

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AYLO FREESITES LTD,

Petitioner

v.

DISH TECHNOLOGIES L.L.C.,

Patent Owner

U.S. Patent 8,868,772

Issue Date: October 21, 2014

Title: APPARATUS, SYSTEM, AND METHOD FOR ADAPTIVE-RATE
SHIFTING OF STREAMING CONTENT

Inter Partes Review No. IPR2024-00048

**PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT 8,868,772
CHALLENGING CLAIMS 1, 3-8, AND 10-21
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.1 *et seq.***

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PETITIONER’S EXHIBIT LIST

Table of Exhibits for U.S. Pat. 8,868,772 Petition for *Inter Partes* Review

Exhibit Number	Description
1001	U.S. Pat. 8,868,772 (“the ’772 Patent”)
1002	File History of U.S. Pat. 8,868,772
1003	Declaration of Dr. Henry Houh including Curriculum Vitae (“Houh”)
1004	U.S. Patent No. 6,161,137 to Ogdon et al. (“Ogdon”)
1005	<RESERVED>
1006	<RESERVED>
1007	U.S. Patent No. 6,848,004 to Chang (“Chang”)
1008	WO1997044942 to Kliger (“Kliger”)
1009	337-TA-1265 ITC Investigation Initial Determination
1010	337-TA-1265 ITC September 11, 2023 Enforcement Complaint
1011	<RESERVED>
1012	<RESERVED>
1013	U.S. Patent No. 6,637,031 to Chou (“Chou”)
1014	<RESERVED>
1015	<RESERVED>
1016	U.S. Patent No. 7,529,806 to Shteyn (“Shteyn”)

TABLE A: LISTING OF CLAIMS

Claim Designation	Claim Language
Claim 1	
1[Pre]	A method for presenting rate-adaptive streams, the method comprising:
1[A][1]	streaming by a media player operating on an end user station a video from a set of one or more servers,
1[A][2]	wherein each of a plurality of different copies of the video encoded at different bit rates is stored as multiple files on the set of servers,
1[A][3]	wherein each of the multiple files yields a different portion of the video on playback,
1[A][4]	wherein the multiple files across the different copies yield the same portions of the video on playback,
1[A][5]	each of said files having a time index such that the files whose playback is the same portion of the video for each of the different copies have the same time index in relation to the beginning of the video, and wherein the streaming comprises:
1[B]	requesting by the media player a plurality of sequential ones of the files of one of the copies from the set of servers over a plurality of Transmission Control Protocol (TCP) connections based on the time indexes;
1[C]	automatically requesting by the media player from the set of servers over the plurality of TCP connections subsequent portions of the video by requesting for each such portion one of the files from one of the copies dependent upon successive determinations by the media player to shift the playback quality to a higher or lower quality one of the different copies, said automatically requesting including,
1[D]	repeatedly generating a set of one or more factors indicative of the current ability to sustain the streaming of the video using the files from different ones of the copies, wherein the set of one or more factors relate to the performance of the network; and
1[E]	making the successive determinations to shift the playback quality based on at least one of the set of factors to achieve continuous playback of the video using the files of the highest quality one of the copies determined sustainable at that time; and

1[F]	presenting the video by playing back with the media player on the end user station the requested files in order of ascending playback time.
Claim 3	
[3]	The method of claim 1, wherein said making the successive determinations to shift comprises: upshifting to a higher quality one of the different copies when the at least one factor is greater than a first threshold; and determining if the higher quality playback can be sustained.
Claim 4	
[4]	The method of claim 3, wherein said making the successive determinations to shift comprises downshifting to a lower quality one of the different copies when the at least one factor is less than a second threshold.
Claim 5	
5[A]	The method of claim 1, further comprising: receiving user input to enable one of fast-forward, skip randomly, and rewind functionality; and
5[B]	requesting files of the video at a specified time index that is not the next sequential time in the current playback.
Claim 6	
[6]	The method of claim 1, wherein said requesting the plurality of sequential one of the files includes requesting the files from a low quality one of the different copies to enable instant playback of the video, and wherein said automatically requesting includes-upshifting to a higher quality one of the different copies.
Claim 7	
[7]	The method of claim 1, wherein said requesting the plurality of sequential ones of the files includes requesting the plurality of sequential ones of the files over different ones of the plurality of TCP connections.
Claim 8	
[8]	The method of claim 1, wherein said presenting comprises sequentially arranging the requested files from the different copies in the order of ascending playback time for playback with the media player on the end user station.

Claim 10	
[10]	The method of claim 1, wherein the at least one of the set of factors is indicative of the available bandwidth of the plurality of TCP connections.
Claim 11	
[11]	The method of claim 1, wherein the at least one of the set of factors is indicative of latency of the requested files, wherein the latency is a time measure between when one of the requests is issued and a time that response data of the request begins to arrive at the end user station.
Claim 12	
[12]	The method of claim 1, wherein the at least one of the set of factors is indicative of time intervals between successive receive times for each response to the requested files.
Claim 13	
[13]	The method of claim 1, wherein the at least one of the set of factors is indicative of delays or losses in one or more of the plurality of TCP connections.
Claim 14	
[14]	The method of claim 1, wherein at least one of the set of servers is a web server.
Claim 15	
[15]	The method of claim 14, wherein the files are requested from the web server using Hyper Text Transfer Protocol (HTTP), and wherein the web server is without specialized server-side intelligence to respond to said requesting.
Claim 16	
[16]	The method of claim 1, wherein at least one of the set of servers is a cache server of a network infrastructure operator.
Claim 17	
17[A]	The method of claim 1, wherein: said generating the set of factors comprises: monitoring time intervals between successive receive times for each of the requested files;
17[B]	calculating a current performance ratio across a current window of the time intervals; and
17[C]	calculating a current average of the performance ratio to obtain a current performance factor of the set of factors;
17[D]	said making further comprises:

	comparing the current performance factor with a set of one or more trigger thresholds; and
17[E]	determining whether to upshift or downshift to a higher or lower quality one of the different copies based on said comparing.
Claim 18	
18[A]	The method of claim 1, wherein said making comprises: comparing a current performance factor of the set of factors with a set of one or more trigger thresholds, wherein the set of one or more trigger thresholds is determined by a combination of two of the set of factors relating to a current read ahead margin and a minimum safety margin, wherein the current read ahead margin is an amount of contiguously available, sequentially arranged requested files of video received by the media player for playback at a current playback time index; and
18[B]	determining whether to upshift or downshift to a higher or lower quality one of the different copies based on said comparing.
Claim 19	
[19]	The method of claim 1, wherein: said requesting comprises issuing for each of the plurality of sequential ones of the files a request with the filename of that file, and said automatically requesting comprises issuing for each of the files a request with the filename of that file.
Claim 20	
[20]	The method of claim 1, wherein the set of servers includes a content server storing the multiple files of the different copies, and wherein the set of servers includes one or more cache servers caching at least some of the files.
Claim 21	
[21]	The method of claim 1, wherein the multiple files are independently cacheable by a cache server without specialized server-side intelligence.

I. INTRODUCTION

Aylo Freesites Ltd (“Petitioner”) petitions under 35 U.S.C. § 312 and 37 C.F.R. § 42 for *inter partes* review of claims 1, 3-8, and 10-21 (“Challenged Claims”) of U.S. Pat. 8,868,772 (“the ’772 Patent”) (EX1001). The ’772 Patent is assigned to DISH Technologies L.L.C. (“DISH”) and, based on information and belief, Sling TV L.L.C. is an exclusive licensee.

The ’772 Patent relates to adaptive-rate shifting of streaming content, including a client requesting streamlets of different bitrates based upon client determinations to select higher or lower bitrate versions. The Grounds advanced here were not relied upon during prosecution of the ’772 Patent and teach such adaptive-rate shifting of content streaming.

II. MANDATORY NOTICES

A. Real Party-in-Interest – § 42.8(b)(1)

Petitioner certifies that Aylo Freesites Ltd (f/k/a MG Freesites Ltd), Aylo Premium Ltd (f/k/a MG Premium Ltd), and Aylo Billing Limited (f/k/a MG Billing Limited) are the only real parties-in-interest.

B. Related Proceedings – § 42.8(b)(2)

The ’772 Patent is currently asserted in the following proceedings. Petitioner and its RPIs are only named parties in the District Court Litigations defined below:

- *MG Freesites Ltd et al. v. DISH Technologies LLC et al.* 3:23-cv-03674 (N.D. Cal.) (the “California Litigation”)
- *DISH Technologies LLC et al. v. MG Premium Limited et al.* 2:23-cv-00552 (D. Utah) (the “Utah Litigation” and, collectively with the California Litigation, the “District Court Litigations”);
- *DISH Technologies LLC et al. v. WebGroup Czech Republic A.S. et al.* 2:23-cv-00553 (D. Utah)
- *DISH Technologies LLC et al. v. Vidgo Inc.* 2:23-cv-00624 (D. Utah)
- *DISH Technologies LLC et al. v. iFIT Health & Fitness, Inc. f/k/a ICON Health & Fitness, Inc.* 1:23-cv-00963 (D. Del.)
- *DISH Technologies LLC v. A Parent Media Co. Inc. et al.* 1:23-cv-01000 (D. Del.)
- *DISH Technologies LLC v. fuboTV Media Inc.* 1:23-cv-00986 (D. Del.)
- *DISH Technologies LLC v. Beachbody, LLC d/b/a/BODi* 1:23-cv-00987 (D. Del.)
- *DISH Technologies LLC v. BritBox, LLC* 1:23-cv-08971 (S.D.N.Y.)

Additionally, Petitioner intends to file IPRs on U.S. Patent Nos. 9,407,564; 10,469,554; 10,469,555; 10,757,156; 10,951,680; 11,470,138 and 11,677,798.

C. Counsel – § 42.8(b)(3) and (b)(4); Service Information; Fees

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A Power of Attorney is filed concurrently herewith under 37 C.F.R. § 42.10(b). The Office is authorized to charge the fee set forth in 37 C.F.R. § 42.15(a) or other fees to Deposit Account No. 22-0261.

III. CERTIFICATION OF GROUNDS FOR STANDING

Petitioner certifies that the '772 Patent is available for IPR and that Petitioner is not barred or estopped from requesting IPR challenging the patent claims on the grounds identified in this Petition.

IV. UNPATENTABILITY GROUNDS

Petitioner requests cancellation of claims 1, 3-8, and 10-21 based on the grounds below.

Ground	Reference(s)	Challenged Claims	Basis
1	Ogdon	1, 3-8, and 10-21	103
2	Ogdon and Shteyn and Chou	1, 3-8, and 10-21	103

The two grounds are supported by the Declaration of Dr. Henry Houh (EX1003) and other supporting evidence in the Exhibit List. EX1003, ¶¶ 55-56.

