* at 2:29–34. If the difference between the new encoding and the old encoding exceeds a certain threshold, a correction procedure is performed so that the total number of bits of the new encoding is sufficiently close to the number of bits of the old encoding of the frame. *Id.* at 2:34–39. The frames of the video are then re-encoded using the newly determined quantizer values. *Id.* at 2:40–45.

2. *Analysis of Claim 5*

Petitioner contends that Azadegan anticipates claim 5. Pet. 43–46. We have reviewed Petitioner’s detailed explanation identifying where each limitation allegedly appears in Azadegan, along with the testimony of Petitioner’s declarant, Dr. Furht. *See id.*; Pet. Reply 9–15; Ex. 1107 ¶¶ 176–191; Ex. 1109 ¶¶ 59–68. We have also reviewed Patent Owner’s assertions and evidence as to why Petitioner’s explanations and evidence are deficient. PO Resp. 18–33; Ex. 2002 ¶¶ 60–71. On this record, we are persuaded that

Petitioner has shown by a preponderance of the evidence that Azadegan discloses each limitation of claim 5.

For example, claim 5 requires a method for regenerating a replayable multimedia presentation data stream generated from a list of data elements. Petitioner asserts that Azadegan discloses a method for re-encoding a previously encoded video data stream to change the quality of portions of video. Pet. 43 (citing Ex. 1104, Abstract, 2:8–18, 2:40–45).

Claim 5 further requires identifying original level indicators for each of the data elements where the original level indicators are determined at the time the multimedia presentation data stream was generated. Petitioner asserts that Azadegan discloses that the originally encoded video data is encoded using an automatic video encoding process that creates log files, which include the number of bits used for each of the originally encoded picture frames. Pet. 44 (citing Ex. 1104, 13:23–48, 18:47–19:10).

Claim 5 further requires generating a current list of data elements. Petitioner asserts that Azadegan discloses manually adjusting the quality of a sequence of frames, which results in a list of current data elements for quantization adjustments. Pet. 44 (citing Ex. 1104, Fig. 13, 23:37–59); Ex. 1107 ¶ 185. Moreover, Azadegan discloses that a “relative priority of each section is . . . calculated.” Ex. 1104, 27:15–20. By calculating the relative priority for each section, which is made up of frames (*id.* at 27:57–65), we are persuaded that Azadegan discloses “generating a current list of data elements.”

Claim 5 further requires generating a current level indicator for each of the data elements in the current list. Petitioner asserts that Azadegan discloses calculating the number of bits of data required for each modified frame (i.e., the current level indicator) based on the new quantizer values for

modified frames. Pet. 45 (citing Ex. 1104, 24:53–56, 37:28–38, Fig. 12, Fig. 20).

Claim 5 further requires comparing the current level indicators with the original level indicators to identify updated data elements. Petitioner asserts that Azadegan discloses comparing the number of bits for each frame generated as a result of new quantizer values (i.e., the current level indicators) against the original number of bits for that frame before quantization adjustments. Pet. 45 (citing Ex. 1104, 38:27–67, Fig. 23). Petitioner argues that if the difference is comparable, the revised quantization values are accepted and the updated data elements for the current frame are identified. *Id.* at 45–46 (citing Ex. 1104, 38:56–67).

Claim 5 further requires locating original data portions in the multimedia presentation data stream, which correspond to the updated data elements. Petitioner asserts that Azadegan discloses locating the segments in the original data stream that are to be replaced by calculating the bit offset for a picture. *Id.* at 46 (citing Ex. 1104, 20:32–62, 46:66–47:9).

Claim 5 further requires dividing the updated data elements into one or more updated data portions. Petitioner asserts that Azadegan discloses that, after the user manually adjusts portions of the video, the adjusted video is re-encoded and recompressed to an MPEG-2 format. *Id.* (citing Ex. 1104, 14:49–52). Petitioner also asserts that Azadegan discloses that video encoded in MPEG-2 format is divided into portions called Packetized Elementary Stream packets. *Id.* (citing Ex. 1104, 53:51–61, 63:19–35). In Petitioner’s Reply, Petitioner asserts that during the re-encoding process, video frames are divided into macroblocks, which contain encoded data for a specific region of an image. Pet. Reply 9 (citing Ex. 1104, 34:65–66; Ex. 1109 ¶¶ 54–57; Ex. 1110, 145:12–147:2, 151:25–153:4).

