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 10,469,555
Issue Date: November 5, 2019
Title: APPARATUS, SYSTEM, AND METHOD FOR MULTI-BITRATE CONTENT STREAMING

Inter Partes Review No. IPR2024-00146

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT 10,469,555 CHALLENGING CLAIMS 1, 3-5, 7-11, 13-20, and 22-27 UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.1 *et seq.*

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1001	U.S. Pat. 10,469,555 ("the '555 Patent")
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1006	Synchronized Multimedia Integration Language (SMIL 2.0) ("SMIL 2.0")
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1008	WO1997044942 to Kliger ("Kliger")
1009	337-TA-1265 ITC Investigation Initial Determination
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1013	U.S. Patent No. 6,637,031 to Chou ("Chou")
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1015	File History of U.S. Pat. 6,161,137 to Ogdon

TABLE A: LISTING OF CLAIMS

Claim Designation	Claim Language
Claim 1	
1[Pre]	A system for adaptive-rate content streaming of live event video playable on one or more end user stations over the Internet, the system comprising:
1[A]	at least one storage device storing live event video
1[B]	the live event video encoded at a plurality of different bitrates creating a plurality of streams including a low quality stream, a medium quality stream, and a high quality stream,
1[C]	the low quality stream, the medium quality stream, and the high quality stream each comprising a group of streamlets encoded at a respective one of the plurality of different bitrates;
1[D]	wherein at least one of the low quality stream, the medium quality stream, and the high quality stream is encoded at a bitrate of no less than 600 kbps;
1[E]	wherein the amount of data in each streamlet corresponding to the same part of the live event video in the low quality stream, the medium quality stream, and the high quality stream varies according to the different bitrates; and the plurality of streamlets in the low quality stream, the medium quality stream, and the high quality stream having a duration that is the same as each other.
Claim 3	
[3]	The system of claim 1 wherein the streamlets in each of the high quality stream, the medium quality stream and the low quality stream are each encoded at a different one of the plurality of different bitrates.
Claim 4	
4[A]	The system of claim 1, further comprising: a plurality of web servers located at different locations across the internet, each web server configured to:
4[B]	receive at least one streamlet request over one or more internet connections from the one or more end user stations to retrieve the first streamlet storing a portion of the video, wherein the at least one streamlet request from the one or more end user stations includes a request for a currently selected first streamlet from one of the low quality stream, the medium quality stream, and the high quality stream

	based upon a determination by the end user station to select a higher or lower bitrate version of the streams;
4[C]	retrieve from the storage device the requested first streamlet from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream; and
4[D]	send the retrieved first streamlet from the currently selected one of the different copies to the requesting one of the end user stations over the one or more network connections.
Claim 5	
[5]	The system of claim 1, wherein each of the first streamlets has a first duration that is the range of 0.1 to 5 seconds.
Claim 7	
7[A]	The system of claim 1, further comprising: a first web server configured to:
7[B]	receive at least one streamlet request over one or more internet connections from the one or more end user stations to retrieve the first streamlet storing the first portion of the live event video, wherein the at least one streamlet request from the one or more end user stations includes a request for a currently selected first streamlet from one of the low quality stream, the medium quality stream, and the high quality stream based upon a determination by the end user station to select a higher or lower bitrate version of the live event video;
7[C]	retrieve from the storage device the requested first streamlet from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream; and
7[D]	send the retrieved first streamlet from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream to the requesting one of the end user stations over the one or more network connections.
Claim 8	
[8]	The system of claim 7, wherein the first streamlets of the low quality stream, the medium quality stream, and the high quality stream are available before the live event is complete.
Claim 9	
[9]	The system of claim 7, wherein the streamlets of the low quality stream, the medium quality stream, and the high quality stream of the live event are available on a 10 second delay.
Claim 10	

10[Pre]	A content player device to stream a video over a network from a server for playback of the video, the content player device comprising:
10[A]	a processor;
10[B]	a digital processing apparatus memory device comprising non-transitory machine-readable instructions that, when executed, cause the processor to:
10[C][1]	establish one or more network connections between the client module and the server,
10[C][2]	wherein the server is configured to access at least one of a plurality of groups of streamlets;
10[C][3]	wherein the video is encoded at a plurality of different bitrates to create a plurality of streams including at least a low quality stream, a medium quality stream, and a high quality stream,
10[C][4]	wherein each of the low quality stream, the medium quality stream, and the high quality stream comprises a streamlet that encodes the same portion of the video at a different one of the plurality of different bitrates;
10[C][5]	wherein at least one of the low quality stream, medium quality stream, and high quality stream is encoded at a bit rate of no less than 600 kbps; and
10[C][6]	wherein the streamlet encoding the same portion of the video in the low quality stream has an equal playback duration as the streamlet encoding the same portion of the video in the high quality stream;
10[D]	select a specific one of the streams based upon a determination by the client module to select a higher or lower bitrate version of the streams;
10[E]	place a streamlet request to the server over the one or more network connections for the selected stream;
10[F]	receive the requested streamlets from the server via the one or more network connections; and provide the received streamlets for playback of the video.
Claim 11	
[11]	The content player device of claim 10 wherein each streamlet of the plurality of streamlets in the low quality stream, the medium quality stream, and the high quality stream has a duration that is the same as each other.
Claim 13	
[13]	The content player device of claim 10, wherein each streamlet of the plurality of streamlets in the low quality stream, the medium quality

	stream, and the high quality stream has a duration that is the range of 0.1 to 5 seconds.
Claim 14	
[14]	The content player device of claim 10, wherein the video is a video of a live event.
Claim 15	
[15]	The content player device of claim 14, wherein the streamlets of the low quality stream, the medium quality stream, and the high quality stream are available before the live event is complete.
Claim 16	
[16]	The content player device of claim 15, wherein the streamlets of the low quality stream, the medium quality stream, and the high quality stream of the live event are available on a ten second delay.
Claim 17	
[17]	The content player device of claim 16, wherein the streamlets from the low quality stream, the medium quality stream, and the high quality stream of the live event, when played back, appear live to a viewer.
Claim 18	
18[Pre]	A system for adaptive-rate content streaming of live event video playable on one or more end user stations over the internet, the system comprising:
18[A]	at least one storage device configured to store live event video,
18[B]	the live event video encoded at a plurality of different bit rates creating a plurality of streams including at least a low quality stream and a high quality stream;
18[C]	the low quality stream and the high quality stream each encoding the same portion of the live event video with a streamlet that is encoded a different one of the different bit rates;
18[D]	wherein the plurality of streamlets in the low quality stream and the plurality of streamlets in the high quality stream have durations that are equal to each other.
Claim 19	
[19]	The system of claim 18, wherein the streamlets in each of the low quality stream and the high quality stream corresponding to the same portion of the live event video have equal durations.
Claim 20	

[20]	The system of claim 18 wherein the plurality of streams further comprise a medium quality stream encoded at a bit rate higher than the low quality stream and lower than the high quality stream.
Claim 22	
22[A]	The system of claim 18, further comprising: a first web server configured to:
22[B]	receive at least one streamlet request over one or more internet connections from the one or more end user stations to retrieve a streamlet storing a portion of the video, wherein the at least one streamlet request from the one or more end user stations includes a request for a currently selected one of the low quality stream, the medium quality stream, and the high quality stream based upon a determination by the client module to select a higher or lower bitrate version of the streams;
22[C]	retrieve from the storage device the requested streamlet from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream; and
22[D]	send the retrieved streamlet from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream to the requesting one of the end user stations over the one or more network connections.
Claim 23	
23[A]	The system of claim 18, further comprising: a plurality of web servers located at different locations across the internet, each web server configured to:
23[B]	receive at least one streamlet request over one or more internet connections from the one or more end user stations to retrieve a streamlet storing a portion of the video, wherein the at least one streamlet request from the one or more end user stations includes a request for a currently selected one of the low quality stream, the medium quality stream, and the high quality stream based upon a determination by the client module to select a higher or lower bitrate version of the streams;
23[C]	retrieve from the storage device the requested streamlet from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream; and

23[D]	send the retrieved streamlet from the currently selected one of the different copies to the requesting one of the end user stations over the one or more network connections.
Claim 24	
[24]	The system of claim 21, wherein all of the streamlets in each of the low quality stream, the medium quality stream and the high quality stream have equal durations.
Claim 25	
[25]	The system of claim 21, wherein the streamlets of the low quality stream, the medium quality stream, and the high quality stream are available on a ten second delay before the live event is complete, wherein the streamlets from the low quality stream, the medium quality stream, and the high quality stream of the live event, when played back, appear live to a viewer.
26[Pre]	A content player device to stream a video over a network from a server for playback of the video, the content player device comprising:
26[A]	a processor;
26[B]	a digital processing apparatus memory device comprising non-transitory machine-readable instructions that, when executed, cause the processor to:
26[C][1]	establish one or more network connections between the client module and the server,
26[C][2]	wherein the server is configured to access at least one of a plurality of groups of streamlets;
26[C][3]	wherein the video is encoded at a plurality of different bitrates to create a plurality of streams including at least a low quality stream and a high quality stream,
26[C][4]	the low quality stream and the high quality stream each representing the same portion of the video with a streamlets encoded at a different one of the plurality of different bitrates; and
26[C][5]	wherein the streamlet representing the same portion of the video in the low quality stream and the streamlet representing the same portion of the video in the high quality stream have durations equal to each other;
26[D]	select a specific one of the streams based upon a determination by the client module to select a higher or lower bitrate version of the streams;
26[E]	place a streamlet request to the server over the one or more network connections for the selected stream;

26[F]	receive the requested streamlets from the server via the one or more network connections; and provide the received streamlets for playback of the video.
Claim 27	
[27]	The content player device of claim 26, wherein the plurality of streamlets in the low quality stream have a duration equal to the duration of the plurality of streamlets in the high quality stream.