V. '772 PATENT

A. Summary

The '772 Patent (application no. 11/116,783) was filed on April 28, 2005 and issued on October 21, 2014. EX1001, Cover. The '772 Patent purports to relate to adaptive rate shifting of streaming contents such as video, over the Internet. EX1001, Abstract, 1:18-21. The '772 Patent describes an “agent controller module” to “simultaneously request” a plurality of streamlets, “continuously monitor” streamlet requests and subsequent responses and “accordingly request” higher or lower quality streamlets. *Id.*, Abstract. The '772 Patent also describes a “staging module” that stages the streamlets and arranges the streamlets for playback on a content player. *Id.*

One embodiment of the system of the '772 Patent includes “a content server 102” and “end user 104” coupled by a data communications network (*e.g.*, the Internet 106) wherein the “end user station 104” may be a personal computer, entertainment system, or a portable electronic device configured to present content. *Id.*, FIG. 1, 6:3-17. The '772 Patent describes encoding the same content file 200 into three different “quality” streams:

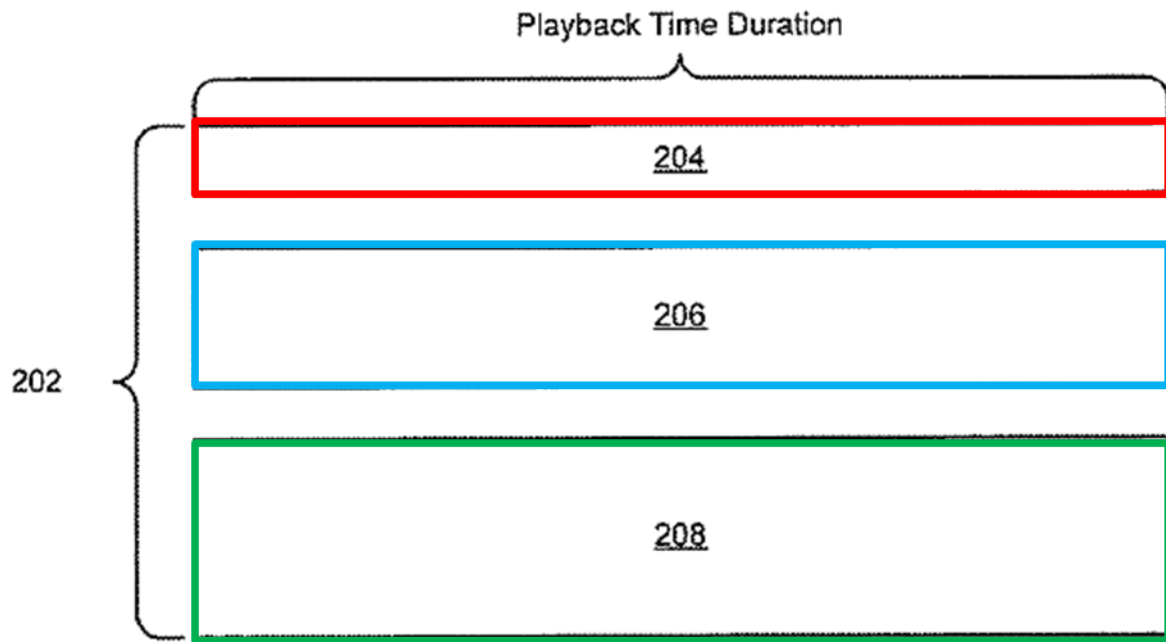


FIG. 2b

Id., FIG. 2b (annotated, low quality (red, 204), medium quality (blue, 206), and high quality (green, 208)), 6:46-57.

For example, “low quality stream 204 may be encoded and compressed to a bit rate of 100 kilobits per second (kbps), the medium quality stream 206 may be encoded and compressed to a bit rate of 200 kbps, and the high quality stream 208 may be encoded and compressed to 600 kbps.” *Id.*, 6:53-57.

Each stream (204, 206, and 208) is also “divided into a plurality of streamlets” where “streamlet refers to any sized portion of the content file” and may be “an independent media object” where “streamlet 0 may have a time index of 00:00

representing the beginning of content playback, and streamlet 1 may have a time index of 00:02, and so on.” *Id.*, 6:58-7:7.

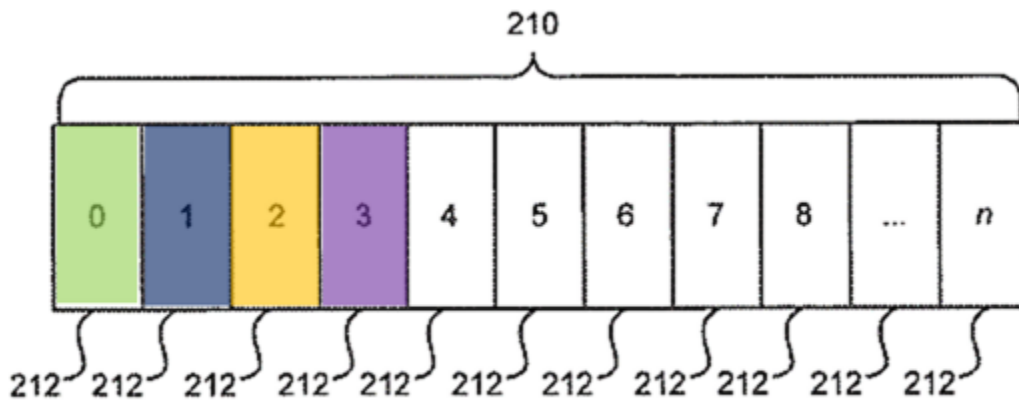


FIG. 2c

Id., FIG. 2c (annotated).

As the client receives a streamlet, it “calculates 708 a performance ratio” and “obtain[s] a performance factor.” *Id.*, 12:15-40, FIGs, 6 and 7. Thereafter, the client determines whether to upshift or downshift the stream quality based upon comparing the performance factor versus trigger thresholds and makes a “determination of whether use of the higher quality stream is sustainable.” *Id.*, 12:41-65.

B. Prosecution History

The '772 Patent was filed as Application No. 11/116,783 on April 28, 2005. On May 14, 2008, the Examiner issued a non-final office action finding, *inter alia*, the pending claims anticipated by or obvious over U.S. Publication No. 2002/0144276 (“Radford”). EX1002, 62-80.

On September 11, 2008, Applicant conducted an interview and revised the claims, arguing Radford no longer anticipates or renders obvious the claims as amended because Radford does not disclose automatically and progressively requesting video portions, achieving continuous playback, or multiple TCP connections. *Id.*, 110-122.

On February 20, 2009, the Examiner issued a final office action rejecting all pending claims. *Id.*, 394-409. The Examiner found most claims indefinite for reciting “performance factors,” “requesting sub-parts,” and “requesting . . . from the server over a plurality of [TCP] connections.” *Id.*, 396-397. The Examiner found that pending claim 39 failed the written description requirement for reciting new matter. The Examiner found all pending claims obvious in view of U.S. Publication No. 2002/0188745 (“Hughes”), U.S. Publication No. 2003/0135631 (“Li”), U.S. Publication No. 2004/0093420 (“Gamble”), and (for some claims) Official Notice. *Id.*, 397-409.

On March 11, 2009, Applicant conducted another interview, and on March 14, 2009, Applicant submitted an amendment after final. *Id.*, 441-463. Applicant argued that claim 39, amended to recite that the “current read ahead margin” is an amount of contiguously available, sequentially arranged portions, is supported by the specification. *Id.*, 445-446. Applicant also amended the claims to recite “one or more factors [that] relate to the performance of the network,” which it asserted

encompassed “any factor which relates to the performance of the network in general,” and argued that “requesting sub-parts” “requires that the ‘sub-parts’ encompass **any part of the requested portions of the video**, not just any part of the copies of the video files.” *Id.*, 446-449 (emphasis in original). Applicant further amended claim 20 to recite “requesting by the media player [. . .] from the server.” *Id.*, 449-450. Applicant argued that the combination of asserted references no longer rendered the claims obvious. *Id.*, 450-463. For example, Applicant argued that Gamble’s disclosure of selecting a file to be sent, segmenting the file into segments in the TCP layer, and sending the segments over parallel TCP connections does not teach “**requesting** by the media player a plurality of **sequential portions of one of the copies . . . from the server over a plurality of [TCP] connections**” and “automatically and progressively **requesting** by the media player from the server **over the plurality of TCP connections subsequent portions of the video from different ones of the copies**” (emphasis in original). *Id.*, 450-460.

On April 2, 2009, the Examiner declined to enter this amendment. *Id.*, 469-471. On April 10, 2009, Applicant submitted another amendment after final, making identical claim changes and remarks, except to account for cancellation of claims 22 and 39. *Id.*, 498. On May 12, 2009, the Examiner declined to enter this amendment. *Id.*, 504-506.

On June 22, 2009, Applicant further revised its claims in a Request for Continued Examination. *Id.*, 510-536. Applicant again argued that the claims are not indefinite and that the combination of asserted prior art no longer rendered obvious the claims as amended. *Id.*, 527-532.

On August 20, 2009, the Examiner issued a non-final office action rejecting all claims. *Id.*, 547-560. The Examiner found that the claims recited new matter and were obvious in view of “Intelligent Streaming” (“Birney”) and U.S. Publication No. 2003/0152036 (“Quigg-Brown”). *Id.*, 549-560.

On October 22, 2009, Applicant further amended the then-pending claims. *Id.*, 566-583. Applicant argued that “requesting . . . over a plurality of [TCP] connections based on the time indexes” was supported by the specification’s description of, *inter alia*, streamlets encapsulated as an independent media object or file having a unique time index, and multiple TCP connections. *Id.*, 573-574. Applicant also argued that a claim amendment reciting “**repeatedly** generating a set of one or more factors” means that “the set of factors are generated more than once, not just ‘at any time set.’” *Id.*, 574-575 (underline in original). Applicant further argued that the asserted combination of Birney and Quigg-Brown no longer rendered obvious the claims as amended, including “requesting by the media player” (first and/or second occurrences), “stored as multiple files,” “time indexes,” and the media player “making the successive determinations.” *Id.*, 575-582.

On February 22, 2010, the Examiner issued a final office action finding the claims obvious in view of Birney, U.S. Patent No. 6,490,627 (“Kalra”), and Quigg-Brown. *Id.*, 615-630. Among other things, the Examiner asserted that Birney teaches (i) multiple files through its disclosure of discrete streams with different quality bit rates, and (ii) time indexes through its disclosure of seamlessly switching stream qualities. *Id.*, 627-628.

On February 25, 2010, Applicant filed a response arguing the claims are not obvious over the asserted prior art, including that Birney teaches streams stored as a single file (not multiple files) and that seamlessly switching stream qualities does not in and of itself teach time indexes. *Id.*, 635-640. On March 23, 2010, the Examiner issued an Advisory Action maintaining the rejection. *Id.*, 641-643. On April 22, 2010, Applicant filed another response. *Id.* 654-660. On May 17, 2010, the Examiner issued another Advisory Action maintaining the rejection. *Id.*, 661-663.

On May 24, 2010, Applicant filed a Notice of Appeal, followed by its Appeal Brief on October 25, 2010, in which it asserted arguments that the prior art does not disclose numerous pending claim limitations. *Id.*, 665-667, 672-721. In addition to arguments based on multiple files, Applicant argued, *e.g.*, that the cited art’s disclosure of bandwidth fluctuations does not teach factors indicative of (i) latency, (ii) time intervals between successive receive times for each response, or (iii) delays or losses in one or more TCP connections. *Id.*, 700-703; *see also id.*, 706. Applicant

also argued that Birney’s disclosure that “the [Windows Media] server selects and delivers the stream with the most appropriate bit rate” or “pushes data to a client” does not teach a web server and/or a cache server without specialized server-side intelligence. *Id.*, 703-705.

On February 16, 2011, the Examiner filed an Examiner’s Answer to the Appeal Brief, maintaining the rejection of all pending claims. *Id.*, 753-778. On April 28, 2005, Applicant submitted its Reply Brief. *Id.*, 787-807.

On July 23, 2014, the PTAB issued a decision reversing the Examiner’s rejection, finding that neither Birney nor Kalra discloses “that the different copies of the video are *stored as multiple files.*” *Id.*, 820-825 (emphasis in original). On August 12, 2014, the Examiner issued a Notice of Allowance. *Id.*, 1516-1525. On August 20, 2014, Applicant filed another RCE with an Information Disclosure Statement. *Id.*, 2153-2154. On September 12, 2014, the Examiner issued another Notice of Allowance. *Id.*, 2158-2166.