Finally, claim 5 requires replacing the original data portions with the updated data portions. Petitioner asserts that Azadegan discloses that the newly re-encoded portions of the video replace the originally encoded data. *Id.* (citing Ex. 1104, 15:18–21, 49:63–67, 60:66–67, Figs. 34, 36).

In response, Patent Owner contends that Azadegan does not disclose “dividing said updated data elements into one or more updated data portions” before “replacing said original data portions with said updated data portions,” as required by the claim. PO Resp. 23–28. Specifically, Patent Owner focuses on the disclosure of MPEG-2 packetization as the alleged “dividing” step, which Patent Owner contends occurs before the alleged “replacing” step.

As an initial matter, we agree with Patent Owner that claim 5 requires that the “dividing” step occur before the “replacing” step. Although we typically do not read a specific order of steps into method claims, we will do so if “the sequential nature of the claim steps is apparent from the plain meaning of the claim language and nothing in the written description suggests otherwise.” *See Mantech Envtl. Corp. v. Hudson Envtl. Servs., Inc.*, 152 F.3d 1368, 1375–76 (Fed. Cir. 1998).

Here, the plain language of the claim makes clear that the “dividing” step must occur before the “replacing” step. The “dividing” step divides the updated data elements into “one or more updated data portions.” The “replacing” step then recites replacing the original data portions with “*said* updated data portions.” Thus, “said updated data portions” of the “replacing” step refers to the “one or more updated data portions” of the “dividing” step, suggesting that the steps must occur in the order stated. The Specification is consistent with this understanding, disclosing that the interleaver divides the multimedia data elements into portions and then

replaces the portions with updated stream portions. Ex. 1101, 10:19–24. Accordingly, we determine that the “dividing” step of claim 5 of the ’091 patent must occur before the “replacing” step.

In its Reply, Petitioner asserts that the Petition identifies two distinct ways to satisfy the “dividing” step of the claim. Pet. Reply 9. Petitioner further asserts that Patent Owner’s argument focuses on only the second way, while ignoring the first. *Id.* at 10.

Upon considering the arguments and evidence presented by both sides, we agree with Petitioner. Specifically, as support for the “dividing” step of the claim, the Petition states:

Azadegan discloses that, after the user manually adjusts portions of the video, the adjusted video is re-encoded and recompressed to an MPEG-2 format (14:49-52). Video encoded in MPEG-2 format is divided into portions called Packetized Elementary Stream (PES) packets. (53[:]51[–]61; 63:19-35).

Pet. 46.

As support for the “replacing” step of the claim, the Petition states, “Azadegan discloses that the re-encoded portions of the video replace the previously encoded data. (15:18-21; 49:63-67; 50:66-67; Figs. 34 & 36).” *Id.*

The cited portion of Azadegan regarding re-encoding video (i.e., Ex. 1104, 14:49–52) and the first cited portion regarding the “replacing” step (i.e., *id.* at 15:18–21) both refer to the steps of Figure 5. *Id.* at 14:6–7.

Figure 5 is reproduced below:

