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 10,469,554
Issue Date: November 5, 2019
Title: APPARATUS, SYSTEM, AND METHOD FOR MULTI-BITRATE CONTENT STREAMING

Inter Partes Review No. IPR2024-00045

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT 10,469,554 CHALLENGING CLAIMS 1-1-5, 7, 8, 10-14, 16-20, 22-28, and 30 UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.1 *et seq.*

Mail Stop PATENT BOARD
Patent Trial and Appeal Board
United States Patent and Trademark Office
PO Box 1450
Alexandria, Virginia 22313-1450
Submitted Electronically via PTAB E2E

TABLE OF CONTENTS

I. INTRODUCTION 1

II. MANDATORY NOTICES 1

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

B. Related Proceedings – § 42.8(b)(2) 1

C. Counsel – § 42.8(b)(3) and (b)(4); Service Information; Fees 2

III. CERTIFICATION OF GROUNDS FOR STANDING 3

IV. UNPATENTABILITY GROUNDS 3

V. ’554 PATENT 4

A. Summary 4

B. Prosecution History 8

C. Priority Date 9

VI. LEVEL OF ORDINARY SKILL IN THE ART 9

VII. CLAIM CONSTRUCTION 10

VIII. OVERVIEW OF THE PRIOR ART 12

A. State of the Art 12

B. Ogdon 13

C. Allen 14

D. SMIL 2.0 15

E. Analogous Art 16

IX. SPECIFIC GROUNDS 17

A. Ground 1: Claims 1-5, 7, 8, 10-14, 16-20, 22-28, and 30 Would Have Been Obvious in view of Ogdon and Allen 17

1. Claim 1: 17

2. Claim 2: "The system of claim 1, wherein the second streamlet of each of the groups of streamlets each has the same second duration and corresponds to the same second portion of the live event video in the low quality stream, the medium quality stream, and the high quality stream, the second streamlet of the low quality stream having the same bitrate as the first streamlet of the low quality stream." 27

3. Claim 3: "The system of claim 2, wherein the first and second durations are different." 27

4. Claim 4: 29

5. 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." 33

6. Claim 7: 34

7. 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." 35

8. Claim 10: "The system of claim 7, 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." 36

9. Claim 11: "The system of claim 7, wherein the first web server is further configured to: receive at least one virtual timeline request over the one or more internet connections from the one or more end user stations to retrieve a virtual timeline; and send the virtual timeline to the requesting one of the end user stations over the one or more network connections." 36

10. Claim 12: "The system of claim 11, wherein the virtual timeline corresponds to the currently selected one of the low quality stream, the medium quality stream, and the high quality stream." 39

11. Claim 13: "The system of claim 11, wherein the virtual timeline defines a playlist for a user to view." 39

12. Claim 14: "The system of claim 11, wherein the virtual timeline comprises a file that is configured to define a playlist for a user to view." 40

13. Claim 16: 40

14. Claim 17: "The end user station of claim 16, wherein the second streamlet of each of the groups of streamlets each has the same second duration and corresponds to the same second portion of the live event video in the low quality stream, the medium quality stream, and the high quality stream, the second streamlet of the low quality stream having the same bitrate as the first streamlet of the low quality stream." 49

15. Claim 18: "The end user station of claim 17, wherein the first and second durations are different." 49

16. Claim 19: "The end user station of claim 16, wherein each of the first streamlets has a first duration that is the range of 0.1 to 5 seconds." 49

17. Claim 20: "The end user station of claim 16, 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." 49

18. Claim 22: "The end user station 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."....49

19. Claim 23: "The end user station of claim 16, wherein the end user station is further configured to: request and receive a virtual timeline; and wherein one or more streamlet requests are based on the at least one virtual timeline."....50

20. Claim 24: "The end user station of claim 23, wherein the virtual timeline corresponds to the currently selected one of the low quality stream, the medium quality stream, and the high quality stream."....50

21. Claim 25: "The end user station of claim 23, wherein the virtual timeline defines a playlist for a user to view."....50