C. Priority Date

Petitioner assumes for the purpose of this Petition a priority date of April 30, 2004 (the “Priority Date”) based on the claimed priority to the Provisional application No. 60/566,831 (EX1001, Cover), but Petitioner reserves the right to contest this priority date (and priority chain) in other proceedings.

VI. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner submits that a person having ordinary skill in the art (“POSITA”) as of the Priority Date would have had at least a B.S. degree in computer science or electrical engineering (or comparable degree) and two years of experience in networking or streaming media, or a M.S. in computer science or electrical engineering (or comparable degree). EX1003, ¶ 51. A higher level of education or specific skill might make up for less experience, and vice-versa. *Id.*

VII. CLAIM CONSTRUCTION

Family members of the ’772 Patent were asserted in the International Trade Commission (“ITC”) in Investigation No. 337-TA-1265 (ITC) (“the ITC Investigation”). Petitioner was not involved in the ITC Investigation.

Petitioner submits that, for purposes of institution, no constructions are necessary. However, Petitioner acknowledges that in the ITC Investigation between Patent Owner and iFIT Inc. asserting family members of the ’772 Patent, the Chief Administrative Law Judge (“ALJ”) construed “a factor indicative of the current ability to sustain the streaming [of the video ... wherein the set of one or more factors relate to the performance of the network]” according to its plain and ordinary meaning, “e.g., one or more factors relating to the performance of the network that is indicative of an ability to sustain the streaming of the video.” EX1009, 53-61. The ALJ also construed “repeatedly generating a factor” as “generating a factor more

than once” and construed “successive determinations” according to its plain and ordinary meaning. *Id.*, 61-64.

The PTAB is not bound by the ITC’s constructions. *Mediatek Inc. v. Advanced Micro Devices, Inc.*, IPR2018-00102, Paper 48 (Final Written Decision), at 10-11 (PTAB Apr. 29, 2019) (citing *Nobel Biocare Servs. AG v. Intradent USA, Inc.*, 903 F.3d 1365, 1375 (Fed. Cir. 2018)). Nevertheless, as shown herein, the asserted grounds render claims 1, 3-8, and 10-21 of the ’772 Patent unpatentable even under the ITC’s constructions. By asserting that the ’772 Patent claims are unpatentable under the ITC’s constructions, Petitioner is not conceding that those constructions are correct and reserves its rights to challenge those constructions in any future proceeding.

In the ITC Investigation, iFIT proposed a design-around with respect to certain limitations of other patents in the family of the ’772 Patent. In response, DISH argued that even where limitations “require repeated up- and down-shifting, the single, initial adaptive stream selection performed by iFIT’s Redesigned Products *is equivalent*.” EX1010, 32 (emphasis added). Thus, although Petitioner does not necessarily agree with Patent Owner, Patent Owner should be held to its argument that a “single, initial adaptive stream selection” is equivalent to limitations that require repeated up- and down-shifting.

VIII. OVERVIEW OF THE PRIOR ART

A. State of the Art

The '772 Patent admits in the “Description of Related Art” section that “streaming media” was known, including streaming of “audio/video” where “quality that can be received for real time presentation is constrained by the available bandwidth of the user’s network connection.” EX1001, 1:31-41. The '772 Patent further admits that TCP connections were known and that “[m]ost streaming solutions use a TCP connection.” *Id.*, 2:6-38. Further, Patent Owner admits that the “standard HTTP/TCP protocol” is “the web standard upon which the Internet is built.” *See DISH Technologies LLC et al v. Aylo Premium Limited et al* Case No. 2:23-cv-00552-BSJ, D.I. 1 at ¶30. Other admissions in the '772 Patent are that “[u]se of cache servers is well known to those skilled in the art.” EX1001, 8:6-10.

Before the Priority Date, “client-pull” streaming systems were known in the art wherein a client requested from a server sequential portions of a file at different encoded quality levels based on network bandwidth. EX1003, ¶ 58. For example, Chang describes “real time measurement and prediction of bandwidth for adaptive content delivery of rich media according to available user bandwidth.” EX1007, Abstract. Chang discloses a client (via java applets) that performs real time bandwidth measurement according to user’s available bandwidth and fetches the corresponding bandwidth sensitive track content from the server via HTTP requests.

Id., 7:43-53, 8:59-9:5, 9:45-51, 10:15-14, 10:35-58. In another example, Kliger teaches a media player device that requests from a server the appropriate bandwidth object depending on network bandwidth. EX1008, 3:25-32, 5:25-28, 9:32-10:4, 12:33:13:8, claim 3.

B. Ogdon

Ogdon (EX1004) was filed on March 31, 1998 and issued on December 12, 2000. Ogdon is prior art under at least (pre-AIA) 35 U.S.C. § 102(b). Ogdon is not cited on the face of the '772 Patent nor was it considered in the ITC Investigation.

Ogdon discloses a system for distributing a video presentation, during the performance of the presentation, over the Internet via web servers to a plurality of client nodes at a quality level appropriate for each client node based upon the transmission characteristics of the network, such as data transmission rate. EX1004, Abstract, 1:9-15, 2:21-35. Ogdon discloses that each presentation includes presentation “elements” (also referred to as “collections” or “subcollections”) containing “one or more segments” of the presentation and being “an indivisible portion of a presentation performance” wherein each such element has multiple versions of the same content and same duration at a different quality levels such that each version of each element can be substituted for the other as an alternative based upon network performance. *Id.*, 2:36-66, 13:47-49. Ogdon further discloses that each client node selects and requests each element at the appropriate quality level based

upon its calculated network characteristics. *Id.*, 4:29-36, 6:40-51, 7:10-15, 21:40-45, 22:10-33, 23:40-24:3, 25:24-30.

C. Shteyn

Shteyn (EX1016) was filed on November 4, 1999 and issued on May 5, 2009. Shteyn is prior art under at least (pre-AIA) 35 U.S.C. § 102(e). Shteyn is not cited on the face of the '772 Patent, nor was it considered in the ITC Investigation.

Shteyn discloses partitioning a content file into segments at a server including storing alternates encoded at different bitrates for each segment. EX1016, Abstract, FIGs. 1-2, claims 1, 9, 11. Shteyn discloses that the client connects to the server and downloads the control XML file that enables the client to request, download, and play out each segment of the content file sequentially. *Id.*, 2:57-3:36, 3:44-61, 4:8-16. Shteyn further discloses that the client application may detect a change in bandwidth and select a different quality (higher or lower quality) segment when requesting subsequent segments. *Id.*, 4:20-31, FIG. 2, claim 1.

D. Chou

Chou (EX1013) was filed on December 4, 1998 and issued on October 21, 2003. Chou is prior art under at least (pre-AIA) 35 U.S.C. § 102(e). Chou is not cited on the face of the '564 Patent, nor was it considered in the ITC Investigation.

Chou discloses obtaining real-time responses with interactive multimedia servers providing at least two different audio/visual data streams, with a first data

stream having fewer bits per frame and providing a video image much more quickly than a second data stream with a higher number of bits and quality. EX1013, Abstract. Chou discloses that the first data stream is available much faster and may be more quickly displayed on demand. *Id.* Chou further discloses that start-up delay and seek delay occur in order to guard against future buffer underflow due to network jitter. *Id.*, 2:59-3:8.

E. Analogous Art

Each prior art reference is analogous art to the claimed invention in the '772 Patent, and each is in the same field of endeavor of adaptive-rate streaming based on network conditions. *Compare* EX1001, title, Abstract, 1:18-21, 2:44-48, 2:60-3:67, FIGs. 2c, 4, and 7, *with* EX1004, Abstract, 1:9-15, 3:38-63, 7:10-15, 7:40-63, 21:40-22:33, 23:40-24:3, FIG. 2; EX1016, Abstract, 1:6-14, 2:53-63, 3:44-64, 4:20-31, FIGs. 1-2; EX1013, Abstract, 2:7-3:19, 3:29-60, 6:50-7:30, FIG. 2; EX1003, ¶ 65.

Additionally, each prior art reference is reasonably pertinent to any purported problem addressed in the '772 Patent, such as “alleviat[ing] the problems of reliability, efficiency, and latency” and “offer[ing] instantaneous viewing” using “multiple connections between a source and a destination, requesting varying bitrate streams depending upon network conditions.” EX1001, 2:39-2:48; EX1003, ¶ 66.

IX. SPECIFIC GROUNDS

A. Ground 1: Claims 1, 3-8, and 10-21 Would Have Been Obvious in view of Ogdon

1. Claim 1

a. 1[Pre]

Whether or not the preamble is limiting, Ogdon teaches 1[Pre].

Ogdon discloses a method for presenting a digital stream from a video server (webserver(s)) over a network (Internet). EX1004, Abstract (“distributing a performance of a presentation synchronously to a plurality of client nodes” via “the Internet”), 7:40-48 (“at least one of a client node 56 (e.g., a personal computer) . . . may receive video . . . from a communications network 70 such as the Internet”), FIGs. 1A-1B.

Ogdon further teaches a method for presenting a rate-adaptive stream by adaptively receiving the video data and switching between versions of the video presentation based on network characteristics. *Id.* 3:38-41 (“**dynamically and adaptively switch**¹ between . . . versions of the presentation according to network transmission characteristics at each client network node”), 22:10-23 (“the client node 56 uses its most recent network 70 data transmission characteristics together

¹ All emphases in prior art citations are added unless otherwise indicated.

with the host 200 transmitted list of current network 70 addresses for content webserver 96 to select an appropriate content webserver and an appropriate version of the next collection of segments to be retrieved.”); EX1003, ¶ 68.

b. 1[A][1]

Ogdon teaches 1[A][1]. Ogdon discloses a media player (client presentation software 88 and/or browser 78) operating on an end user station (client node) streaming from a set of one or more servers. EX1004, 7:52-63 (“if the client node 56 is resident at a client site 54, then a network interface **software package** is required for receiving, e.g., video presentation information from the communications network 70 . . . includ[ing] a network browser 78 such as the Internet browsers offered by Microsoft and Netscape, together with a **client presentation software system 88** that coordinates with the browser 78 for requesting, receiving and **displaying presentation segments** (from the network 70) as appropriate during the presentation.”), 8:27-40 (“content webserver 96a, and alternate content web server 96b” provide “presentation data to client sites 54 requesting such data via client nodes”); EX1003, ¶ 69.

Because Ogdon refers to the client presentation software and the browser as part of a “software package” that “together” perform functions of the invention, a POSITA would have considered the client presentation software and the browser as together forming “a media player.” EX1003, ¶ 70.

Alternatively, if “a media player” is interpreted as requiring one single computer program, Ogdon contemplates receiving and displaying presentation data via just “an internet browser” or a plug-in within the browser (EX1004, 5:28-36), and a POSITA would have been motivated to modify the system such that each of the functions performed in Ogdon collectively by the client presentation software and browser be performed by a single program alone to simplify the system, reduce the number of programs that are required to run on the client node, and make it easier to debug. EX1003, ¶ 71. Further, this would have been a straightforward modification because it would have been a simple matter of programming one computer program to perform all functionality that the client presentation software and the browser are disclosed to perform collectively. *Id.*

c. 1[A][2]

Ogdon teaches 1[A][2]. Ogdon discloses that each copy of the video presentation is made up of multiple files (“segments”) and each segment has alternative bitrate versions for the client nodes to choose from. Ogdon uses the term “segment” to mean a portion of the video presentation and explains that “one or more” segments may be grouped into an “element,” “collection,” or “subcollection.” *E.g.*, EX1004, 2:36-49, 4:29-36, 18:40-45, 22:10-29. EX1003, ¶ 72. Ogdon explains that this is “an indivisible portion” of the video presentation (EX1004, 2:36-42). and that a segment can be a file. EX1004, 28:17-18 (“presentation data segment file”);

EX1003, ¶ 72. Thus, Ogdon discloses that the video presentation is made up of a set of segments as files. EX1003, ¶ 72.