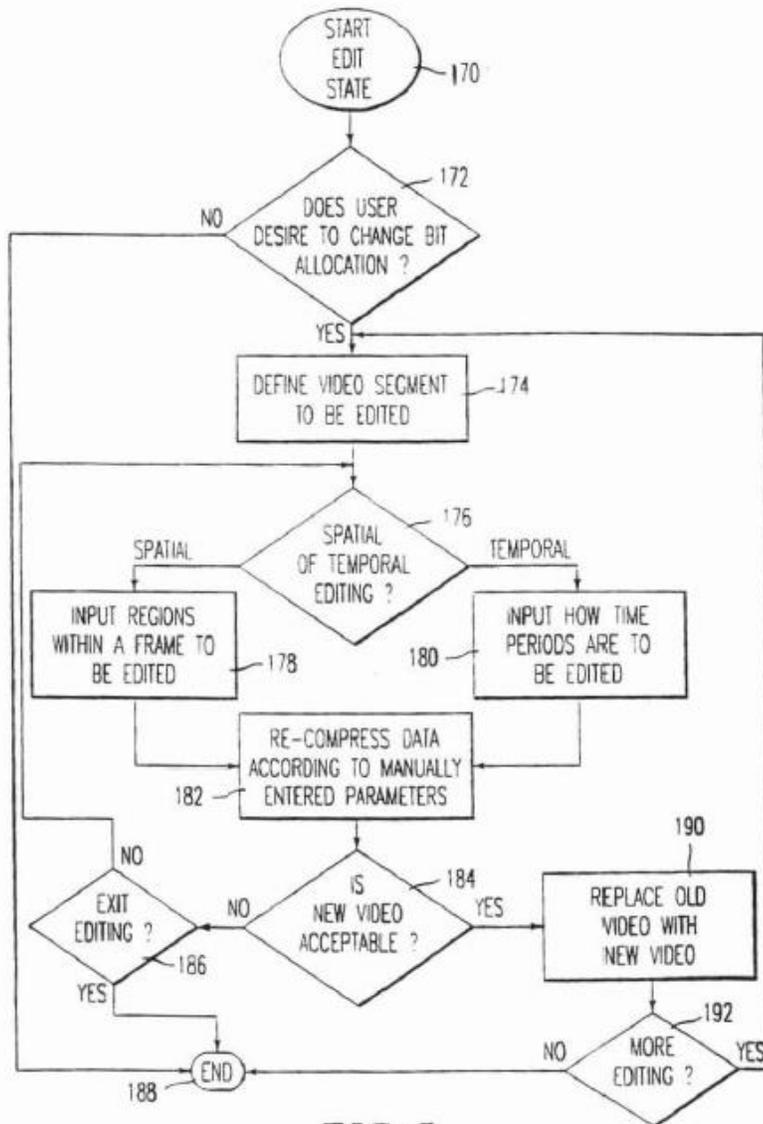


FIG. 5

Figure 5 depicts the process performed in the edit state of Azadegan. *Id.* at 14:6–7. In particular, Figure 5 identifies the re-encoding step as step 182 and the replacing step that follows as step 190. *Id.* at Fig. 5. Thus, Azadegan discloses that the re-encoding step (i.e., the “dividing” step) occurs before the replacing step, as required by the claims.

Patent Owner asserts that Petitioner’s argument that re-encoding requires dividing the video into macroblocks is a new argument raised in its

Reply. Tr. at 26:25–27:4. Although we agree that the Petition could have addressed this issue more clearly, we do not find that Petitioner raised new arguments in its Reply. On the contrary, the Petition refers expressly to the re-encoding step in Figure 5. Pet. 46 (citing Ex. 1104, 14:49-52).

Moreover, according to 37 C.F.R. § 42.23(b), “[a] reply may only respond to arguments raised in the . . . patent owner response.” 37 C.F.R. § 42.23(b).

As set forth above, Petitioner raised the re-encoding process as support for the “dividing” step. When challenged in the Patent Owner Response, Petitioner responded to Patent Owner’s arguments in the Reply. Thus, under the circumstances of this case, we do not find Petitioner to have violated our Rules, especially where Petitioner consistently has cited Azadegan’s re-encoding process as disclosing the “dividing” step. We determine that such rebuttal evidence is properly before the Board, and, thus, must be considered. *See In re Sullivan*, 498 F.3d 1345, 1351 (Fed. Cir. 2007) (finding the Board improperly failed to consider rebuttal evidence and stating “the Board must consider that evidence”). .

Moreover, Petitioner’s declarant explained that a person of ordinary skill in the art would understand that the re-encoding and recompressing process of Azadegan requires dividing the video into macroblocks. Ex. 1109 ¶ 57 (“[T]he video frame data is divided into macroblock-sized representations, each of which is separately encoded in accordance with the specified quantization value for that macroblock.”); *see also* Ex. 2009, 38:5–39:6 (testifying that “I cannot see how you can perform all these operations if you are not specifying and dividing into macroblocks”). This is consistent with the testimony of Patent Owner’s declarant, who stated that MPEG compression involves dividing pictures into macroblocks. Ex. 1110, 152:11–19. In light of this testimony and the cited portions of Azadegan in

the Petition, we determine that Petitioner did not “sandbag[]” Patent Owner by further explaining its argument in its Reply. *See* Tr. at 27:21–22.