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, 3-5, 7-11, 13-20, and 22-27 ("Challenged Claims") of U.S. Pat. 10,469,555 ("the '555 Patent") (EX1001). The '555 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 '555 Patent relates to adaptive-rate shifting of streaming content, including 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 '555 Patent and teach such multi-bitrate 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 '555 Patent is currently asserted in the following proceedings. Petitioner and its RPIs are only named parties in the District Court Litigation defined below:

- *MG Freesites Ltd et al. v. DISH Technologies LLC et al.* 3:23-cv-03674 (N.D. Cal.) (the "District Court Litigation")
- *DISH Technologies LLC et al. v. Vidgo Inc. 2:23-cv-00624 (D. Utah)*
- *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-c-v-00986 (D. Del.)
- *DISH Technologies LLC v. Beachbody, LLC d/b/a/BODi* 1:*23*-cv-00987 (D. Del.)
- *iFIT Inc. v. ITC* CAFC-23-1965 (Fed. Cir.), *which* is an appeal from Investigation No. 337-TA-1265 (ITC) (the "ITC Investigation")
- *DISH Technologies LLC et al. v. ICON Health & Fitness, Inc.* 1:21-cv-00531 (D. Del.)
- *DISH Technologies LLC v. BritBox, LLC*, No. 1:23-cv-08971 (S.D.N.Y.)

Additionally, Petitioner has filed IPRs on U.S. Patent Nos. 8,868,772 (IPR2024-00048); 9,407,564 (IPR2024-00047); 11,470,138 (IPR2024-00044); 10,469,554 (IPR2024-00045); 10,951,680 (IPR2024-00046); and 11,677,798 (IPR2024-00043). Petitioner is contemporaneously filing an IPR for U.S. Patent No. 10,757,156.

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 ’555 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, 3-5, 7-11, 13-20, and 22-27 based on the grounds below.

Ground	Reference(s)	Challenged Claims	Basis
1	Ogdon	18-19	102
2	Ogdon in view of Allen	1, 3-5, 7-11, 13-20, and 22-27	103
3	Ogdon in view of Allen and SMIL 2.0	1, 3-5, 7-11, 13-20, and 22-27	103

These grounds are supported by the Declaration of Dr. Henry Houh (EX1003) and other supporting evidence in the Exhibit List. EX1003, ¶¶ 46-47.

V. '555 PATENT

A. Summary

The '555 Patent (application no. 16/252,365) was filed on January 18, 2019 and issued on November 5, 2019. EX1001, Cover. The '555 Patent purports to relate to "multi-bitrate content streaming," such as video, over the Internet. EX1001, Abstract, 1:31-34. The '555 Patent describes "a receiving module" to "capture media content," a streamlet module to "segment the media content and generate a plurality of streamlets," and "encoding module" to "generate a set of streamlets" such that the set of streamlets has a plurality of streamlets "having identical time indices and durations" and " a unique bitrate." *Id.*, Abstract.

One embodiment of the system of the '555 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, 6:36-45. The '555 Patent describes encoding the same content file 200 into at least three different "quality" streams:

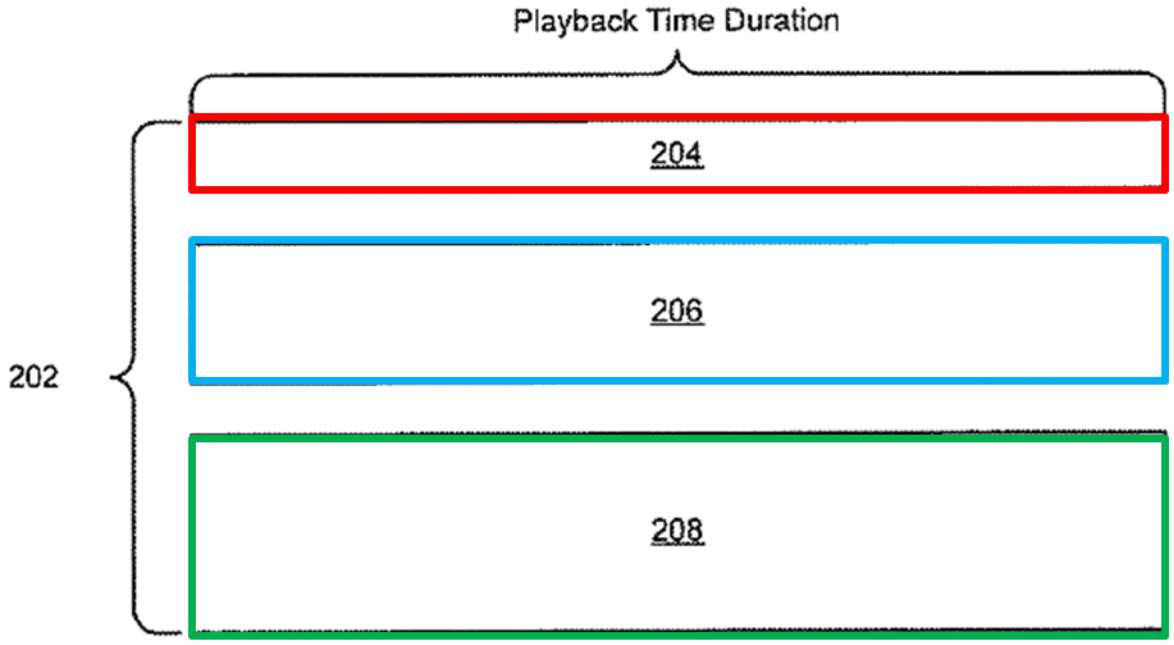

FIG. 2b

Id., FIG. 2b (annotated, low quality (red, 204), medium quality (blue, 206), and high quality (green, 208)), 7:25-31.

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.*, 7:31-36.

Each stream (204, 206, and 208) is also "divided into a plurality of source streamlets 303" 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.*, 7:37-49.

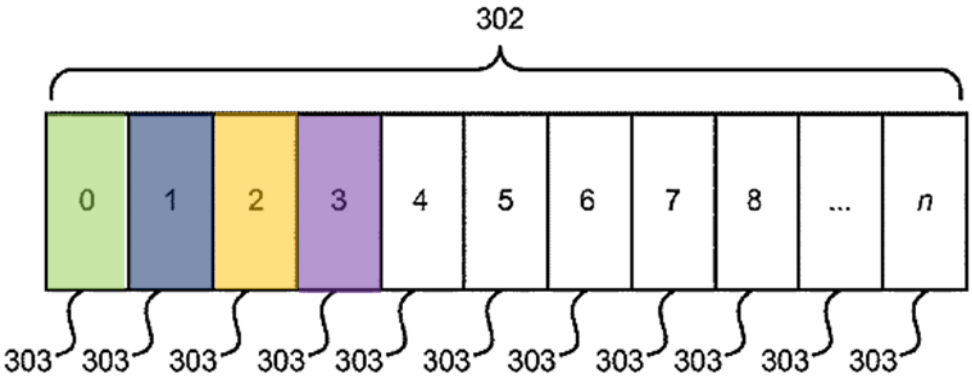

FIG. 3a

Id., FIG. 3a (annotated).

These streamlets form "sets" of streamlets 306 wherein a "set" is "a group of streamlets having identical time indices and durations but varying bitrates." *Id.*, 7:57-60.

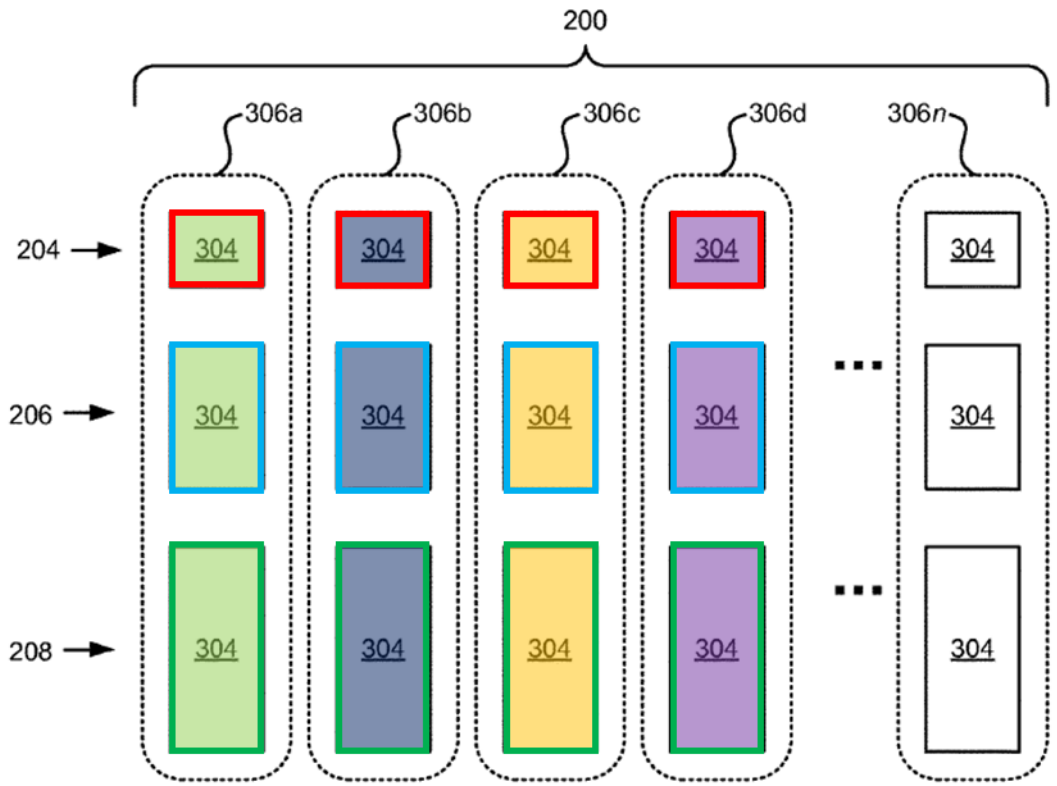

FIG. 3b

Id., FIG. 3b (annotated, showing low, medium, and high quality streamlets in each "set" of streamlets" 306a-d).