22. Claim 26:....50

23. Claim 27: "The process of claim 26, wherein the second streamlet of each of the groups of streamlets each has the same second duration and corresponds to the same second portion of the live event video in the low quality stream, the medium quality stream, and the high quality stream, the second streamlet of the low quality stream having the same bitrate as the first streamlet of the low quality stream." 52

24. Claim 28: "The process of claim 26, wherein the first and second durations are different." 52

25. Claim 30: 52

B. Ground 2: Claims 1-5, 7, 8, 10-14, 16-20, 22-28, and 30 Would Have Been Obvious in view of Ogdon, Allen, and SMIL 2.0 54

1. Claims 1, 16, 26, and 30: 54

2. Claims 2, 17, and 27: 56

3. Claims 5 and 19: 57

4. Claims 11-14 and 23-25: 57

X. GRAHAM FACTORS (NO SECONDARY CONSIDERATIONS).....58

XI. NO BASIS FOR DISCRETIONARY DENIAL 60

A. § 314(a): *Fintiv* and *General Plastic* Factors Favor Institution.....60

B. § 325(d): *Advanced Bionics* Favors Institution.....62

XII. CONCLUSION.....62

TABLE OF AUTHORITIES

Page(s)

Cases

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH,
IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020).....62

Apple Inc. v. Fintiv, Inc.,
IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020).....60

Gen. Plastic Indus. Co. v. Canon Kabushiki Kaisha,
IPR2016-01357, Paper 19 (PTAB Sept. 6, 2017).....61

Hulu LLC v. SITO Mobile R&D IP, LLC,
IPR2021-00298, Paper 11 (PTAB May 19, 2021).....60

Mediatek Inc. v. Advanced Micro Devices, Inc.,
IPR2018-00102, Paper 48 (PTAB Apr. 29, 2019).....11

Nobel Biocare Servs. AG v. Instradent USA, Inc.,
903 F.3d 1365 (Fed. Cir. 2018).....11

Sony Group Corp. v. MZ Audio Sciences, LLC,
IPR2022-01544, Paper No. 12 (PTAB Apr. 21, 2023).....62

Sotera Wireless, Inc. v. Masimo Corp.,
IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020).....61