Ogdon further discloses that the video presentation has multiple different copies (*e.g.*, high quality (full animation) and lower quality (limited animation) versions) encoded at different bitrates for each segment because there are “[d]ifferent versions of the same presentation” with “different network requirements,” for example, “a first version of a presentation may require a network transmission rate sufficient for real time or animated video” and “another version of the presentation [requiring] a transmission rate sufficient for graphic slides.” EX1004, 2:30-66. Further, “if a low transmission data rate is detected . . . presentation elements of a reduced size can be retrieved” or “if a higher transmission rate is detected . . . presentation elements of a greater size (and **corresponding enhanced quality of presentation**) can be retrieved.” *Id.*, Abstract; *see also id.*, 22:44-47 (“better presentation quality presentation elements may be retrieved (*e.g.*, the presentation quality may be enhanced from **limited** or no animation **to full animation**)”), 13:47-49 (“**several variations** of presentation content can be provided to clients based on the available bandwidth”), 24:55 (“alternative segment collections that are smaller”), claim 9 (“said first subcollection includes a first video portion, and said second subcollection includes a different second video portion that corresponds in content with said first video portion, and wherein said first and

second video portions have substantially different expected data transmission rates for being transmitted to said first client node”); EX1003, ¶ 73. A POSITA would have understood that the smaller size and lower transmission rate for “limited or no animation” video is encoded at a lower bitrate and the larger size, higher quality, and higher transmission rate requirement “full animation” video is encoded at a higher bitrate. EX1003, ¶ 73

Ogdon further discloses that a set of video servers (webserver(s)) store the different copies of the video presentation as “[d]ifferent versions of the same presentation, accessible from the one or more of the content webserver(s).” EX1004, 2:30-31, 9:30-31, 22:60-64; *see also id.*, 9:44-46 (“content manager 104 distributes presentation content (e.g., presentation segments) to the content webserver(s) 96”); claim 21 (“storing a plurality of segments of a presentation for network access via one or more content supply nodes”), FIG. 2C (step 508 “list of network 70 addresses (URLs) of the content webserver(s) 96 from which this next collection of segments can be retrieved”).

d. 1[A][3]

Ogdon teaches 1[A][3]. Ogdon discloses that each of the multiple files (segments) yields a different portion of the video on playback because the “subcollection of segments (i.e., presentation elements) [are] ordered according to their presentation sequence.” Ogdon, 2:44-45, 3:46-47 (“presentation as an **ordered**

series of presentation segments”), claim 21 (“there are subcollections of one or more segments, each subcollection having a predetermined presentation order”), FIG. 2C (step 508 “next collection of one or more (video) segments”); EX1003, ¶ 75.

e. 1[A][4]

Ogdon teaches 1[A][4]. *See* 1[A][2]. Ogdon discloses that the multiple files (segments) across the different copies contains the same portions of the video on playback because each version (e.g., high quality (full animation) and lower quality (limited animation) versions) of the stream encodes the same portion of the presentation at different quality levels. EX1004, 2:43-49 (“each version of a presentation typically has its subcollection of segments (i.e. presentation elements) ordered according to their presentation sequence” and “**every segment** (or subcollections thereof) **in one version corresponds with a segment** (or subcollections thereof) **having the same presentation order in each of the other versions.**”); *see also id.*, 2:49-55 (“**corresponding segments** (or subcollections thereof) in different versions” are the same such that “any of the corresponding alternative segments (or subcollections thereof) from different versions can be **presented as a replacement for another such corresponding segment** (or subcollection) during the presentation.”), claim 21 (“said first subcollection is replaceable with said second subcollection”); EX1003, ¶ 76.

f. 1[A][5]

Ogdon teaches 1[A][5]. Ogdon discloses that each of the files (segments) in the different copies (versions) have a time index because the segments across different versions are aligned in time such that each begin at the same playback time in relation to the beginning of the video and because they have the same video presentation order (just different quality levels). EX1004, 2:44-49 (“substantially every segment (or subcollections thereof) in one version corresponds with a segment (or subcollections thereof) having **the same presentation order**, in each of the other versions.”); 3:11-15 (“ordering of predefined segments (or subcollections thereof) is capable of being presented and archived . . . such ordering can take into account alternative segments for the presentation.”). Each segment is sequentially ordered starting from the beginning of the video presentation, which corresponds to the playback times and the segments are requested in such order.

In the ITC Investigation, the ALJ interpreted “time index” according to its plain and ordinary meaning and found this limitation was met by requesting sequential media segments according to an increasing “sequential Media Sequence number” noting that the “URI contains information that is an index for the relative position in time of the Media Segment within the larger Media Sequence.” EX1010, 90-92.

Here, as explained above, Ogdon teaches that each segment for each quality level is sequentially ordered in the same order starting from the beginning of the video presentation, which corresponds to the playback times and are requested in order. EX1004, FIG. 2 (step 508: “The host 200 sends one or more commands to the client presentation software 88 at each client node 56 indicating; (A) **the next** collection of one or more (video) segments”, then at step 560, when there are no more segments to present, the process loops back to step 476 for identifying **the next** collection of presentation segments). Thus, to the extent “time index” is interpreted as the ALJ interpreted this limitation, Ogdon meets this limitation.

To the extent “time index” requires files to be indexed or named with some indication of playback time, Ogdon also teaches this limitation. For example, Ogdon contemplates a “virtual time” identification for segments of the video presentation. EX1004, 25:63-26:14 (“A ‘virtual time’ column 620 is provided wherein values in this column set and reset a presentation performance timer so that, for example, some portions of a presentation will automatically be skipped if a performance of the presentation is running behind a predetermined performance schedule . . . for a presentation performance corresponding to script level 1, in row 608a, the timer is set to 0.00 and the subsequent rows 608 for script level 1 are sequentially performed until 608e is encountered, wherein a determination is made as to whether the timer has a value greater than one minute and one second....”), FIG. 3 (620: “Virtual Time

HR:MN:SEC”). A POSITA would have understood that the virtual time at a given script level applies to each of the files (segments) across the different qualities whose playback is that same portion of the video, such that they have the same time index in relation to the beginning of the video, given Ogdon’s disclosure of segments at different versions having the same presentation order. EX1003, ¶ 80.

As discussed above, the files (segments), starting with the first segment, play the files (segments), starting with the first segment, play back the same portion of video for the different copies. *See* 1[A][4]. And the media player (client presentation software and/or browser) streams the video. *See* 1[A][1]; EX1003, ¶ 81.

g. 1[B]

Ogdon teaches 1[B]. Ogdon discloses that the files of each of the copies are in the same sequential order. *See* 1[A][2], 1[A][4] (segments ordered according to their presentation sequence), 1[A][5] (time indexes). Ogdon further teaches that end user device client nodes request (via client presentation software and/or browser) sequential files (segments) of one of the copies from the video server because Ogdon is a “client-request” system that requires the client to request each sequential segment or element where “each client node” must “request presentation content from a given set of communications network servers rather than having such servers push presentation content to the client node.” EX1004, 6:41-44. More specifically, “the present invention employs a ‘client-request’ technology, where each

presentation member's browser requests information from a communication network server." *Id.* 7:10-13, claim 12 ("a network interface component, residing on said first client node, for receiving said presentation control information and transmitting a request for a subcollection of said collection of data segments to one of said content supplying nodes, wherein said network interface component includes a network browser for communicating with said communications network"), FIG. 2C (step 528: "the browser, in turn, sends a network 70 (Internet) request to the selected content webserver 96 for the selected collection of segments").

Ogdon discloses that "requesting . . . a plurality of sequential ones of the files" may include a request for a single segment per request or multiple segments per request because Ogdon discloses that each "element" (a/k/a "subcollection" or "collection") that is requested contains "one or more segments." EX1004, 2:39-40, 22:30-33. Thus, each requested element may contain one segment (file) or, alternatively, each requested element may contain two or more segments (files). In the latter case, the request would be for multiple segments (files) at once. EX1003, ¶ 83.

Ogdon also teaches that the client requests the segments "based on time indexes" because, as explained with respect to 1[A][5], each element is sequentially ordered starting from the beginning of the video presentation, which corresponds to the playback times and the elements are requested in such order and because

segments may be requested based on a “virtual time.” EX1004, FIG. 2 (step 508: “The host 200 sends one or more commands to the client presentation software 88 at each client node 56 indicating; (A) the next collection of one or more (video) segments”, then at step 560, when there are no more segments to present, the process loops back to step 476 for identifying the next collection of presentation segments); 23:41-50 (“client node 56 provides the identity of the selected webserver and next collection of segments to the client node’s browser 78, and the browser, in turn, sends a network 70 request to the selected web server for the selected (subversion) of segments” then “client presentation software 88 monitors the time elapsed before transmission of the selected collection of segments is completed, and determines whether these segments are provided within an appropriate window of time that allows them to be presented during the performance of the presentation.”); EX1003, ¶ 84.

Finally, Ogdon further discloses that the files are requested over a plurality of TCP connections based on the time indexes. EX1004, 2:1-6 (“the present invention may communicate the video portion of a presentation to a user site via the Internet (more generally, via any TCP/IP network)”, 2:8-12 (“both the video and audio portions of the presentation may be provided solely by a TCP/IP network such as the Internet”), 2:13-23 (“[t]he present invention distributes a presentation [] among network server nodes of a TCP/IP network . . . a version of the presentation may be

accessed **synchronously from different network server nodes**, or different versions of the presentation may be accessed **synchronously from one or more of the network server nodes.**”), claim 7, 22:48-64 (“the presentation element(s) selected is dependent upon network protocols such as HTTP” noting that “as the size of the presentation data and the time for retrieval decreases, the present invention tends to use HTTP” and, for example, “there is a primary webserver 96a and an alternative webserver 96b, and each has presentation versions for both HTTP and FTP as well as both having animated and non-animated interchangeable presentation elements.”); EX1003, ¶ 85.