These sets of streamlets are stored in a streamlet database 408 and then a "client module 114 may request streamlets 304 using HTTP from the web server 116" or "a plurality of web servers 116." *Id.*, 9:1-4, 9:30-40. Further, the '555 Patent explains that the invention may be used to stream "live" content files on a short delay because "two-pass encoding to a plurality of streams 202 may be performed on each

corresponding raw streamlet without waiting" for the end of a program and the streamlets may be streamed "over the internet shortly after the content module 112 begins capture of the content file 200." *Id.*, 10:44-56.

To stream content, the client module 114's "agent controller module 702 is configured to select a quality level of streamlets to transmit to the viewer" and "requests lower or higher quality streams based upon continuous observation of time intervals between successive receive times of each requested streamlet." *Id.*, 13:3-26. The "agent controller module 702 receives 1004 a streamlet" and "monitors 1006 the receive time of the requested streamlet" such as time intervals between successive receive times for each streamlet response and "calculates 1008 a performance ratio" and "obtain[s] a performance factor." *Id.*, 17:6-40, FIGs. 9 and 10. The agent control module 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.*, 17:41-18:14.

B. Prosecution History

The '555 Patent was filed as Application No. 16/252,356 on January 18, 2019. On March 22, 2019, the Examiner issued a non-final rejection of all pending claims including non-statutory double patenting and prior art rejections over Xu et al. (US 7,369,610), Lango et al. (US 2005/0055425), Mehan (US 2003/0103571), Tillman

et al. (US 6,496,980), Lee et al. (US 2003/0103571), Seazholtz (US 5,812,786), and Rahman (US 7,934,159). EX1002, 83-105.

On June 20, 2019, Applicant amended the claims (including canceling claims 10-30 and adding new claims 31-48) and traversed the Examiner's rejection. *Id.*, 116-129. Applicant argued the filed terminal disclaimer obviated the non-statutory double patent rejection and argued that the cited prior art in the rejection lacked "groups of streamlets that encode the same portions of the video program at different bit rates." *Id.*, 117. In response, the Examiner issued a Notice of Allowance on September 9, 2019. *Id.*, 622.

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, 2), 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, ¶ 42. A higher level of education or specific skill might make up for less experience, and vice-versa. *Id*.

VII. CLAIM CONSTRUCTION

Petitioner submits that, for purposes of institution, most terms require no construction. However, Petitioner acknowledges that in the ITC Investigation between Patent Owner and iFIT, Inc. asserting the '555 Patent and family members of the '555 Patent, the Chief Administrative Law Judge ("ALJ") construed "streamlet" as "any sized portion of the content file." EX1009, 38-43. The ALJ also construed "low quality stream," "medium quality stream," and "high quality stream" under their plain and ordinary meaning. *Id.*, 46-53. The ALJ also found that "end user station," "content player device" required no construction. *Id.*, 71.

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. Instradent USA, Inc.*, 903 F.3d 1365, 1375 (Fed. Cir. 2018)). Nevertheless, as shown herein, the asserted grounds render the Challenged Claims of the '555 Patent unpatentable even under the ITC's constructions. By asserting that the '555 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 addition, Petitioner notes that in the ITC Investigation, iFIT proposed a design-around that included performing an initial, adaptive stream selection based on bandwidth. EX1010, 31. According to iFIT, modifying its products in this manner would not infringe because the claims "require repeated and continuous shifting between bitrates during streaming based on ongoing network conditions." *Id*. In response, DISH argued that iFIT's Redesigned Products would still infringe because "this initial adaptive selection by itself plainly meets" limitation 16[h] of the '554 Patent and limitation 10[h] of the '555 Patent. *Id.* Thus, though Petitioner does not necessarily agree with Patent Owner, Patent Owner should be held to its position is that a single determination and quality level selection, even without subsequent "shifting," meets these limitations.

VIII. OVERVIEW OF THE PRIOR ART

A. State of the Art

The '555 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, 1:47-56. The '555 Patent further admits that streaming was used "to deliver content on demand (previously recorded) or from live broadcasts." *Id.*, 1:56-57.

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, ¶ 49. For example, Chang (filed in 1999) 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 (filed in 1997) teaches a client 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 '555 Patent nor was it considered by the ALJ in the ITC Investigation. Petitioner notes that during the ITC Investigation, Respondents included Ogdon in a notice of prior art dated September 10, 2021. EX1012. However, though Applicant (*i.e.*, DISH) submitted Respondents' notice of prior art in an IDS as "non-patent literature," Applicant did not cite Ogdon in an IDS for

consideration during prosecution of the pending applications that became U.S. Patent No. 11,470,138 ("the '138 Patent") and U.S. Patent No. 11,677,798 ("the '798 Patent"). The '138 Patent issued on October 11, 2022, over a year after Respondents' notice of prior art including Ogdon was filed with the ITC. The '798 Patent issued June 13, 2023, nearly two years after Respondents' notice of prior art including Ogdon was filed with the ITC.

Ogdon discloses a system for distributing a video presentation, during the performance of the presentation, over the Internet via webservers 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 video presentation includes a plurality of sequential presentation elements, collections, or subcollections of "one or more segments" where each segment 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 sequential segment (or collection of segments) 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. Allen

Allen (EX1005) was filed on March 15, 2002 and published on September 26, 2002. Allen is prior art under at least (pre-AIA) 35 U.S.C. § 102(b). Allen is not cited on the face of the ’555 Patent. United States Publication No. 2004/0117427 (which claims priority to Allen) is cited on the face of the ’555 Patent, but neither were used in any prior art rejections. Allen was also not considered by the ALJ in the ITC Investigation.

Allen discloses streaming media to multiple users and tailoring the delivery stream to the capabilities of the user’s system. EX1005, 1:15-21. Allen explains that multi-bitrate streaming was well-known, including encoding copies of a video at multiple quality levels with different bitrates, such as low quality (56 kbps), medium quality (300 kbps) and high quality (600 kbps). *Id.*, 12:1-5.

D. SMIL 2.0

Synchronized Multimedia Integration Language 2.0 (“SMIL 2.0”) is an XML markup language for multimedia presentations and was publicly accessible on the World Wide Web Consortium’s (“W3C”) website at least as of November 9, 2001. *See* EX1006 (SMIL 2.0); EX1011 (Wayback Affidavit showing SMIL 2.0 available on November 9, 2001); EX1003, ¶¶ 54-55.

Thus, SMIL 2.0 is prior art under at least (pre-AIA) 35 U.S.C. § 102(b). SMIL 2.0 is not cited on the face of the ’555 Patent and was not considered by the ALJ in

the ITC Investigation. Petitioner notes that during prosecution of the ’555 Patent, Applicants submitted an article titled “Mobile Streaming Media CDN Enabled by Dynamic SMIL” by Yoshimura. Applicants did not submit the actual SMIL standard, and the article submitted by Applicants does not mention important elements of SMIL such as “<seq>,” “<switch>,” or “systemBitrate” teaching three quality levels (high, medium, and low) and switching to a particular quality level based upon measured system bitrate, which are pertinent to this Petition.

SMIL 2.0 discusses these elements. SMIL 2.0 discloses that, using “<seq>”, a client can request and play media elements one after the other. EX1006, 123-126. SMIL 2.0 further teaches that a client can select different encoded files based on the client’s available bandwidth. EX1006, 61-63. Specifically, the “<switch>” element can be used to list different quality files with a “systemBitrate,” and, depending on the client’s bandwidth, only one will be selected. *Id*.

E. Analogous Art

Each prior art reference is analogous art to the claimed invention in the ’555 Patent. And each is in the same field of endeavor of client-server media streaming and, more specifically, streaming by a client from a server including having the data stream segmented into a plurality of streamlets at the server side wherein the client requests the streamlets from the server and plays out the media. *Compare* EX1001, Title, Abstract, 1:31-34, 3:11-4:34, FIGs. 2-7, *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; EX1005, Abstract, 1:10-12:22; EX1006, 61-62, 123-126; EX1003, ¶ 56.

Additionally, each prior art reference is reasonably pertinent to any purported problem addressed in the '555 Patent. *Id.*; EX1001, Title, Abstract, 1:30-2:67; EX1003, ¶ 57.