Yita LLC v. MacNeil IP LLC,
69 F.4th 1356 (Fed. Cir. 2023).....59

Statutes

35 U.S.C. § 101.....8

35 U.S.C. § 102(b).....13, 14, 15

35 U.S.C. § 103.....8

35 U.S.C. § 312.....1

35 U.S.C. § 314(a) 60

35 U.S.C. § 325(d) 62

Other Authorities

37 C.F.R. § 42 1

37 C.F.R. § 42.8(b)(1).....1

37 C.F.R. § 42.8(b)(2).....1

37 C.F.R. § 42.8(b)(3).....2

37 C.F.R. § 42.8(b)(4).....2

37 C.F.R. § 42.10(b) 3

37 C.F.R. § 42.15(a).....3

PETITIONER'S EXHIBIT LIST

Table of Exhibits for U.S. Pat. 10,469,554 Petition for *Inter Partes* Review

Exhibit Number	Description
1001	U.S. Pat. 10,469,554 ("the '554 Patent")
1002	File History of U.S. Pat. 10,469,554
1003	Declaration of Dr. Henry Houh including Curriculum Vitae ("Houh")
1004	U.S. Patent No. 6,161,137 to Ogdon et al. ("Ogdon")
1005	International P.C.T. Publication WO 2002/075482 A2 ("Allen")
1006	Synchronized Multimedia Integration Language (SMIL 2.0) ("SMIL 2.0")
1007	U.S. Patent No. 6,848,004 to Chang ("Chang")
1008	WO1997044942 to Kliger ("Kliger")
1009	337-TA-1265 ITC Investigation Initial Determination
1010	337-TA-1265 ITC September 11, 2023 Enforcement Complaint
1011	Internet Archive Affidavit for URLs including EX1006
1012	Respondents' Notice of Prior Art in 337-TA-1265
1013	U.S. Patent No. 6,637,031 to Chou ("Chou")
1014	U.S. Provisional Application No. 60/041,770 ("Ogdon Provisional")
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, each group of streamlets comprising at least first and second streamlets, each of the streamlets corresponding to a portion of the live event video;
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; and
1[E]	wherein the first streamlet of each of the groups of streamlets has the same first duration and encodes the same first portion of the live event video in each of the low quality stream, the medium quality stream, and the high quality stream, and wherein the first streamlet of the low quality stream encodes the same first portion of the live event video at a different bitrate than the first streamlet of the high quality stream and the first streamlet of the medium quality stream.
Claim 2	
[2]	The system of claim 1, wherein the second streamlet of each of the groups of streamlets each has the same second duration and corresponds to the same second portion of the live event video in the low quality stream, the medium quality stream, and the high quality stream, the second streamlet of the low quality stream having the same bitrate as the first streamlet of the low quality stream.
Claim 3	
[3]	The system of claim 2, wherein the first and second durations are different.
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 10	
[10]	The system of claim 7, 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 11	
[11]	The system of claim 7, wherein the first web server is further configured to: receive at least one virtual timeline request over the one or more internet connections from the one or more end user stations to retrieve a virtual timeline; and send the virtual timeline to the requesting one of the end user stations over the one or more network connections.
Claim 12	
[12]	The system of claim 11, wherein the virtual timeline corresponds to the currently selected one of the low quality stream, the medium quality stream, and the high quality stream.
Claim 13	
[13]	The system of claim 11, wherein the virtual timeline defines a playlist for a user to view.
Claim 14	
[14]	The system of claim 11, wherein the virtual timeline comprises a file that is configured to define a playlist for a user to view.
Claim 16	
[16][Pre]	An end user station to stream a live event video over a network from a server for playback of the video, the content player device comprising:
16[A]	a processor;
16[B]	a digital processing apparatus memory device comprising non-transitory machine-readable instructions that, when executed, cause the processor to:
16[C][1]	establish one or more network connections between the end user station and the server,
16[C][2]	wherein the server is configured to access at least one of a plurality of groups of streamlets;

16[C][3]	wherein the live event 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,
16[C][4]	each of the low quality stream, the medium quality stream, and the high quality stream comprising a group of streamlets encoded at the same respective one of the different bitrates, each group comprising at least first and second streamlets, each of the streamlets corresponding to a portion of the live event video;
16[C][5]	wherein at least one of the low quality stream, the medium quality stream, and the high quality stream is encoded at a bit rate of no less than 600 kbps; and
16[C][6]	wherein the first streamlets of each of the low quality stream, the medium quality stream and the high quality stream each has an equal playback duration and each of the first streamlets encodes the same portion of the live event video at a different one of the different bitrates;
16[D]	select a specific 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;
16[E]	place a streamlet request to the server over the one or more network connections for the first streamlet of the selected stream;
16[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.
Claim 17	
[17]	The end user station of claim 16, wherein the second streamlet of each of the groups of streamlets each has the same second duration and corresponds to the same second portion of the live event video in the low quality stream, the medium quality stream, and the high quality stream, the second streamlet of the low quality stream having the same bitrate as the first streamlet of the low quality stream.
Claim 18	
[18]	The end user station of claim 17, wherein the first and second durations are different.
Claim 19	
[19]	The end user station of claim 16, wherein each of the first streamlets has a first duration that is the range of 0.1 to 5 seconds.

Claim 20	
[20]	The end user station of claim 16, 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 22	
[22]	The end user station 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 23	
[23]	The end user station of claim 16, wherein the end user station is further configured to: request and receive a virtual timeline; and wherein one or more streamlet requests are based on the at least one virtual timeline.
Claim 24	
[24]	The end user station of claim 23, wherein the virtual timeline corresponds to the currently selected one of the low quality stream, the medium quality stream, and the high quality stream.
Claim 25	
[25]	The end user station of claim 23, wherein the virtual timeline defines a playlist for a user to view.
Claim 26	
26[Pre]	A process executable by one or more servers to stream a live event video for playback by one or more end user stations, the process comprising:
26[A]	storing, by the one or more servers, a plurality of streams including a low quality stream, a medium quality stream, and a high quality stream,
26[B]	wherein the low quality stream, the medium quality stream, and the high quality stream each comprise a group of streamlets encoded at a respective one of a plurality of different bitrates, each group comprising at least first and second streamlets, each of the streamlets corresponding to a portion of the live event video;
26[C]	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; and
26[D]	wherein the first streamlet of each of the groups of streamlets has the same first duration and encodes the same first portion of the live event video in the low quality stream, the medium quality stream, and the