To the extent that Patent Owner argues that Ogdon does not teach multiple TCP connections, a POSITA would have been motivated to configure Ogdon’s apparatus to establish multiple TCP connections between a client and content server. For example, a POSITA understood that having multiple TCP connections provides a back-up if one connection fails. It also allows parallel downloading of multiple segments at the same time, which increases efficiency, *e.g.*, where maximum TCP throughput is the limiting factor of performance. Multiple TCP connections also permits connections to an alternative webserver(s) for the user to request different quality segments, to ensure sufficient buffer of data for continuous playback. A POSITA would understand that multiple TCP connections would be required to access content parts residing on different server computers, since TCP connections

are defined by the source/destination IP addresses and source/destination ports, and different server computers would have different IP addresses, and source port numbers for a TCP connection are selected at the time of the connection. EX1003, ¶ 86. A POSITA would have had a reasonable expectation of success with such a modification because the TCP protocol allows for multiple connections and Ogdon teaches using TCP to request different quality versions or the same version from different server nodes. *Id.*

h. 1[C]

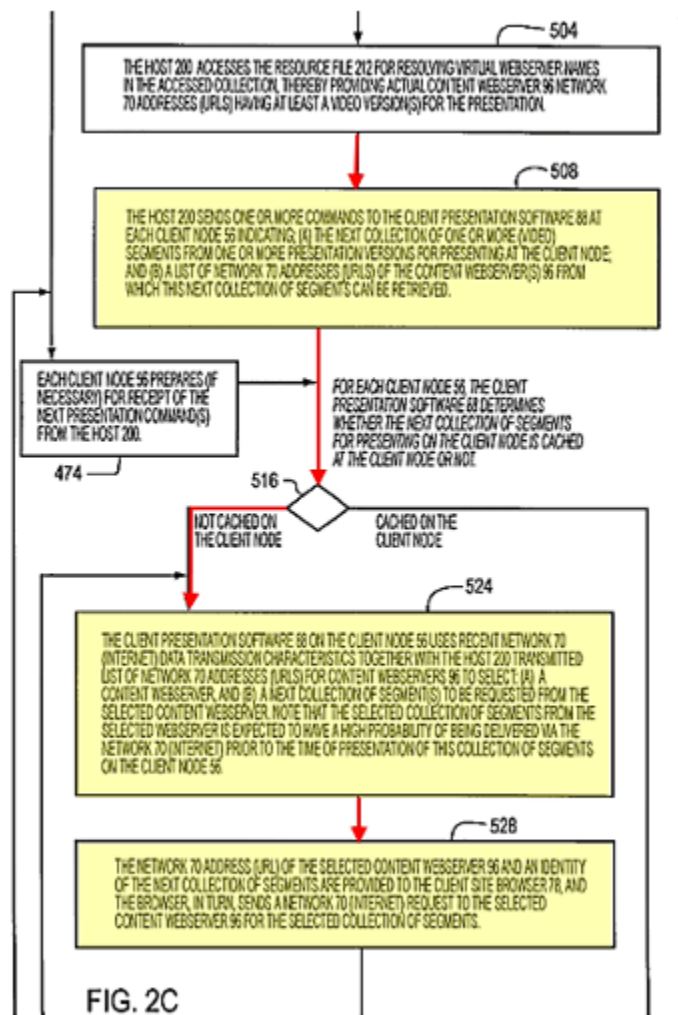
Ogdon teaches 1[C]. Ogdon discloses automatically requesting subsequent portions of the video. EX1004, 6:18-23 (“Thus, when the data required for a segment is not timely cached prior to its intended performance at a client's node, alternate segment data is **automatically requested** from the communications network by the client node.”), FIG. 2C (step 524: “The client presentation software 88 . . . select[s] . . . a next collection of segment(s)”). Ogdon teaches that selection of a higher or lower quality for each segment may be based upon successive determinations (*e.g.*, (step 516) client **determines** whether segments are already cached; (step 532) after requesting, client **determines** whether the requested segments are cached within a desired time; (step 536) if no, client **determines** whether there is time to try again; (step 544) if yes, client **determines** network characteristics at client node). *Id.*, FIGs. 2C-2D, 24:50-57 (“on such **subsequent iterations for determining** an alternative

way to present a particular portion of the presentation, the following steps may be performed: the **original calculation is again performed with new times and current bandwidth information** . . . [a]n overall limit of three re-tries of any URL will force smaller alternative segment collections to be selected”), claims 3 (“without manual input from the first user”), 11 (“without user selection input”).

Ogdon further discloses making such successive determinations to shift the playback quality to a higher or lower quality one of the different copies of the video because Ogdon repeatedly determines, based on bandwidth, in a loop to shift the quality of the segments.

[I]f the next collection of segments is not cached on a client node 56, then step 524 is performed wherein the client presentation software 88 on the client node 56 uses its most recent network 70 data transmission characteristics together with the host 200 transmitted list of current network 70 addresses for content webservers 96 **to select an appropriate content webserver and an appropriate version of the next collection of segments to be retrieved.**

Id., 22:10-18, 23:5-22 (calculating bandwidth to “[s]elect the highest quality collection of presentation elements available”), 23:40-48, 24:50-57; EX1003, ¶ 88; *see also* EX1004, FIGs. 2B-2D.



EX1004, FIG. 2C (annotated).

i. 1[D]

Ogdon teaches 1[D]. Ogdon discloses generating a factor “indicative of the current ability to sustain the streaming of the video using the files from different ones of the copies” because it repeatedly calculates data transmission characteristics such as the current client node bandwidth to select a quality version for each segment collection. EX1004, 22:10-23 (“the client node 56 uses its **most recent network 70**

data transmission characteristics together with the host 200 transmitted list of current network 70 addresses for content webserver 96 **to select** an appropriate content webserver and **an appropriate version of the next collection of segments to be retrieved.**”), 23:5-22 (calculating “average bandwidth” for “[s]elect[ing] the highest quality collection of presentation elements available”), FIG. 2C (“Client node 56 uses recent network 70 (Internet) data transmission characteristics . . . to select . . . (B) a next collection of segment(s) to be requested from the selected content webserver.”), 5:36-39 (“several variations of presentation content can be delivered **based on, e.g., the current bandwidth available** and the client’s affiliated network server(s).”), 13:47-49, 24:50-57 (“on such subsequent iterations for determining an alternative way to present a particular portion of the presentation, the following steps may be performed: the original calculation is again performed with new times and current bandwidth information . . . [a]n overall limit of three re-tries of any URL will force smaller alternative segment collections to be selected”), claim 2.

Ogdon also explains that additional factors may be calculated for selecting the quality segments such as “network 70 error rates, fluctuations in bandwidth, or a predictive statistical expectation of bandwidth.” *Id.*, 23:6-28. Both current bandwidth and these additional factors also relate to “the performance of the network” because bandwidth determines the capacity of the network and clients will

select the most appropriate version to ensure the requested segments are delivered in time for presentation to sustain the stream. 23:18-20 (“Select the highest quality collection of presentation elements available”), 23:10-23 (“the goal of assuring that there is a **high probability** of this next collection of segments being delivered to the client node 56 **prior to the time that this collection is to be used in the presentation performance on the client**”), 21:62-63 (“attempt to assure a timely caching of this next collection of segments for timely performance”); EX1003, ¶ 90.

j. 1[E]

Ogdon teaches 1[E]. Ogdon discloses making the successive determinations to shift the playback quality based on the factor to achieve continuous playback of the video using the files (segments) of the highest quality copy of the video that is determined to be sustainable at that time. In Ogdon, the process for retrieving the next file and determining whether to shift the playback quality of the next file to the highest quality sustainable is carried out in a loop. *See* EX1004, 23:10-23, FIG. 2B (step 476 “first (next) collection of corresponding presentation segments”), FIG. 2C (step 508 “next collection of one or more (video) segments from one or more presentation versions” and steps 524, 528), FIG. 2D (step 552 present “the next segment” and loop at 560), 22:10-18, 23:5-22 (calculating bandwidth to “[s]elect the highest quality collection of presentation elements available”), 23:40-48, 24:50-57; EX1003, ¶ 91.

k. 1[F]

Ogdon teaches 1[F]. Ogdon discloses that the segments are played back by the client node(s) in order of ascending playback time, *i.e.*, in sequential order. *See* 1[Pre], 1[B], 1[C], 1[E]; EX1004,7:59-63 (“a client presentation software system 88 that coordinates with the browser 78 for requesting, receiving and displaying presentation segments (from the network 70) as appropriate during the presentation”), 26:37-39 (“provide a particular presentation content file (e.g., of presentation elements) at a client node 56 in time for display.”), 2:44-45, 3:46-47 (“presentation as an ordered series of presentation segments”), claim 21 (“there are subcollections of one or more segments, each subcollection having a predetermined presentation order”), FIG. 2C (step 508 “next collection of one or more (video) segments”); EX1003, ¶ 92.

2. Claim 3

Ogdon teaches claim 3. Ogdon teaches that the media player (client presentation software and/or browser) upshifts to a higher quality one of the different copies (*e.g.*, higher quality full animation version) when a certain threshold is exceeded such that the factor is greater than a first threshold (*e.g.*, bandwidth high enough to timely cache higher quality) and similarly downshifts to a lower quality one of the different copies (*e.g.*, lower quality reduced animation version) when the factor is less than a second threshold (*e.g.*, bandwidth only sufficient to timely cache

lower quality), *i.e.*, determining whether the higher quality playback can be sustained. *See* EX1004, 6:14-23 (“the present invention monitors: . . . the data transmission rate . . . the amount of data cached on each client’s node” and “when the data required for a segment is not timely cached prior to its intended performance at a client’s node, alternative segment data is automatically requested”), FIG. 2C (step 524 selecting segments that “have a high probability” of being delivered “prior to the time of presentation”), 2:62-66, 21:61-62; 1[B], 1[C] (successive determinations to shift quality higher), 1[E] (upshifting to the higher quality copy when the factor is greater than the first threshold), 1[D] (determining that the quality of playback can be sustained according to a combination of factors such as bandwidth and available content webserver, as well as network error rates, bandwidth fluctuations, or predictive statistical expectation of bandwidth); EX1003, ¶ 93.

3. Claim 4

Ogdon teaches claim 4. As explained with respect to claim 3, Ogdon teaches that the media player downshifts to a lower quality one of the different copies (*e.g.*, lower quality reduced animation version) when the factor is less than a second threshold (*e.g.*, bandwidth only sufficient to timely cache lower quality). EX1003, ¶ 94.

4. Claim 5

a. 5[A]

Ogdon teaches claim 5[A]. Ogdon discloses enabling “dynamic control of the pace of the presentation by a presentation leader while each client node selects specific display materials to attain that pace.” EX1004, 6:44-47.

The '772 Patent explains, without elaboration, that “the agent controller module 402 may be configured to anticipate streamlet 212 requests and pre-request streamlets 212. By pre-requesting streamlets 212, the user may fast-forward, skip randomly, or rewind through the content and experience no buffering delay.” EX1001, 8:46-50. A POSITA would have understood from Ogdon’s commensurate disclosure of pre-loading content portions that fast-forward, skip randomly, and rewind functionality was enabled. A POSITA would have been motivated to configure Ogdon’s apparatus to anticipate file requests and pre-request files in order to utilize available bandwidth and ensure a sufficient buffer of data to receive such standard playback and control functionality. These functions were extremely well known in the art and expected by consumers of multimedia content. *See* EX1013, 2:64-3:4 (discussing seeking to a particular point of time in on-demand multimedia content and its inherent delay); EX1003, ¶ 96. A POSITA would have had a reasonable expectation of success with such a modification because Ogdon teaches preloading the presentation in accordance with available bandwidth, and

functionality for fast-forwarding, skipping randomly, and rewinding was well known and commonly implemented in media players in the art. EX1003, ¶ 96.

b. Claim 5[B]

Ogdon teaches claim 5[B]. Ogdon discloses requesting collections of segments, not limited to one segment at a time, *i.e.*, the next sequential segment. *See* 1[C]; EX1004, 10:61-11:5 (“allowing the client node to **pre-load** certain content portions of a presentation”), 19:52-59 (upon connection, the client presentation software 88 retrieves and caches “one or more initial presentation segments”); EX1003, ¶ 97. As explained with respect to 5[A], a POSITA would have been motivated to configure Ogdon’s apparatus to enable skip functionality at a specified time index with a reasonable expectation of success. EX1003, ¶ 97.

5. Claim 6

Ogdon teaches claim 6. Ogdon discloses that if lower network transmission characteristics exist prior to the request for the first element (*i.e.*, subcollection of segments), the client node will initially request a low quality element, and if the network characteristics subsequently improve after requesting the low quality streamlets, the client node will select a higher quality next element. EX1004, Abstract (“if a low transmission data rate is detected at a first client node, **presentation elements of a reduced size can be retrieved.**”); *see* 1[B] (client requesting files), 1[C] (automatically requesting subsequent files), 1[D]

(performance factor), 1[E] (upshifting to the higher quality copy according to the performance factor); EX1003, ¶ 98. Additionally, a POSITA would have known that it was desirable to “reduce[] the start-up” for streaming content to beneficially allow the user to view the stream more quickly and thus request a low quality first then switch up to a better quality once there is sufficient buffering at the client. EX1013, 3:29-54.