IX. SPECIFIC GROUNDS

A. Ground 1: Claims 18-19 Are Anticipated by Ogdon

1. Claim 18

a. 18[Pre]: "A system for adaptive-rate content streaming of live event video playable on one or more end user stations over the internet, the system comprising:"

Whether or not the preamble is limiting, Ogdon discloses 18[Pre]. Ogdon discloses a system (including client node(s) 56 and webserver(s) 96a and 96b) for adaptive-rate content streaming of live event video (distributing video presentation during performance) playable on one or more end user stations (client node(s) 56) over the Internet. EX1004, Abstract ("distributing a performance of a presentation synchronously to a plurality of client nodes" via "the Internet . . . **during a performance**[1] of the presentation" where "the client nodes receiving the presentation determine a particular variation of data presentation to receive from the

[1] All emphases in prior art citations are added unless otherwise noted.

network server nodes" depending on "characteristics of the network such as data transmission rate"), 3:38-41 ("**dynamically and adaptively switch** between . . . versions of the presentation according to network transmission characteristics at each client network node"), 7:40-48 ("Client sites 52, where audience members receive a presentation . . . has at least one of a client node 56 (e.g., a personal computer)" and "may receive video (and possibly audio as well) information from a communications network 70 such as the Internet"), 8:27-40 ("content webservers 96a, and alternate content web servers 96b" provide "presentation data to client sites 54 requesting such data via client nodes"), 10:7 ("**live** presentation"), 6:2-5 ("present invention is capable of delivering an entire collection of presentation segments to a client node **while the presentation is being performed**"); EX1003, ¶ 58.

b. 18[A]: "at least one storage device configured to store live event video,"

Ogdon discloses 18[A]. Ogdon discloses that the webservers store live event video. EX1004, 9:30-31 ("webservers 96 where the content for each presentation will reside"), 9:44-46 ("content manager 104 distributes presentation content (e.g., presentation segments) to the content webservers 96"), 10:7-13, 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"); EX1003, ¶ 59.

c. 18[B]: "the live event video encoded at a plurality of different bit rates creating a plurality of streams including at least a low quality stream and a high quality stream;"

Ogdon discloses 18[B]. Ogdon discloses that the live event video (video presentation) is encoded at a plurality of different bitrates (different versions or quality levels) creating a plurality of streams including, at least, a low quality stream (*e.g.*, limited animation video) and a high quality stream (*e.g.*, full animation video) because Ogdon discloses "[d]ifferent versions of the same presentation" with "different network requirements" such as "a first version" requiring "a network transmission rate sufficient **for real time or animated video**" and "another version" requiring "a transmission rate sufficient for **graphic slides**." EX1004, 2:8-10, 2:30-66, Abstract ("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"), 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; EX1003, ¶ 60.

d. 18[C]: "the low quality stream and the high quality stream each encoding the same portion of the live event video with a streamlet that is encoded a different one of the different bit rates;"

Ogdon discloses 18[C]. Ogdon further discloses that each stream (*e.g.*, low quality limited-animation video and high quality full-animation video) comprises elements, collections, or subcollections of streamlets (segments) where each corresponding segment at the high quality level and low quality level encode the same content (*i.e.*, same portion of the video) at different bitrates. 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**."), 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, ¶ 61.

e. 18[D]: "wherein the plurality of streamlets in the low quality stream and the plurality of streamlets in the high quality stream have durations that are equal to each other."

Ogdon discloses 18[D]. Ogdon discloses that plurality of streamlets (segments) in the low quality stream (*e.g.*, limited-animation video) and the plurality of streamlets (segments) in the high quality stream (*e.g.*, full-animation video) have durations that are equal to each other. First, the claims recite that collectively "the plurality of streamlets" in each quality level stream have durations that are equal to each other, and Ogdon discloses "[d]ifferent versions of the same presentation" (EX1004, 2:30) and that each version has segments that "correspond[] with a segment . . . having the same presentation order, in each of the other versions" (*id.*, 2:47-49) such that the plurality of streamlets that collectively make up the entire video presentation stream for each version of the same video presentation would be equal to each other in duration. EX1003, ¶ 62. In other words, Ogdon discloses that the full video presentation stream (made up of a plurality of segments) is the "same" video presentation at each quality level and thus each quality level video presentation stream has durations equal to each other. Second, Ogdon discloses that each individual corresponding segment in each version of the video presentation also have the same presentation duration. EX1004, 2:49-55 ("corresponding segments (or subcollections thereof) in different versions have approximately the **same presentation duration**" so 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."). A POSITA would have understood "approximately the same presentation duration" to disclose both (1) durations that are precisely equal to each other, and (2) durations that are nearly equal to each other. EX1003, ¶ 62.

2. Claim 19: "The system of claim 18, wherein the streamlets in each of the low quality stream and the high quality stream corresponding to the same portion of the live event video have equal durations."

Ogdon discloses claim 19. Ogdon discloses that the streamlets (segments) in each of the low quality stream and the high quality stream correspond to the same portion of the live event video have equal durations. *See* 18[C]-18[D].

Additionally, the provisional application of Ogdon (U.S. 60/041,770) also discloses that "corresponding presentations segments in the collection have identical audio portions" (EX1014, 35 (claim 25)), meaning that corresponding alternate video presentation segments versions with identical audio portions also have identical (*i.e.,* same or equal) durations. Further, during prosecution of the Ogdon patent, the Applicant characterized the Ogdon invention as having different versions "with identical (and/or content corresponding) portions of the presentation" (EX1015, 239), meaning the corresponding video segments (portions) have identical

(*i.e.,* same or equal) time durations for each corresponding video segment version. EX1003, ¶¶ 63-64.

B. Ground 2: Claims 1, 3-5, 7-11, 13-20, and 22-27 Would Have Been Obvious in view of Ogdon and Allen

1. Claim 1:

a. 1[Pre]:"A system for adaptive-rate content streaming of live event video playable on one or more end user stations over the Internet, the system comprising:"

Whether or not the preamble is limiting, Ogdon teaches 1[Pre]. Ogdon discloses a system for adaptive-rate content streaming of a live event video (video presentation) that is playable on one or more end user stations (client node(s)) over the Internet. EX1004, 7:40-48 ("Client sites 52, where audience members receive a presentation . . . has at least one of a **client node 56** (e.g., a personal computer)" and "may receive **video** (and possibly audio as well) information from a communications network 70 such as the **Internet**"), 8:27-40 ("content webservers 96a, and alternate content web servers 96b" provide "presentation data to client sites 54 requesting such data via client nodes"), 7:53-63 ("client node 56" has "a network interface software package required for receiving, e.g., video presentation information from the communications network 70 . . . Internet" including "a network browser 78 . . . 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"), 3:38-41 ("**dynamically and adaptively** switch 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 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."), FIGS. 1-2, 1:62-2:1 ("the present invention provides interactive and/or **real-time** presentations to presentation members that are geographically scattered"), 10:7 ("**live** presentation"), 6:2-5 ("present invention is capable of delivering an entire collection of presentation segments to a client node **while the presentation is being performed**"), Abstract ("distributing a performance of a presentation synchronously to a plurality of client nodes" via "the Internet . . . **during a performance** of the presentation").

Additionally, Patent Owner admits in the background section of the '555 Patent that it was known to use streaming "to deliver content on demand (previously recorded) or from live broadcasts." *See* Section VIII.A; EX1003, ¶ 65.

b. 1[A]: "at least one storage device storing live event video,"

Ogdon teaches 1[A]. Ogdon discloses the webserver(s) store the live event video. EX1004, 9:30-31 ("webservers 96 where the content for each presentation will reside"), 9:44-46 ("content manager 104 distributes presentation content (e.g.,

presentation segments) to the content webservers 96"), 10:7-13, 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"); EX1003, ¶ 66.

c. 1[B]: "the live event video encoded at a plurality of different bitrates creating a plurality of streams including a low quality stream, a medium quality stream, and a high quality stream,"

Ogdon in view of Allen teaches 1[B]. Ogdon discloses that the live event video (video presentation) is encoded at a plurality of different bitrates (different versions or quality levels) creating a plurality of streams because Ogdon discloses "[d]ifferent versions of the same presentation" with "different network requirements" such as "a first version" requiring "a network transmission rate sufficient for real time or **animated video**" and "another version" requiring "a transmission rate sufficient for **graphic slides**." EX1004, 2:8-10, 2:30-66, Abstract ("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"), 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"); EX1003, ¶¶ 67-68.

To the extent Ogdon does not explicitly disclose encoding each of a low quality stream, a medium quality stream, and a high quality stream, a POSITA would have been motivated to combine Ogdon with Allen to arrive at this limitation. Allen teaches that it was known to encode video content into at least three different quality levels (or bitrates) for streaming in order to allow streaming to various clients with different network requirements including, for example, at 56 kbps, at 300 kbps, and at 600 kbps. EX1005, 12:1-5. A POSITA would have understood that the lowest bitrate version (56 kbps) would have been a "low quality" stream (because it would have the fewest bits per second), and similarly that the 600 kbps stream would be a high quality stream (because it would have the most bits per second) while the 300 kbps would be a medium quality stream (in between the low and high). EX1003, ¶ 69.