Patent Owner also argues that Azadegan does not expressly require that a video that has been previously divided into macroblocks is re-divided into macroblocks during the re-encoding process. Obs. 5. Specifically, Patent Owner appears to assert that the macroblocks are not necessarily further divided into smaller macroblocks. Tr. at 31:1–5. As explained above, however, we credit the testimony of Petitioner’s declarant, who states that a person of ordinary skill in the art would understand that re-encoding and recompressing video data would necessarily require dividing the data into macroblocks. Ex. 2009, 38:5–39:6. Moreover, to the extent Patent Owner argues that the “dividing” step requires dividing a data element into multiple portions, we are not persuaded. Claim 5 recites “dividing said updated data elements into *one or more* updated data portions.” Thus, by encompassing “dividing each of said data elements into one . . . portion[],” the claim does not require dividing each data element into multiple portions. Even if Azadegan did not describe necessarily re-dividing the macroblocks into multiple smaller macroblocks, it is not required to do so under the claims.

After considering the arguments and evidence presented by Petitioner and Patent Owner, we determine that Petitioner has shown by a preponderance of the evidence that Azadegan anticipates claim 5.

E. Anticipation of Claim 8 by Adams (Ex. 1106)

Petitioner contends that Adams anticipates claim 8. Pet. 52–56. Petitioner offers the Declaration of Dr. Furht. Ex. 1107 ¶¶ 220–237. Patent Owner does not address claim 8 in its Patent Owner Response and, accordingly, “leave[s] it to the Board’s discretion to decide Claim 8 based on

the petition.” Tr. at 24:19–25. Upon review of Petitioner’s analysis and supporting evidence, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claim 8 is anticipated by Adams.

1. Adams

Adams relates to an interactive video system that provides flexible content programming. Ex. 1106, 2:19–20. The interactive video system includes a computer system and a satellite, cable television, or television broadcast receiver. *Id.* at 3:65–4:4. For the embodiment with the satellite receiver, the satellite receiver sends a digital data stream to the computer system, which extracts video data packets and generates a corresponding video image on a display device. The computer system also extracts audio data packets from the data stream and generates a corresponding audio signal to drive a speaker. *Id.* at 4:34–45. Finally, the computer system extracts other associated data packets, which include interactive video command and control functions for the computer system. *Id.* at 7:32–33.

2. Analysis of Claim 8

Petitioner provides a detailed explanation as to how Cruz discloses each limitation of claim 8. Pet. 52–56. Upon review of Petitioner’s analysis and supporting evidence, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claim 8 is anticipated by Adams.

For example, claim 8 requires a method for reproducing a multimedia presentation from a playback data stream containing images and sounds and associated commands. Petitioner asserts that Adams discloses a client runtime manager that processes a packetized digital data stream that includes a video packet, an audio packet, and an associated data packet, which specifies interactive video command and control functions for the computer system. Pet. 52–53 (citing Ex. 1106, 8:24–63, 7:32–34).

Claim 8 further requires identifying the data portions. Petitioner asserts that Adams discloses a data selector that extracts incoming digital audio and video data and transfers the data into their respective queues. *Id.* at 54 (citing Ex. 1106, 6:12–20, 4:37–47). Petitioner further argues that extracting data packets from a stream requires identifying the data packets first. *Id.*; *see also* Ex. 1107 ¶ 233.

Claim 8 also requires extracting images and sounds from the data portions and extracting the associated commands. Petitioner asserts that Adams discloses that the client runtime manager software reads the audio and video data packets and distributes the data to the audio subsystem or graphics display subsystem. Pet. 54–55 (citing Ex. 1106, 8:38–47). Petitioner further asserts that Adams discloses reading the incoming associated data packets from the associated data queue and executing the commands specified by each associated data packet. *Id.* at 55 (citing Ex. 1106, 8:51–54).

Finally, claim 8 requires processing the data portions in accordance with the associated commands to reproduce the images and sounds. Petitioner asserts that Adams discloses that the client runtime manager reads the incoming associated data packets from the associated data queue and executes the command and control interactive video functions specified by each associated data packet. *Id.* at 55–56 (citing Ex. 1106, 8:51–54). Petitioner further asserts that Adams discloses that the associated data packets are synchronized to the video and audio packets via the TIME STAMP in each packet header. *Id.* at 56 (citing Ex. 1106, 8:54–56).

After considering the arguments and evidence, we are persuaded by Petitioner’s reasoning. We, therefore, determine that Petitioner has shown

by a preponderance of the evidence that Adams discloses each limitation of claim 8 of the '091 patent.

III. CONCLUSION

We conclude that Petitioner has shown by a preponderance of the evidence that claims 1, 4, 5, and 8 are unpatentable under 35 U.S.C. § 102.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that that Petitioner has shown by a preponderance of the evidence that claims 1, 4, 5, and 8 are unpatentable;

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

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Patent 5,995,091

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