6. Claim 7

Ogdon teaches claim 7. *See* 1[B] (establishing multiple TCP connections), claim 2 (obvious to establish multiple TCP connections for sub-parts); EX1003, ¶ 99. A POSITA would have been motivated to configure Ogdon’s apparatus to request sequential files (segments) over different TCP connections. As a POSITA understood, this improves reliability in situations where one connection fails by retrieving sequential files over other connections and retrieving the files more quickly. It also takes advantage of available bandwidth by parallelizing retrieval of files to increase throughput where an individual TCP connection’s maximum throughput is the bottleneck. EX1003, ¶ 99. A POSITA would have had a reasonable expectation of success with such a modification because the TCP protocol enables multiple connections, and utilizing multiple connections to request and retrieve different files was well known. *Id.* Whether to utilize multiple TCP connections to retrieve multiple sequential files was a known design choice to improve performance

of media playback when the bandwidth of a single TCP connection is the bottleneck.
Id.

7. Claim 8

Ogdon teaches claim 8. *See* 1[F] (requesting, receiving, and displaying ordered series of presentation segments, including collections of segments at different quality levels), 1[A][2] (different copies encoded at different bit rates), 1[C][2] (retrieving collections of segments at different quality levels); EX1003, ¶ 100.

8. Claim 10

Ogdon teaches claim 10. *See* 1[B] (establishing plurality of TCP connections), 1[D] (factor indicative of available bandwidth); EX1003, ¶ 101.

9. Claim 11

Ogdon teaches claim 11. Ogdon discloses that latency—the measure between when a request for the files is issued and when response data begins to arrive—is a performance factor. *See* EX1004, 23:40-24:27 (“[T]he client presentation software 88 monitors the time elapsed before transmission of the selected collection of segments is completed, and determines whether these segments are provided within an appropriate window of time that allows them to be presented during performance of the presentation.”; measuring “(7.2) for each one of the one or more previous requests for presentation segments, an elapsed length of time between the request

time for the presentation segments and receipt of the segments”; “the client presentation software 88 determines if there is sufficient time to retry obtaining the collection of segments or another collection of alternative segments prior to the time of their estimated performance”); EX1003, ¶ 102.

10. Claim 12

Ogdon teaches claim 12. *See* EX1004, 23:24-28 (“additional network characteristics other than bandwidth may be used” such as “network 70 error rates, fluctuations in bandwidth, or a predictive statistical expectation of bandwidth may be used”), (“comparing elapsed time as in (7.2)”). Accounting for such fluctuations in bandwidth entails multiple bandwidth measurements and as such is indicative of time intervals between successive receive times. EX1003, ¶ 103. Moreover, Ogdon recognizes that a POSITA would understand various functions dependent on measurements such network transmission rates, latencies, and segment sizes. EX1004, 23:40-24:27. One such known function was network jitter: “variability in the rate at which data is transmitted through a network.” EX1013, 2:46-47. Network jitter is indicative of time intervals between successive receive times for each response to the requested files, and a POSITA knew to utilize it as a performance factor because large jitter could result in a buffer underflow and necessitate a lower quality level, *i.e.*, an inability to sustain the current level. EX1003, ¶ 103.

11. Claim 13

Ogdon teaches claim 13. Ogdon discloses that delays or losses in a TCP connection constitute a performance factor. *See* EX1004, 6:9-26 (“there is still the possibility of **data delays** from a slow network server”; “Accordingly, the present invention monitors: (a) characteristics of network transmissions of presentation materials to client nodes”; considering whether “the data required for a segment is **not timely cached** prior to its intended performance at a client’s node”), 23:24-28 (“additional network characteristics other than bandwidth may be used” such as “network 70 error rates”), 23:40-24:27 (“[T]he client presentation software 88 monitors the time elapsed before transmission of the selected collection of segments is completed, and determines whether these segments are provided within **an appropriate window of time** that allows them to be presented during performance of the presentation.”; “[F]or determining this desired time, a function dependent on one or more of: (a) various measurements related to one or more other client nodes 56 receiving the presentation performance, (b) a predetermined default length of time, as e.g., specified in the presentation script, and (c) a length of time determined by a leader of the presentation performance, e.g., during the performance.”; measuring “network 70 transmission rates for each one or more previous requests for presentation segments”; “the client presentation software 88 determines if there is sufficient time to retry obtaining the collection of segments or another collection

of alternative segments prior to the time of their estimated performance”); EX1003, ¶ 104.

12. Claim 14

Ogdon teaches claim 14. *See* 1[Pre] (content webserver 96); EX1003, ¶ 105.

13. Claim 15

Ogdon teaches claim 15. Ogdon discloses requesting files (segments) from a web server (content webserver 96) using HTTP. *See* claim 14; EX1004, 22:48-54 (“the present invention tends to use HTTP”); EX1003, ¶ 106.

Ogdon further discloses that the web server is without specialized server-side intelligence to respond to said requesting. The ’772 Patent explains that “[t]he streamlets 212 are essentially static files. As such, no specialized media server or server-side intelligence is required for a client module 114 to retrieve streamlets 212.” EX1001, 8:3-5. In Ogdon, so too are the segments stored as static files and retrieved by client-side requests. *See* EX1004, 6:41-44 (“each client node to request presentation content from a given set of communications network servers rather than having such servers push presentation content to the client node”), 7:10-13 (“the present invention employs a ‘client-request’ technology, where each presentation member’s browser requests information from a communication network server”), 7:59-63 (“client presentation software system 88 that coordinates with the browser 78 for requesting, receiving and displaying presentation segments (from the network

70) as appropriate during the presentation”), 19:54-59 (“the client presentation software 88 is instructed by the presentation controlling host 200 . . . to retrieve and cache, via network 70, one or more initial presentation segments from identified content webserver 96 where the presentation segments have been pre-stored.”), 21:40-45 (“host 200 sends one or more commands to each copy of the client presentation software 88 indicating both the next collection of segments to be retrieved by the client nodes and the network 70 addresses of the primary and alternate webserver 96 from which to retrieve the segment collection.”), 22:12-17 (“the client presentation software 88 on the client node 56 uses its most recent network 70 data transmission characteristics together with the host 200 transmitted list of current network 70 addresses for content webserver 96 to select an appropriate content webserver and an appropriate version of the next collection of segments to be retrieved.”); EX1003, ¶ 107. While Ogdon does not expressly state this negative limitation, a POSITA would have understood that a client-pull system as taught by Ogdon would not utilize or have a need for specialized server-side intelligence, as the client-pull system would simply request the files needed when needed, using standard methods of HTTP, which is what the server is designed to respond to. EX1003, ¶ 107.

14. Claim 16

Ogdon teaches claim 16. Patent Owner admits that “[u]se of cache servers is well known to those skilled in the art, and will not be discussed further herein.” EX1001, 8:6-10; *see* Section VIII.A; EX1003, ¶ 108. A POSITA would have been motivated to configure Ogdon’s apparatus to connect to a cache server in order to improve and increase reliability of response time and performance as compared to connecting to a webserver. EX1003, ¶ 108. A POSITA would have had a reasonable expectation of success with such a modification because the cache servers were well known, as admitted by Patent Owner, and implemented by ISPs and other network infrastructure operators in common networking protocols as alternatives to webserver. *Id.*

15. Claim 17

a. 17[A]

Ogdon teaches 17[A]. *See* claim 12.

b. 17[B]

Ogdon teaches 17[B]. The ’772 Patent describes an embodiment of “a performance ratio r across a window of n samples for streamlets of playback length S ” and “time intervals A [*sic*, Δ] between successive receive times for each streamlet response”: $r = S \frac{n}{\sum_{i=1}^n \Delta_i}$. EX1001, 12:10-25. This performance ratio measures whether the streamlets’ playback length is greater than their receive time. EX1003,

¶ 110. Ogdon teaches a current performance ratio at step 532, which measures whether the segments are cached on the client node within a desired time. EX1004, FIG. 2D; *see also* 1[D]-1[E]; EX1004, 23:10-11 (“size is divided by the bandwidth average for the last two minutes”), 23:27-28 (“predictive statistical expectation of bandwidth may be used”). This would have suggested to a POSITA a calculation of whether the segments’ playback length is greater than their receive time: a ratio with value greater than 1. EX1003, ¶ 110.

c. 17[C]

Ogdon teaches 17[C]. The ’772 Patent describes an embodiment of “a performance factor ϕ ” that calculates “a geometric mean ... across a window of size m ”: $\phi = \left(\prod_{j=1}^m r_j\right)^{\frac{1}{m}}$. EX1001, 12:28-40. A POSITA would have been motivated to configure Ogdon’s apparatus to calculate a current average of the performance ratio in order to reduce the thrashing effect of highly transient outlier values of the performance factor. EX1003, ¶ 111. A POSITA would have had a reasonable expectation of success with such a modification because Ogdon teaches making quality shifting determinations after retrieval of a plurality of segments as well as calculating average network performance. *See* 1[B]-1[E]; EX1001, 23:10-14, 24:65-25:1; EX1003, ¶ 111.

d. 17[D]

Ogdon teaches 17[D]. *See* 1[E], claim 3 (comparing performance factor to threshold); EX1003, ¶ 112.

e. 17[E]

Ogdon teaches 17[E]. *See* 1[E], claims 3, 4 (upshifting or downshifting); EX1003, ¶ 113.

16. Claim 18

a. 18[A]

Ogdon teaches 18[A]. Ogdon discloses that the media player compares a current performance factor with a set of one or more trigger thresholds. *See* 1[E], claim 3 (comparing performance factor to threshold); EX1003, ¶ 114. The set of one or more trigger thresholds is determined by a combination of factors relating to a current read ahead margin—an amount of contiguously available, sequentially arranged requested files received by the media player for playback at a current playback time index—and a minimum safety margin. At step 516, the client presentation software determines whether the next collection of segments is cached at the client node, *i.e.*, whether an amount of contiguously available, sequentially arranged requested files is received by the media player. If yes, then it proceeds (through step 548) to step 552 and presents the next segment, *i.e.*, according to there being a nonzero amount of such files. EX1004, FIG. 2C step 516, FIG. 2D step 552,

24:60-25:30 (if the requested collection of segments is cached, present all segments to the client); *see also id.*, 21:61-64 (“client nodes now enter a processing state whereby these nodes attempt to assure a timely caching of this next collection of segments for timely performance of their portion of the presentation”), 24:14-49 (if selected segments cannot be retrieved, determining if there is sufficient time to try again, *i.e.*, enough of the presentation buffered to try to download the same segments again); EX1003, ¶ 114. And at step 524, the client presentation software determines whether the selected collection of segments “is expected to have a high probability of being delivered ... prior to the time of presentation,” *i.e.*, within a minimum safety margin. EX1004, FIG. 2C step 524; EX1003, ¶ 114. As explained with respect to 5[A], a POSITA would have been motivated to configure Ogdon’s apparatus to pre-request files. *See* 5[A].

b. 18[B]

Ogdon teaches 18[B]. Ogdon discloses that the media player upshifts or downshifts to a higher quality copy or lower quality copy based on comparison of a performance factor to a threshold. *See* 18[A], 1[C] (successive determinations to shift quality higher), 1[D] (performance factor), 1[E], claims 3, 4 (upshifting or downshifting); EX1003, ¶ 115.