A POSITA would have been motivated to encode the video presentation of Ogdon, including each sequential segment of the video, into each of a low quality, medium quality, and high quality level bitrate stream, as taught by Allen, because providing three different quality levels (low at 56 kbps, medium at 300 kbps, and high at 600 kbps) would enable user client nodes with a wide variety of network

bandwidth requirements to stream the video presentation—a stated goal of Ogdon. EX1004, Abstract ("client network nodes with varying available network bandwidths can be utilized for synchronously and simultaneously performing the presentation"); EX1003, ¶ 70. A POSITA would have had a reasonable expectation of success with such a combination because both Ogdon and Allen are drawn to similar systems of client-server based streaming and because simply encoding another copy at an additional quality level would have been a simple and straightforward modification for a POSITA. *Id*.

d. 1[C]: "the low quality stream, the medium quality stream, and the high quality stream each comprising a group of streamlets encoded at a respective one of the plurality of different bitrates;"

Ogdon in view of Allen teaches 1[C]. *See* 1[B] (Allen teaching three quality levels (high, medium, and low)).

Ogdon further discloses that each stream (at each corresponding quality level/bitrate) comprises a group (elements, collections, or subcollections) of streamlets (segments) encoded at a respective one of the bit rates. 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."), 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, ¶¶ 71-72.

Additionally, as explained above in 1[B], Allen teaches encoding the same video at low, medium, and high quality levels. Since Ogdon contemplates a live video presentation that is segmented and stored at various quality levels (EX1004, Abstract, 1:62-2:1, 6:2-5, 10:7), a POSITA would have been motivated to encode each recorded video segment of Ogdon into each quality level in parallel in real-time prior to storing at the webservers (*see* 1[A]). EX1003, ¶ 73; *see also* EX1005, 5:15-21 ("considerable technology has developed for capturing analog video . . . then digitizing and encoding the video signal for streaming distribution over the Internet"), 3:16-18 ("redigitized video is then simultaneously processed in a plurality of encoders" to "provide output in a particular popular format and bit rate"). A POSITA would have understood this to be a convenient and practical way to generate different quality levels for each segment in real-time for distribution to client nodes. EX1003, ¶ 73. A POSITA would have had a reasonable expectation of success with such a modification because Ogdon teaches corresponding segments at

different quality levels and a POSITA would have known how to encode each raw video segment into a corresponding quality level (bitrate) on a segment-by-segment basis in parallel. EX1003, ¶ 74.

e. 1[D]: "wherein at least one of the low quality stream, the medium quality stream, and the high quality stream is encoded at a bitrate of no less than 600 kbps;"

Ogdon in view of Allen teaches 1[D]. As explained above, Ogdon in view of Allen teaches encoding a high quality stream at a bitrate of 600 kbps. *See* 1[B]; EX1003, ¶ 75.

f. 1[E]: "wherein the amount of data in each streamlet corresponding to the same part of the live event video in the low quality stream, the medium quality stream, and the high quality stream varies according to the different bitrates; and the plurality of streamlets in the low quality stream, the medium quality stream, and the high quality stream having a duration that is the same as each other."

Ogdon in view of Allen teaches 1[E]. *See* 1[B] (Allen teaching low, medium, and high quality stream). Ogdon further teaches the amount of data in each streamlet corresponding to the same part of the live event video (*i.e.*, corresponding segments at each quality level) varies according to the different bitrates. EX1004, Abstract ("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"), 24:54-55 ("usually resulting in selection of alternative segment

collections that are **smaller**"). More specifically, a POSITA would have understood that the same video portion (segment) (*e.g.* encoded at 56 kbps bitrate quality level taught by Allen) would contain fewer bits, and thus have a smaller data size, than the corresponding same segment at a medium quality level (*e.g.*, 300 kbps bitrate taught by Allen) and that both low and medium quality segments would be smaller in data size than the same corresponding segment at 600 kbps (high quality). EX1003, ¶ 76.

Ogdon further discloses that the plurality of streamlets (segments) in each of the quality level streams have a duration that is the same as each other. First, the claims recite that collectively "the plurality of streamlets" in each quality level stream have durations that are equal to each other, and Ogdon discloses "[d]ifferent versions of the same presentation" (EX1004, 2:30) and that each version has segments that "correspond[] with a segment . . . having the same presentation order, in each of the other versions" (*id.*, 2:47-49) such that the plurality of streamlets that collectively make up the entire video presentation stream for each version of the same video presentation would be equal to each other in duration. EX1003, ¶ 77. In other words, Ogdon discloses that full video presentation stream (made up of a plurality of segments) are the "same" video presentation at each quality level and thus each quality level video presentation stream have durations equal to each other. Second, Ogdon discloses that each individual corresponding segment in each version

of the video presentation also have the same presentation duration. EX1004, 2:49-55 ("corresponding segments (or subcollections thereof) in different versions have approximately the **same presentation duration**" so 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."), 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**.").

Ogdon thus states that each corresponding segment at various versions should serve as "replacement" for one another and that the durations are "approximately the same presentation duration." A POSITA would have understood this teaching of "approximately the same" duration not to be limited to only durations that are close but not exactly the same, but rather encompassing durations that are either the same, or approximately the same—especially given additional evidence from Ogdon's provisional application and file history as discussed below. EX1003, ¶ 78. Thus, Ogdon discloses that each corresponding version of each segment is the same portion of the video and has the same duration because they are replacements for one another. A POSITA would have understood this disclosure to teach a same or equal

duration in order to allow alternative versions of each segment to serve as a "replacement" for each other to provide seamless streaming for the user. *Id*.

Additionally, the provisional application of Ogdon (U.S. 60/041,770) also teaches that "corresponding presentations segments in the collection have identical audio portions." EX1014, 35 (claim 25). A POSITA would have understood this disclosure to teach that corresponding alternate video presentation segments can each have identical audio portions, which would mean that the alternate video presentation segments would also have identical (*i.e.,* same or equal) durations. EX1003, ¶ 79. And during prosecution of the Ogdon patent, the Applicant characterized the Ogdon invention as having different versions "with identical (and/or content corresponding) portions of the presentation." EX1015, 239. A POSITA would have considered this a further teaching of identical (*i.e.,* same or equal) time durations for each corresponding video segment version. *Id*.

Also, as described above with respect to limitation 1[C], a POSITA would have been motivated to encode each raw video segment of Ogdon into each corresponding quality level bitrate in real-time—which would generate corresponding segments of equal duration. EX1003, ¶ 80.

To the extent it is found that Ogdon does not disclose that the plurality of streamlets in each of the quality level streams have a duration that is the same as each other, a POSITA would have been motivated to make all of the corresponding

segments in each version an equal duration of time to simplify the system and so that each corresponding streamlet in each version could serve as a replacement for that portion of presentation content so that when switching to a different version during the presentation the user still experiences a seamless presentation. EX1003, ¶ 81. Having corresponding streamlets across different versions be of different playback durations would complicate the presentation of video and may result in an undesirable viewing experience because it would prevent seamless streaming when switching quality levels if playback commences with the beginning of each version file. *Id*. A POSITA would have had a reasonable expectation of success with such a modification because it would have been a straightforward and simple modification to make each segment an equal duration. *Id.*

2. Claim 3: "The system of claim 1 wherein the streamlets in each of the high quality stream, the medium quality stream and the low quality stream are each encoded at a different one of the plurality of different bitrates."

Ogdon in view of Allen teaches claim 3. *See* 1[B]-1[C]; EX1003, ¶ 82.

3. Claim 4:

a. 4[A]: "The system of claim 1, further comprising: a plurality of web servers located at different locations across the internet, each web server configured to:"

Ogdon in view of Allen teaches 4[A]. Ogdon discloses a plurality of web servers located at different locations across the internet, including a first web server,

(webserver 96a and webserver 96b). EX1004, 8:27-31 ("Content Webservers 96: One or more content network server sites 96 (also denoted content webservers 96a, and alternate content webservers 96b) for providing presentation data to client sites 54 requesting such data via client notes 56."); EX1003, ¶ 83.

b. 4[B]: "receive at least one streamlet request over one or more internet connections from the one or more end user stations to retrieve the first streamlet storing a portion of the video, wherein the at least one streamlet request from the one or more end user stations includes a request for a currently selected first streamlet from one of the low quality stream, the medium quality stream, and the high quality stream based upon a determination by the end user station to select a higher or lower bitrate version of the streams;"

Ogdon in view of Allen teaches 4[B]. *See* 1[B]. Ogdon discloses that the content webserver(s) (96) are each configured to receive at least one streamlet (segment) request over one or more Internet (network 70) connections from the one or more end user stations (client node(s) 56) to retrieve the first streamlet storing a portion of the video. 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 webservers 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 webservers 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 webservers 96 to select an appropriate content webserver and an appropriate version of the next collection of segments to be retrieved."); EX1003, ¶ 84.

Ogdon in view of Allen further teaches that the at least one streamlet request from the one or more end user stations (client node(s) 56) includes a request for a currently selected one of the low quality stream, the medium quality stream, and the high quality stream based upon a determination by the client to select a higher or lower bitrate version of the streams. EX1004, 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."), 23:51-24:6, 24:50-55 ("Accordingly, 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 usually resulting in selection of alternative segment collections that are smaller."); *See* 1[B]; EX1003, ¶ 85.

As explained above, Patent Owner asserts that a single "initial adaptive selection" meets this limitation. *See* Section VII.

c. 4[C]: "retrieve from the storage device the requested first streamlet from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream; and"

Ogdon in view of Allen teaches 4[C]. *See* 1[B]. Ogdon discloses that the webserver(s) 96 retrieve from the storage device the requested streamlet (segment) from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream. EX1004, 19:54-67 (client nodes "**retrieve**" elements or subcollections from "content webservers 96 where the presentation segments have

been pre-stored"); 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**"); *See* 1[B]; EX1003, ¶ 86.

d. 4[D]: "send the retrieved first streamlet from the currently selected one of the different copies to the requesting one of the end user stations over the one or more network connections."