17. Claim 19

Ogdon teaches claim 19. Ogdon discloses requesting segments of the media by filename. EX1004, 25:31-37, 26:15-19 (Action column 624 designating an action to performed, such as instructing all client nodes that a resource (e.g., a content file) is available for downloading), 28:15-29 (“Resource Name” column 640 of script description 600 including “File,” which “[d]enotes the name of a resource file”), FIG. 3 (showing “File” for initial and subsequent segments), *see also id.*, 13:13-19 (host 200 sending command to audio client 224 for URL containing location and name of an audio file or stream); EX1003, ¶ 116. In addition to the foregoing, as Ogdon’s process for retrieving collections of segments loops (*see* 1[A][5]), a POSITA would have understood that Ogdon discloses issuing an initial request with the filename of a file and issuing subsequent requests with the filenames of the subsequent files. EX1003, ¶ 116.

18. Claim 20

Ogdon teaches claim 20. *See* 1[A][1] (content webserver 96a, alternative content webserver 96b); claim 16 (obvious to utilize cache server caching at least some of the files); EX1003, ¶ 117.

19. Claim 21

Ogdon teaches claim 21. *See* claim 16 (obvious to utilize cache server caching at least some of the files), claim 15 (no specialized server-side intelligence). A

POSITA would have understood that the Ogdon’s disclosure of a webserver without specialized server-side intelligence is equally applicable to a cache server. EX1003, ¶ 118.

B. Ground 2: Claims 1, 3-8, and 10-21 Would Have Been Obvious in view of Ogdon, Shteyn, and Chou

The sections of Ground 1 (Section IX.A) are incorporated into this section by reference. As explained above in Section IX.A, Ogdon teaches claims 1, 3-8, and 10-21. To the extent that Patent Owner argues that Ogdon fails to teach certain limitations, Ogdon in view of Shteyn and Chou teaches these limitations.

1. Claim 1

As explained above in Section IX.A, Ogdon teaches all limitations of independent claim 1. To the extent it is argued that Ogdon lacks certain limitations, Shteyn and/or Chou teach these limitations.

a. 1[A][1]

Shteyn teaches 1[A][1]. Shteyn discloses a media player (software) on the apparatus (client computing device). EX1016, 2:57-3:5, 4:33-44 (“a hardware-based single-purpose device, similar to the Rio MP3 player” where “**the player needs**, in addition to an XML parser, the ability to interpret XML and the **ability to download and play-out content segments sequentially**” or “a **software application** on a

multi-purpose **computing device** . . . software implementing the functionalities”); EX1003, ¶ 121.

A POSITA would have been motivated to modify the apparatus of Ogdon such that each of the functions performed in Ogdon collectively by the client presentation software and browser be performed by a single program alone, such as taught by Shteyn, to simplify the system, reduce the number of programs that are required to run on the client node, and make it easier to debug. EX1003, ¶ 122. A POSITA would have had a reasonable expectation of success with such a combination because both Ogdon and Shteyn are drawn to similar systems of client-server based streaming, where the client adaptively receives video segments based on client requests based on playout capabilities including network conditions. EX1016, 2:57-3:5, 1:45-46, 1:65, 3:44-56, 4:20-23, 2:35-39, claims 1, 5, 9, 12, FIGs. 1, 2; Section IX.A.1.a-b. Implementing a media player as a single computer program as opposed to the combination of presentation software and a browser would have been a straightforward modification for a POSITA—a simple matter of programming one computer program to perform all functionality that the client presentation software and the browser are disclosed to perform collectively. EX1003, ¶ 122.

b. 1[A][2]

Shteyn teaches 1[A][2]. Shteyn discloses “[a]n electronic file . . . **partitioned into a sequence of segments** at the **server** side.” EX1016, Abstract. Each segment (or “file”) is stored in the server as different encoded bitrate (bandwidth) and size (bytes), such as “part1” and “part1 alt.” *Id.*, 3:44-56 (“segment labeled ‘**part1**’ is in a preferred format . . . An alternative first part is labeled ‘**part1 alt**’ having a **different length**” in bytes and a “different bandwidth requirement.”), 1:65-2:7 (“the **content file is split into multiple parts** . . . location of the whole file as well as of it parts **at the server**”), FIG. 2 (“(Preferred format) . . . <length> 1024 </length> . . . <min_bandwidth> 10,000 </min_bandwidth> . . . (Alternative format) . . . <length> 512 </length> . . . <min_bandwidth> 8,000 </min_bandwidth>”), 2:20-24 (“information contains references to the file location as well as references to the locations of the parts” and “intended bandwidth information is associated with the parts”), claims 1, 9 (“**storing** on one or more **server** computers **multiple alternative files** corresponding to a given segment”), 2:57-3:2, 4:20-21.; EX1003, ¶ 123.

A POSITA would have understood that a segment stored with a different byte length (size) and different bandwidth would mean that each segment is encoded at different bit rates because both are determinative of the encoded rate. EX1003, ¶ 124. For instance, the “Preferred format” with a length of 1024 and minimum bandwidth of 10,000 shows it is a higher quality encoded rate (larger size and

requires more bandwidth) than the lower quality encoded rate or “Alternative format” with a length of 512 and minimum bandwidth of 8,000 (smaller size and thus requires less bandwidth). *Id.*

Shteyn also describes that the different encoded parts for each segment can be the same format or different formats. EX1016, claims 8, 14, FIG. 2, 1:42-50; EX1003, ¶ 125.

A POSITA would have understood the above disclosures and from Ogdon’s disclosures (at Section IX.A.1.c), including disclosure of different versions of the same video presentation each having “different network requirements,” to teach encoding the same raw uncompressed video content into two or more versions having different bitrates. EX1003, ¶ 126. It was well-known to a POSITA at the time of the alleged Priority Date that streaming different versions of content at different quality levels depending on client network requirements meant encoding the content into different quality levels with different bitrates. For example, a POSITA understood that if a higher quality and a lower quality of the same video were provided, the lower quality version had “fewer bits per frame and provides a video image much more quickly than” a higher quality version “with a higher number of bits and hence higher quality video image.” EX1013, Abstract, *see also id.*, 3:29-35 (“a server provides at least two different data streams. . . . a low resolution stream encoded at a bit rate below the transmission bit rate. . . . a normal resolution stream

encoded at a bit rate equal to the transmission bit rate.”), 10:16-21 (“quality (also referred to as resolution) is a measure of detail in an image . . . quality of an image is commonly measured in pixels per inch and in the number of bytes used to described the color values at each pixel”), 11:6-7 (“low bit rate encoding for the same content”), 7:43-55 (“The streaming media system 300 comprises an encoder 302 which may be coupled to camera 210 or other real time or uncompressed video sources . . . encodes and/or compresses the data . . . for live transmission such as video conferencing, the encoder buffer 304 may be a simple as a first-in first-out (FIFO queue.”); EX1003, ¶ 126.

A POSITA would have been motivated to modify the apparatus of Ogdon such that each segment is stored as a file and thus the multiple different copies of the video encoded at different bit rates are stored as multiple sets of files, to simplify streaming requests by requesting individual successive files rather than requiring the requests to include byte- or other ranges of the video. EX1003, ¶ 127. A POSITA would have had a reasonable expectation of success with such a combination because both Ogdon and Shteyn are drawn to similar systems of client-server based streaming, *see* Section IX.B.1.a, where video segments have time indexes and yield different portions of the video, while across different copies they yield the same portions of the video. EX1016, 1:65, claims 1, 8, 12, 14, FIG. 2, 2:35-39, 3:31-36, 3:57-4:14, 4:20-31, 3:44-53, Abstract, FIG. 1; Section IX.A.1.c-f; EX1003, ¶ 127.

Implementing multiple sets of files would have been a straightforward modification for a POSITA, as requesting video segments by having multiple files for the segments or by requesting ranges of the video were two alternative design choices well known to a POSITA. EX1003, ¶ 127.

c. 1[C]

Shteyn teaches 1[C]. Shteyn discloses that sequential files (segments) are automatically selected by the media player (software) from the video server based upon successive determinations to shift the playback quality to a higher or lower quality one of the different copies of the video because Shteyn repeatedly or successively selects a quality segment based on bandwidth or system capabilities. *See* EX1016, 3:44-56 (“**The segment labeled “part1” is in a preferred format and described the length of the part, e.g., in bytes, the format, the minimum bandwidth required for a connection, and the location on the Internet. An alternative first part is labeled “part1 alt” having a different length, different format, different minimum bandwidth requirement, and a different location. The XML code can be combined with XSL for generating a user level UI at the user's client. The client thus can automatically choose the format compatible with the client’s play-out capabilities.**”), 4:20-31 (“During operation, **the client application could select a next segment in a different format for the same content to adapt to changing circumstances, e.g., lower bandwidth due to network congestion . . .**

the **client pulls the content segments from the locations indicated in the XML control information** for buffering and subsequent play-out.”), 2:35-38 (“The format of parts for play-out may be chosen according to user-related information, e.g., . . . bandwidth sharing/fluctuation conditions, etc.”), claims 5, 9, 12, 1:46, claims 1, 8, 14, FIG. 2, 3:21-30 (“[I]n a thread- and/or process-rich environment, several threads and/or processes can be organized to independently retrieve file segments, while playing out the content of other segments.”), 2:23-24 (“The client may make its own decisions regarding how many parts to download before the start of the play out (execution).”); EX1003, ¶ 128.

The requesting of segments is also shown in Figure 1 below.

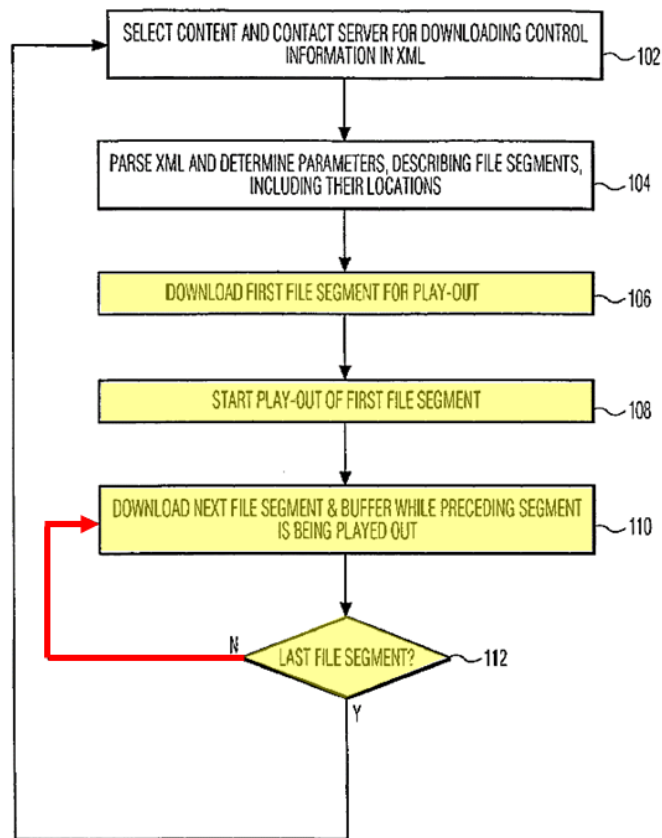


FIG. 1

EX1016, FIG. 1 (annotated).