Ogdon in view of Allen teaches 4[D]. Ogdon discloses that the client receives, caches, and presents the requested streamlets (segments) from the currently selected one of the different copies (of low, medium or high quality stream taught by Allen) that are sent by the webserver(s) to the requesting one of the end user stations (client node 56) over the one or more Internet network connections. EX1004, 7:59-63 ("client presentation software system 88 [] coordinates with the browser 78 for requesting, receiving and displaying presentation segments (from the network 70) as appropriate during the presentation"), 24:48-49 ("collection of segments being delivered prior to the time that these segments are to be presented on the client node 56"), 25:25-27 ("steps 552 through 560 are iteratively performed until all segments of the current collection of segments are presented to the client"); *See* 1[B]; EX1003, ¶ 87.

4. Claim 5: "The system of claim 1, wherein each of the first streamlets has a first duration that is the range of 0.1 to 5 seconds."

Ogdon in view of Allen teaches claim 5. A POSITA considering Ogdon would have been motivated to make the first durations (of each of the first segments) in the range of 0.1 to 5 seconds. EX1003, ¶ 88. For example, a POSITA would have been motivated to make the first duration (of each of the first segments) 1 second or 2 seconds because this would minimize download time and allow playback to begin quickly while also allowing the client to make a bandwidth determination and provide sufficient time for the client to request further sequential segments to queue for playback. *Id.* Additionally, it would have been "obvious to try" for a POSITA to make the first duration (of the first segment) in the range of 0.1 to 5 seconds because this would be a POSITA choosing between one of a finite number of possible solutions. *Id*. Namely, a POSITA would have to assign some duration to the first segment such that the segments are sufficiently long to allow for quick playback without requesting a large number of files but sufficiently short in duration to allow for switching to different quality levels as necessary without excessive delay —this duration would have to be on the order of single digit seconds (*e.g.*, 1-5 seconds), or low double digit seconds. *Id*. Therefore, it would have been obvious for a POSITA to try making the duration of the first segment between 0.1 to 5 seconds) as a finite number of possible solutions. *Id*. A POSITA would have had a reasonable

expectation of success with such modifications because the segments all have *some* duration and merely adjusting the duration the first segment so that the first segment duration between 0.1 to 5 seconds in duration would have been a simple and straightforward modification for a POSITA. *Id*.

5. Claim 7:

a. 7[A]: "The system of claim 1, further comprising: a first web server configured to:"

Ogdon in view of Allen teaches 7[A]. *See* claim 4[A]. EX1003, ¶ 89.

b. 7[B]: "receive at least one streamlet request over one or more internet connections from the one or more end user stations to retrieve the first streamlet storing the first portion of the live event video, wherein the at least one streamlet request from the one or more end user stations includes a request for a currently selected first streamlet from one of the low quality stream, the medium quality stream, and the high quality stream based upon a determination by the end user station to select a higher or lower bitrate version of the live event video;"

Ogdon in view of Allen teaches 7[B]. *See* claim 4[B]. EX1003, ¶ 90.

c. 7[C]: "retrieve from the storage device the requested first streamlet from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream; and"

Ogdon in view of Allen teaches 7[C]. *See* claim 4[C]. EX1003, ¶ 91.

d. 7[D]: "send the retrieved first streamlet from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream to the requesting one of

the end user stations over the one or more network connections."

Ogdon in view of Allen teaches 7[D]. *See* claim 4[D]. EX1003, ¶ 92.

6. Claim 8: "The system of claim 7, wherein the first streamlets of the low quality stream, the medium quality stream, and the high quality stream are available before the live event is complete."

Ogdon in view of Allen teaches claim 8. Ogdon discloses that the first streamlets (segments) of each quality level (*e.g.*, the low quality stream, the medium quality stream, and the high quality stream as taught by Allen) are available before the live event is complete. *See* 1[Pre]; 1[B]; EX1004, 7:61-63 ("requesting, receiving and displaying presentation segments (from the network 70) as appropriate **during the presentation**"), 15:52-58 (explaining that data may be available only **during** a presentation performance), 19:56-59; EX1003, ¶ 93.

7. Claim 9: "The system of claim 7, wherein the streamlets of the low quality stream, the medium quality stream, and the high quality stream of the live event are available on a 10 second delay."

Ogdon in view of Allen teaches claim 9. As explained above, Ogdon discloses that the live stream is available before the event is complete. *See* claim 8. Ogdon further teaches that video presentations "are capable of being transmitted to various network 70 sites for subsequently time-delay delivery if desired." EX1004, 10:16-19. A POSITA would have been motivated to build in a reasonable delay, for

example ten seconds, to allow sufficient buffering such that the client would be unlikely to experience interruptions, but also still provide a stream that is still very close to the user experiencing the event in as close to "real time" as practicable as if attending in person. EX1003, ¶ 94. A POSITA would have had a reasonable expectation of success with this modification because it would simply entail ensuring a sufficient buffer delay of 10 seconds and would have been a straightforward modification. *Id*.

8. Claim 10:

a. 10[Pre]: "A content player device to stream a video over a network from a server for playback of the video, the content player device comprising:"

Whether or not the preamble is limiting, Ogdon teaches 10[Pre]. Ogdon discloses a content player device (client node(s) 56) to stream a video (video presentation) over a network (Internet) from a server (content webserver(s) 96) for playback of the video. *See* 1[Pre]; EX1003, ¶ 95.

b. 10[A]: "a processor;

Ogdon teaches 10[A]. Ogdon discloses a processor at client node 56. EX1004, 7:45 ("client node 56 (e.g., a personal computer)"). A POSITA would have understood that a "personal computer" discloses a processor because a computer requires a processor to perform computing functions.

To the extent it is found that Ogdon does not disclose a processor, a POSITA would have been motivated to include a processor in the client node of Ogdon's system in order to perform the required functions for streaming a video presentation and displaying the video to the user at the client site. Processors were well known in the art. EX1003, ¶¶ 96-97. A POSITA would have had a reasonable expectation of success with such a modification because personal computers use processors to perform computing functions, and modifying the personal computer of Ogdon to include a processor would have been a routine exercise for a POSITA. EX1003, ¶ 97.

c. 10[B]: "a digital processing apparatus memory device comprising non-transitory machine-readable instructions that, when executed, cause the processor to:"

Ogdon teaches 10[B]. Ogdon discloses a digital processing apparatus memory device comprising non-transitory machine-readable instructions (software package) that, when executed, causes the processor to perform functions, such as receiving video presentation information. EX1004, 7:45 ("client node 56 (e.g., a personal computer)"), 7:53-63 ("client node 56" has "a network interface **software** package required for receiving, e.g., video presentation information from the communications network 70 . . . Internet" including "a network browser 78 . . . 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").

A POSITA would have understood that a client node personal computer running software, as disclosed in Ogdon, discloses a digital processing apparatus memory device comprising non-transitory machine-readable instructions (software) that, when executed, cause the processor to perform functions. EX1003, ¶¶ 98-99.

To the extent it is found that Ogdon does not disclose this limitation, a POSITA would have been motivated to include a digital processing apparatus memory device comprising non-transitory machine-readable instructions that, when executed, cause the processor to perform functions in order to allow the client node to execute programs to request, receive, and play back the video presentations. EX1003, ¶ 100. Digital processing apparatus memory devices were well-known in the art to include machine-readable instructions (software) that cause a processor to perform tasks related to video presentations. *Id*. A POSITA would have had a reasonable expectation of success with such a modification because personal computers require such memory for executing instructions (software) to cause processers to perform computing functions, and modifying Ogdon to include such a memory with instructions would have been a routine exercise for a POSITA. *Id*.

d. 10[C][1]: "establish one or more network connections between the client module and the server,"

Ogdon teaches 10[C][1]. Ogdon discloses establishing one or more network connections between the client module (client node(s)) and the server (webserver(s)) because at least one connection is necessary for the client module to retrieve elements from the webservers. EX1004, 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"), 2:1-10 ("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) . . . both the video and audio portions of the presentation may be provided solely by a TCP/IP network such as the Internet"), 19:34-44 ("when the time for the presentation arrives, the client's client presentation software 88 via the network 70 establishes a network 70 connection between the client's client node 56 and the host 200 controlling the presentation performance. . . . After the host 200 is contacted, it instructs the client presentation software 88 to establish a connection with one of the internal webservers 248 for dynamic content."), 19:53-58 ("Following the activation of a connection between the client node 56 and a presentation controlling host 200 . . . client presentation software 88 . . . retrieve[s] and cache[s], via network 70, one or more initial presentation segments from identified content webservers 96"), claim

7 ("a network using TCP/IP for communicating between at least one of: (a) one of said content supplying nodes and said first client node; (b) said presentation controlling node and said first client node; (c) one of the content supplying nodes and said presentation controlling node."); EX1003, ¶ 101.

e. 10[C][2]: "wherein the server is configured to access at least one of a plurality of groups of streamlets;"

Ogdon teaches 10[C][2]. Ogdon discloses that the server (webserver(s)) is configured to access at least one of a plurality of groups (elements, collections, or subcollections) of streamlets (segments). EX1004, 9:30-31 ("webservers 96 where the content for each presentation will reside"), 9:44-46 ("content manager 104 distributes presentation content (e.g., presentation segments) to the content webservers 96"), 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."); EX1003, ¶ 102.

f. 10[C][3]: "wherein the video is encoded at a plurality of different bitrates to create a plurality of streams including at least a low quality stream, a medium quality stream, and a high quality stream,"

Ogdon in view of Allen teaches 10[C][3]. *See* 1[B]; EX1003, ¶ 103.

g. 10[C][4]: "wherein each of the low quality stream, the medium quality stream, and the high quality stream comprises a streamlet that encodes the same portion of the video at a different one of the plurality of different bitrates;"

Ogdon in view of Allen teaches 10[C][4]. *See* 1[C], 1[E]. Ogdon further discloses that each stream (*e.g.*, low, medium, and high quality levels as taught by Allen) comprises elements, collections, or subcollections of streamlets (segments) where each corresponding segment at each quality level encode the same portion of the video at different bitrates. 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**."), 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, ¶ 104.

h. 10[C][5]: "wherein at least one of the low quality stream, medium quality stream, and high quality stream is encoded at a bit rate of no less than 600 kbps; and"

Ogdon in view of Allen teaches 10[C][5]. *See* 1[D]; EX1003, ¶ 105.

i. 10[C][6]: "wherein the streamlet encoding the same portion of the video in the low quality stream has an equal playback duration as the streamlet encoding the same portion of the video in the high quality stream;"

Ogdon in view of Allen teaches 10[C][6]. *See* 1[E]; EX1003, ¶ 106.

j. 10[D]: "select a specific one of the streams based upon a determination by the client module to select a higher or lower bitrate version of the streams;"

Ogdon in view of Allen teaches 10[D]. *See* 10[C][3].

Ogdon further discloses selecting a specific one of the quality streams based upon a determination (*e.g.*, based on network data transmission characteristics at the client node(s)) by the client module (client node) to select a higher or lower bitrate version of the streams. 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 webservers 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 webservers 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 webservers 96 **to select** an appropriate content webserver and **an appropriate version of the next collection of segments to be retrieved**."), 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."), 23:51-24:6, 24:50-55 ("Accordingly, 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** usually resulting

in **selection** of alternative segment collections that are smaller."), Abstract ("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"), 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"); EX1003, ¶ 107.

As explained above, Patent Owner asserts that a single "initial adaptive selection" meets this limitation. *See* Section VII.

k. 10[E]: "place a streamlet request to the server over the one or more network connections for the selected stream;"

Ogdon teaches 10[E]. Ogdon discloses placing a streamlet request to the server over the one or more network connections for the selected stream. *See* 10[D]; 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"); EX1003, ¶ 108.

l. 10[F]: "receive the requested first streamlet from the server via the one or more network connections; and provide the received first streamlet for playback of the live event video."

Ogdon teaches 10[F]. Ogdon discloses receiving the requested first streamlet from the server via the internet connection and provide the received first streamlet for playback of the live event video. EX1004, 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"), 23:45-50 ("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, ¶ 109.

9. Claim 11: "The content player device of claim 10 wherein each streamlet of the plurality of streamlets in the low quality stream, the medium quality stream, and the high quality stream has a duration that is the same as each other."

Ogdon in view of Allen teaches claim 11. *See* claim 1[E]; EX1003, ¶ 110.

10. Claim 13: "The content player device of claim 10, wherein each streamlet of the plurality of streamlets in the low quality stream, the medium quality stream, and the high quality stream has a duration that is the range of 0.1 to 5 seconds."

Ogdon in view of Allen teaches claim 13. *See* claim 5. Further, a POSITA would have been motivated to make each streamlet of the plurality of streamlets in each quality level have a duration that is the range of 0.1 to 5 seconds in order to simplify the system and ensure that each segment is of sufficiently short duration such that they system can rapidly switch between quality levels as necessary. EX1003, ¶ 111.

Alternatively, it would have been "obvious to try" for a POSITA to make each duration of each segment in the range of 0.1 to 5 seconds because this would be a POSITA choosing between one of a finite number of possible solutions. EX1003, ¶ 112. Namely, a POSITA would have to assign some duration to each segment such that the segments are sufficiently long to allow for quick playback without requesting a large number of files but sufficiently short in duration to allow for switching to different quality levels as necessary without excessive delay —this duration would have to be on the order of single digit seconds (*e.g.*, 1-5 seconds), or low double digit seconds. *Id*. Therefore, it would have been obvious for a POSITA to try making the duration of each segment between 0.1 to 5 seconds as a finite number of possible solutions. *Id*. A POSITA would have had a reasonable

expectation of success with such modifications because the segments all have *some* duration and merely adjusting the duration each segment to have a duration between 0.1 to 5 seconds would have been a simple and straightforward modification for a POSITA. *Id.*

11. Claim 14: "The content player device of claim 10, wherein the video is a video of a live event."

Ogdon in view of Allen teaches claim 14. *See* claim 1[Pre]; EX1003, ¶ 113.

12. Claim 15: "The content player device of claim 14, wherein the streamlets of the low quality stream, the medium quality stream, and the high quality stream are available before the live event is complete."

Ogdon in view of Allen teaches claim 15. *See* claim 8; EX1003, ¶ 114.

13. Claim 16: "The content player device of claim 15, wherein the streamlets of the low quality stream, the medium quality stream, and the high quality stream of the live event are available on a ten second delay."

Ogdon in view of Allen teaches claim 16. *See* claim 9; EX1003, ¶ 115.

14. Claim 17: "The content player device of claim 16, wherein the streamlets from the low quality stream, the medium quality stream, and the high quality stream of the live event, when played back, appear live to a viewer."

Ogdon in view of Allen teaches claim 17. *See* 1[Pre], claims 15-16; EX1003, ¶ 116.

15. Claim 18:

a. 18[Pre]: "A system for adaptive-rate content streaming of live event video playable on one or more end user stations over the internet, the system comprising:"

Ogdon in view of Allen teaches 18[Pre]. *See* claim 1[Pre]; Section IX.A.1: 18[Pre]; EX1003, ¶ 117.

b. 18[A]: "at least one storage device configured to store live event video,"

Ogdon in view of Allen teaches this 18[A]. *See* 1[A]; Section IX.A.1: 18[A]; EX1003, ¶ 118.

c. 18[B]: "the live event video encoded at a plurality of different bit rates creating a plurality of streams including at least a low quality stream and a high quality stream;"

Ogdon in view of Allen teaches 18[B]. *See* 1[B]; Section IX.A.1: 18[B]; EX1003, ¶ 119.

d. 18[C]: "the low quality stream and the high quality stream each encoding the same portion of the live event video with a streamlet that is encoded a different one of the different bit rates;"

Ogdon in view of Allen teaches 18[C]. *See* claim 1[C], 1[E]; Section IX.A.1: 18[C]; EX1003, ¶ 120.

e. 18[D]: "wherein the plurality of streamlets in the low quality stream and the plurality of streamlets in the high quality stream have durations that are equal to each other"

Ogdon in view of Allen teaches 18[D]. *See* claim 1[E]; Section IX.A.1: 18[D]; EX1003, ¶ 121.

16. Claim 19: "the streamlets in each of the low quality stream and the high quality stream corresponding to the same portion of the live event video have equal durations."

Ogdon in view of Allen teaches claim 19. *See* 18[C]-18[D]. EX1003, ¶ 122.

17. Claim 20: "The system of claim 18 wherein the plurality of streams further comprise a medium quality stream encoded at a bit rate higher than the low quality stream and lower than the high quality stream."

Ogdon in view of Allen teaches claim 20. *See* 1[B] (Allen teaching a medium quality stream (300 kbps) encoded at a bit rate higher than the low quality stream (56 kbps), and lower than the high quality stream (600 kbps)). EX1003, ¶ 123.

18. Claim 22:

a. 22[A]: "The system of claim 18, further comprising: a first web server configured to:"

Ogdon in view of Allen teaches 22[A]. *See* 7[A]; EX1003, ¶ 124.

b. 22[B]: "receive at least one streamlet request over one or more internet connections from the one or more end user stations to retrieve a streamlet storing a portion of the video, wherein the at least one streamlet request from the one or more end user stations includes a request for a currently selected one of the low quality stream, the medium quality stream, and the high quality stream based upon a

determination by the client module to select a higher or lower bitrate version of the streams;"

Ogdon in view of Allen teaches 22[B]. *See* 7[B]; EX1003, ¶ 125.

c. **22[C]: "retrieve from the storage device the requested streamlet from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream; and"**

Ogdon in view of Allen teaches 22[C]. *See* 7[C]; EX1003, ¶ 126.

d. **22[D]: "send the retrieved streamlet from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream to the requesting one of the end user stations over the one or more network connections."**

Ogdon in view of Allen teaches 22[D]. *See* 7[D]; EX1003, ¶ 127.

19. Claim 23:

a. **23[A]: "The system of claim 18, further comprising: a plurality of web servers located at different locations across the internet, each web server configured to:"**

Ogdon in view of Allen teaches 23[A]. *See* 4[A]; EX1003, ¶ 128.

b. **23[B]: "receive at least one streamlet request over one or more internet connections from the one or more end user stations to retrieve a streamlet storing a portion of the video, wherein the at least one streamlet request from the one or more end user stations includes a request for a currently selected one of the low quality stream, the medium quality stream, and the high quality stream based upon a determination by the client module to select a higher or lower bitrate version of the streams;"**

Ogdon in view of Allen teaches 23[B]. *See* 4[B]; EX1003, ¶ 129.

c. **23[C]: "retrieve from the storage device the requested streamlet from the currently selected one of the low quality stream, the medium quality stream, and the high quality stream; and"**

Ogdon in view of Allen teaches 23[C]. *See* 4[C]; EX1003, ¶ 130.

d. **23[D]: "send the retrieved streamlet from the currently selected one of the different copies to the requesting one of the end user stations over the one or more network connections."**

Ogdon in view of Allen teaches 23[D]. *See* 4[D]; EX1003, ¶ 131.