A POSITA would have been motivated to implement automatic requests by the media player for subsequent portions of the video from the video server in the apparatus of Ogdon, so that the playback experience would proceed without need for manual intervention by the client or the user. EX1003, ¶ 129. A POSITA would have had a reasonable expectation of success with such a combination because both Ogdon and Shteyn are drawn to similar systems of client-server based streaming, *see* Section IX.B.1.a, where the media player successively requests segments based on successive determinations to shift playback quality, including the ability to sustain

streaming based on network performance, to achieve continuous playback at the highest sustainable quality. EX1016, 4:20-26, 3:44-56, 2:10-15, 3:57-4:14, 1:62-64, FIG. 2, claims 1, 2, 3, 9, 12; Section IX.A.1.h-j; EX1003, ¶ 129. Automatically requesting subsequent portions would have been a straightforward implementation for a POSITA—a simple matter of programming the client to automate the loop for requesting subsequent files. EX1003, ¶ 129.

2. Claim 5

Shteyn teaches claim 5. Shteyn discloses anticipating file requests and pre-requesting files because its client can retrieve multiple segments, not limited to one segment at a time, and including the client making its own decisions on how many parts to download in advance. EX1016, 3:21-30, 2:23-24. As explained with respect to Ogdon and claim 5 in Section IX.A.4, a POSITA would have understood from these disclosures of Ogdon and Shteyn that fast-forward, skip randomly, and rewind functionality was enabled, and would have been motivated to configure Ogdon's apparatus to anticipate file requests and pre-request files such as taught by Shteyn in order to utilize available bandwidth and ensure sufficient buffer of data to receive such standard playback and control functionality, with a reasonable expectation of success. *See* Section IX.A.4; EX1003, ¶ 130. These navigation functions were extremely well known in the art and expected by consumers of multimedia content, and as Chou observes, delay caused by such navigation, like seek delay, can be

“particularly annoying,” such that a POSITA would have been motivated to address it. *See* EX1013, 2:64-3:12; EX1003, ¶ 130. A POSITA would have had a reasonable expectation of success with such a modification because Ogdon and Shteyn teach preloading segments of the presentation in accordance with available capabilities, such as bandwidth, networking multithreading, or processing capability, and functionality for fast-forwarding, skipping randomly, and rewinding was well known and commonly implemented in media players in the art. *See* Section IX.A.4; EX1016, 3:21-30, 2:23-24; EX1003, ¶ 130.

3. Claim 6

Ogdon in view of Shteyn and Chou teaches claim 6. Chou describes start-up delay as the latency experienced after starting transmission from the beginning of the content. EX1013, 2:59-64. Chou discloses providing at least two different data streams, one at a low resolution and lower bit rate, and another at a normal resolution and larger bitrate than the first, where “[t]he server initially transmits the low resolution stream” so that “the delay due to buffering is reduced to nearly zero,” and with the normal resolution stream being transmitted “[w]hen the client buffer has grown sufficiently large to guard against future underflow by the normal resolution stream.” *Id.*, 3:29-54; EX1003, ¶ 131.

A POSITA would have been motivated to modify the apparatus of Ogdon to initially request a lower quality for the first files, such as taught by Chou, in order to

have a quicker start-up time for the stream to minimize the wait for the user wishing to view the stream, which Chou observes can be “particularly annoying.” EX1013, 2:59-3:12; EX1003, ¶ 132. In addition, a POSITA would have understood that the client could beneficially use the initial low-quality slice to determine network requirements for subsequent requests. EX1003, ¶ 132. A POSITA would have had a reasonable expectation of success with such a combination because it would have been a straightforward modification of Ogdon to specify that a lower quality of collections of segments be retrieved initially, and whereby Ogdon, Shteyn, and Chou are drawn to similar systems of adaptive client-server based streaming of content having multiple qualities. *Id.*

4. Claim 12 and 17[A]

Ogdon in view of Shteyn and Chou teaches claim 12 and 17[A]. Chou describes network jitter as “[t]he variability in the rate at which data is transmitted through a network.” EX1013, 2:46-47. Chou discloses that network jitter is a factor indicative of the ability to sustain streaming. *Id.*, 3:2-6 (“Both start-up and seek delays occur because even after the client begins to receive new data, it must wait until its buffer is sufficiently full to begin playing out of the buffer. It does this in order to guard against future buffer underflow due to network jitter and variable bit-rate compression.”). As explained in Section IX.A.10, network jitter is indicative of time intervals between successive receive times for each response to the requested

files, and a POSITA knew to utilize it as a performance factor because large jitter could result in a buffer underflow and necessitate a lower quality level, *i.e.*, an inability to sustain the current level. EX1003, ¶ 133.

Accordingly, a POSITA would have been motivated to configure Ogdon's apparatus to have the performance factor be indicative of time intervals between successive receive times for each response, such as taught by Chou, in order to provide more active adaptability to changing network conditions and further reduce the potential for playback delay or stuttering. EX1003, ¶ 134. A POSITA would have had a reasonable expectation of success with such a combination because factoring jitter was known, and Ogdon and Chou are drawn to similar systems of adaptive client-server based streaming of content. *Id.*

X. GRAHAM FACTORS (NO SECONDARY CONSIDERATIONS)

The first three *Graham* factors were discussed for each ground, *i.e.*, the scope of the prior art, the prior art as compared to the claims, and the level of ordinary skill in the pertinent art. *See* Sections V-IX.

For the last factor, secondary considerations, the '772 Patent was not asserted in the ITC Investigation, but Petitioner acknowledges that the ALJ in the ITC Investigation accepted Patent Owner's argument that there was a presumption of a nexus between the claims that were asserted in the ITC Investigation and the Move Media Player (which was acquired by DISH) and ultimately found certain secondary

considerations. EX1009, 212-213. DISH argued that respondents conceded that the Move Media Player embodied the claimed invention because respondents argued that a public use of Move Media Player in 2005 was an invalidating use meeting each and every element of the asserted claims. *Id.*, 212. The ALJ accepted this argument and also found that DISH's expert demonstrated that Move's success is tied to the unique characteristics of the claimed invention including "offering 'a smooth end user experience as the Move Media Player up-shifts and down-shifts in response to network and client CPU availability'" and streaming using "simple HTTP protocol transfer of media files from standard Web servers rather than deployment of expensive media servers," which reduce cost and complexity. *Id.*, 213.

Petitioner submits that these findings are incorrect. First, Petitioner has not made any claims that prior use of the Move Media Player was an invalidating public use and thus the ALJ's findings regarding the concession that Move Media Player meets the claims does not apply to Petitioners.

Second, Petitioner disputes that the Move Media Player has a nexus to the '772 Patent because any of Move's success is not tied to unique characteristics of the claimed invention. As the prior art discussed above shows, the purportedly unique and successful aspects of the Move system that the ALJ relied on to find a nexus were already in existence in the prior art and thus cannot form the basis of any nexus to the claimed invention. *See Yita LLC v. MacNeil IP LLC*, 69 F.4th 1356,

1364 (Fed. Cir. 2023) (“[O]ur case law makes clear that objective evidence of nonobviousness lacks a nexus if it exclusively relates to a feature that was *known* in the prior art—not necessarily well-known”) (emphasis in original) (internal citations and quotations omitted).

For example, the purported “unique” claimed feature of “a smooth end user experience” that “up-shifts and down-shifts in response to network and client CPU availability,” was already present in the prior art. For example, Ogdon and Shteyn all disclose upshifting and downshifting quality of the stream in response to, for example, network congestion to ensure a smooth and uninterrupted stream. *See* Sections IX.A.1: 1[C]-1[E], IX.B.1: 1[C].

Additionally, the alleged “unique” claimed feature of “use of simple HTTP protocol transfer of media files from standard Web servers rather than deployment of expensive media servers” cannot be a basis for finding a nexus explained in the Grounds above, at least Ogdon and Shteyn disclose using simple HTTP protocol for clients to request transfer of files from standard web servers, rather than specialized media servers. *See* Section IX.A.1: 1[B]; EX1004, 14:46-49, 22:48-63; FIGs. 6A-6B; EX1016, 3:4-5, FIG. 2.

Thus, Patent Owner has not shown any nexus to the claim language.

XI. NO BASIS FOR DISCRETIONARY DENIAL

A. § 314(a): *Fintiv* and *General Plastic* Factors Favor Institution

The six *Fintiv* factors weigh against discretionary denial. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11, at 6 (PTAB Mar. 20, 2020).

First Factor. This is neutral because Petitioner has not yet moved to stay the District Court Litigation pending IPR, and the PTAB will not speculate on how a district court may rule when a stay is requested. *See Hulu LLC v. SITO Mobile R&D IP, LLC*, IPR2021-00298, Paper 11 at 10-11 (PTAB May 19, 2021).

Second Factor. This favors institution as a Final Written Decision is quite likely before a trial occurs given no trial date is yet scheduled for the District Court Litigations.

Third Factor. This factor favors institution given the District Court Litigations are in its earliest stages because the case management conference has not yet occurred in the California Litigation (scheduled for October 31, 2023) and no answer has been submitted yet in the Utah Litigation, thus no discovery, claim construction, nor any other significant milestones have occurred.

Fourth Factor. This factor favors institution. Petitioner stipulates that if this '772 Patent IPR is instituted, Petitioner will not pursue invalidity grounds in the District Court Litigations of the Challenged Claims on any ground raised, or that could have been reasonably raised in this IPR for the Challenged Claims. *Sotera*

Wireless, Inc. v. Masimo Corp., IPR2020-01019, Paper 12, at 18-19 (PTAB Dec. 1, 2020).

Fifth Factor. This factor should be accorded little weight or is neutral given the Petitioner and Patent Owner are the same parties as in the District Court Litigations.

Sixth Factor. Petitioner's merits are strong as demonstrated by the above Grounds and supporting Houh declaration.

Additionally, *Gen. Plastic Indus. Co. v. Canon Kabushiki Kaisha* factors weigh against discretionary denial because there is no prior petition filed on the challenged claims of the '772 Patent. *Id.*, IPR2016-01357, Paper 19, at 16-18 (PTAB Sept. 6, 2017).

B. § 325(d): *Advanced Bionics* Favors Institution

Denial under § 325(d) is not warranted under *Advanced Bionics*' two-factor test. *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6, at 8 (PTAB Feb. 13, 2020).

The first factor of whether the "same or substantially the same prior art or arguments previously were presented to the Office" (*id.*) is not met because the specific grounds here were not considered during prosecution of the '772 Patent. Further, neither Ogdon, Shteyn, nor Chou are cited on the face of the '772 Patent. Because the first factor is not met, there is no need to analyze the second factor. *Sony*

Group Corp. v. MZ Audio Sciences, LLC, IPR2022-01544, Paper No. 12, at 7 (PTAB Apr. 21, 2023).

XII. CONCLUSION

Petitioner requests *inter partes* review and cancellation of claims 1, 3-8, and 10-21.

DATED: October 13, 2023

Respectfully submitted,

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CERTIFICATION OF COMPLIANCE UNDER 37 CFR § 42.24(d)

Pursuant to 37 C.F.R. § 42.24(d), Petitioner certifies that this Petition for *Inter Partes* Review has total 13,492 words as counted by Microsoft Word, exclusive of the table of contents, table of authorities, mandatory notices under § 42.8, certificate of service, word count, and appendix of exhibits or claim listing (37 CFR § 42.24(a)). This is within the 14,000 word limit allowed under § 42.24(a)(1)(i).

DATED: October 13, 2023

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CERTIFICATE OF SERVICE

I hereby certify that on October 13, 2023 I caused a true and correct copy of the foregoing materials:

- Petition for *Inter Partes* Review of U.S. Patent 8,868,772
- Exhibits
- Petitioner's Power of Attorney

to be served via overnight delivery on the USPTO Patent Center (PAIR)

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I also caused a courtesy copy of the foregoing materials to be served via email on DISH's counsel of record in the district court litigations:

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