20. **Claim 24: "The system of claim 21, wherein all of the streamlets in each of the low quality stream, the medium quality stream and the high quality stream have equal durations."**

Ogdon in view of Allen teaches claim 24. *See* claim 19; EX1003, ¶ 132.

21. **Claim 25: "The system of claim 21, wherein the streamlets of the low quality stream, the medium quality stream, and the high quality stream are available on a ten second delay before the live event is complete, wherein the streamlets from the low quality stream, the medium quality stream, and the high quality stream of the live event, when played back, appear live to a viewer."**

Ogdon in view of Allen teaches claim 25. *See* claim 9; EX1003, ¶ 133.

22. **Claim 26:**

a. **26[Pre]: "A content player device to stream a video over a network from a server for playback of the video, the content player device comprising:"**

Ogdon teaches 26[Pre]. *See* claim 10[Pre]; EX1003, ¶ 134.

b. 26[A]: "a processor;"

Ogdon teaches 26[A]. *See* claim 10[A]; EX1003, ¶ 135.

c. 26[B]: "a digital processing apparatus memory device comprising non-transitory machine-readable instructions that, when executed, cause the processor to:"

Ogdon in view of Allen teaches 26[B]. *See* claim 10[B]; EX1003, ¶ 136.

d. 26[C][1]: "establish one or more network connections between the client module and the server,"

Ogdon in view of Allen teaches 26[C][1]. *See* claim 10[C][1]; EX1003, ¶ 137.

e. 26[C][2]: "wherein the server is configured to access at least one of a plurality of groups of streamlets;"

Ogdon in view of Allen teaches 26[C][2]. *See* claim 10[C][2]; EX1003, ¶ 138.

f. 26[C][3]: "wherein the video is encoded at a plurality of different bitrates to create a plurality of streams including at least a low quality stream and a high quality stream,"

Ogdon in view of Allen teaches 26[C][3]. *See* claim 10[C][3]; EX1003, ¶ 139.

g. 26[C][4]: "the low quality stream and the high quality stream each representing the same portion of the video with a streamlets encoded at a different one of the plurality of different bitrates; and"

Ogdon in view of Allen teaches 26[C][4]. *See* claim 10[C][4]; EX1003, ¶ 140.

h. 26[C][5]: "wherein the streamlet representing the same portion of the video in the low quality stream and the

streamlet representing the same portion of the video in the high quality stream have durations equal to each other;"

Ogdon in view of Allen teaches 26[C][5]. *See* claim 10[C][6], 18[D]; EX1003, ¶ 141.

i. 26[D]: "select a specific one of the streams based upon a determination by the client module to select a higher or lower bitrate version of the streams;"

Ogdon in view of Allen teaches 26[D]. *See* claim 10[D]; EX1003, ¶ 142.

j. 26[E]: "place a streamlet request to the server over the one or more network connections for the selected stream;"

Ogdon in view of Allen teaches 26[E]. *See* 10[E]; EX1003, ¶ 143.

k. 26[F]: "receive the requested streamlets from the server via the one or more network connections; and provide the received streamlets for playback of the video."

Ogdon in view of Allen teaches 26[F]. *See* 10[F]; EX1003, ¶ 144.

23. Claim 27: "The content player device of claim 26, wherein the plurality of streamlets in the low quality stream have a duration equal to the duration of the plurality of streamlets in the high quality stream."

Ogdon in view of Allen teaches claim 27. *See* 18[D]; EX1003, ¶ 145.

C. Ground 3: Claims 1, 3-5, 7-11, 13-20, and 22-27 Would Have Been Obvious in view of Ogdon, Allen, and SMIL 2.0

The sections of Ground 2 (Section IX.B) are incorporated into this section by reference. As explained above in Section IX.B, Ogdon in view of Allen teaches claims 11, 3-5, 7-11, 13-20, and 22-27. To the extent that Patent Owner argues that

Ogdon in view of Allen fails to teach certain limitations, Ogdon in view of Allen and SMIL 2.0 teaches these limitations. EX1003, ¶ 146.

1. Claims 1, 10, 11 18, 19, 24, 26, and 27:

As explained above in Section IX.B, Ogdon in view of Allen teaches all limitations of independent claims 1, 10, 18, and 26.

To the extent it is argued that Ogdon in view of Allen lack certain limitations, for example that the plurality of streamlets have durations that are equal to each other and that streamlets in each of the quality levels corresponding to the same portion of the live event video have equal durations (as described in limitations 1[F], 10[C][6], 11, 18[D], 19, 24, 26[C][5] and 27), SMIL 2.0 teaches these limitations. For example, SMIL 2.0 teaches using a SMIL element called "<switch>" that "allows an author to specify a set of alternative elements encoded at different quality levels from which only the first acceptable element is chosen" EX1006, 61.

SMIL 2.0 also teaches using a SMIL element called "<seq>" which "defines a sequence" such that "media elements play one after the other" (EX1006, 158) and controlling duration of such media elements using the "dur" attribute (*id.*, 125-128). In one example, SMIL 2.0 teaches providing three sequential media elements and three alternative sequential media elements (annotated below as purple, yellow, and red) each having an equal playback duration of 5 seconds due to the "dur=5s":

```
<switch>
  <seq systemRequired="BrushMedia">
    <brush dur="5s" color="#0000FF" region="colorbox"/>
    <brush dur="5s" color="#00FF00" region="colorbox"/>
    <brush dur="5s" color="#FF0000" region="colorbox"/>
  </seq>
  <seq>
    <img dur="5s" src="blue.jpg"  region="colorbox"/>
    <img dur="5s" src="green.jpg" region="colorbox"/>
    <img dur="5s" src="red.jpg"   region="colorbox"/>
  </seq>
</switch>
```

EX1006, 273 (annotated).

In other words, SMIL 2.0 teaches a first segment and alternative first segment (each annotated as purple) and each with an equal fixed duration of five seconds (and likewise for second and third segments). EX1003, ¶¶ 147-150. And SMIL also teaches each sequential streamlet (first, second, and third) also having a same or equal duration (5 seconds). A POSITA would have been motivated to ensure that each segment in Ogdon had the same or equal duration, *e.g.*, 5 seconds as taught by SMIL 2.0, in order simply they system and to ensure that when a switch is made to an alternative segment the alternative segment is a perfect replacement for preferred segment so that when switching to a different version during the presentation the user still experiences a seamless presentation. EX1003, ¶ 150. A POSITA would have had a reasonable expectation of success with such a combination because both Ogdon and SMIL 2.0 are drawn to similar systems of client-server based streaming including allowing the client to determine which alternative files to choose based on

system attributes and because ensuring each segment is the same duration of 5 seconds would have been a straightforward modification for a POSITA. *Id*.

2. Claims 5 and 13:

Ogdon in view of Allen and SMIL 2.0 teaches each streamlet with a streamlet duration of 5 seconds. *See* Section IX.C.1; EX1003, ¶ 151.

X. GRAHAM FACTORS (NO SECONDARY CONSIDERATIONS)

The first three *Graham* factors were discussed for each ground, including 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, Patent Owner cannot show any nexus to the claim language. The ’555 Patent was asserted in the ITC Investigation and 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.

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, none of the above alleged characteristics are claimed in the '555 Patent. Third, the ALJ's findings were incorrect because 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).

More specifically, the purported "unique" 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 discloses

upshifting and downshifting quality of the stream in response to, for example, network congestion to ensure a smooth and uninterrupted stream. *See, e.g.*, claim 10[D].

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 because at least Ogdon discloses using simple HTTP protocol for clients to request transfer of files from standard web servers, rather than specialized media servers. *See, e.g.*, EX1004, 14:46-49, 22:48-63.

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 Litigation.

Third Factor. This factor favors institution given the District Court Litigation is its earliest stages because the case management conference has not yet occurred and thus no claim construction nor any other significant milestones have occurred.

Fourth Factor. This factor favors institution. Petitioner stipulates that if this '555 Patent IPR is instituted, Petitioner will not pursue invalidity grounds in the District Court Litigation 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 its real parties in interest) and Patent Owner are the same parties as in the District Court Litigation.

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 '555 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 '555 Patent. Further, Ogdon, Allen, and SMIL 2.0 are not cited on the face of the '555 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, 3-5, 7-11, 13-20, and 22-27.

DATED: November 7, 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 13,800 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, appendix of exhibits, and claim listing (37 C.F.R. § 42.24(a)). This is within the 14,000 word limit allowed under § 42.24(a)(1)(i).

DATED: November 7, 2023

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CERTIFICATE OF SERVICE

I hereby certify that on November 7, 2023 I caused a true and correct copy of the foregoing materials:

- Petition for *Inter Partes* Review of U.S. Patent 10,469,555
- Exhibits
- Petitioner's Power of Attorney

to be served via overnight delivery on the USPTO Patent Center (PAIR) Correspondence Address for U.S. Patent 10,469,555 as follows:

54583 - DISH Technologies L.L.C.
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ENGLEWOOD, CO 80112

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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