	high quality stream, the first streamlet of the low quality stream having a different one of the different bitrates than the first streamlet of the high quality stream and the first streamlet of the medium quality stream;
26[E]	receiving 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,
26[F]	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;
26[G]	retrieving 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
26[H]	sending 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 27	
[27]	The process of claim 26, wherein the second streamlet of each of the groups of streamlets each has the same second duration and corresponds to the same second portion of the live event video in the low quality stream, the medium quality stream, and the high quality stream, the second streamlet of the low quality stream having the same bitrate as the first streamlet of the low quality stream.
Claim 28	
[28]	The process of claim 26, wherein the first and second durations are different.
Claim 30	
30[Pre]	A process executable by a content player device to stream a live event video over a network from a server for playback of the video by the content player device, the process comprising:
30[A]	establishing one or more network connections between the content player device and the server,
30[B]	wherein the server accesses a plurality of streams including a low quality stream, a medium quality stream, and a high quality stream,

30[C]	wherein the low quality stream, the medium quality stream, and the high quality stream each comprise a group of streamlets encoded at a respective one of a plurality of different bitrates, each group comprising at least first and second streamlets, each of the streamlets corresponding to a portion of the live event video;
30[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; and
30[E]	wherein the first streamlet of each of the groups of streamlets has the same first duration and encodes the same first portion of the live event video in the low quality stream, the medium quality stream, and the high quality stream, the first streamlet of the low quality stream having a different bitrate than the first streamlet of the high quality stream and the first streamlet of the medium quality stream;
30[F]	selecting, by the content player device, a currently selected 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;
30[G]	placing a 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;
30[H]	receiving the requested streamlet from the server via the one or more network connections; and rendering, by the content player device, the received streamlet for playback of the live event video.

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 1-5, 7, 8, 10-14, 16-20, 22-28, and 30 ("Challenged Claims") of U.S. Pat. 10,469,554 ("the '554 Patent") (EX1001). The '554 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 '554 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 '554 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 '554 Patent is currently asserted in the following proceedings. Petitioner and its RPIs are only named parties in the District Court Litigations defined below:

- *MG Freesites Ltd et al. v. DISH Technologies LLC et al.* 3:23-cv-03674 (N.D. Cal.) (the "California Litigation")

- *DISH Technologies LLC et al. v. MG Premium Limited et al.* 2:23-cv-00552 (D. Utah) (the "Utah Litigation" and, collectively with the California Litigation, the "District Court Litigations");

- *DISH Technologies LLC et al. v. WebGroup Czech Republic A.S. et al.* 2:23-cv-00553 (D. Utah)

- *DISH Technologies LLC et al. v. Vidgo Inc. 2:23-cv-00624 (D. Utah)*

- *DISH Technologies LLC 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 intends to file IPRs on U.S. Patent Nos. 8,868,772; 9,407,564; 11,470,138; 10,469,555; 10,757,156; 10,951,680; and 11,677,798.

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

Lead Counsel:	Backup Counsel:

Frank M. Gasparo (Reg. No. 44,700) Venable LLP 151 West 42nd Street, 49th Floor New York, NY 10036 Phone: (212) 370-6273 Fax: (212) 307-5598 FMGasparo@Venable.com	William A. Hector (Reg. No. 66,823) Venable LLP 101 California Street, Suite 3800 San Francisco, CA 94111 Phone: (415) 653-3750 Fax: (415) 653-3755 WAHector@venable.com

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 ’554 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 1-5, 7, 8, 10-14, 16-20, 22-28, and 30 based on the grounds below.

Ground	Reference(s)	Challenged Claims	Basis
1	Ogdon and Allen	1-5, 7, 8, 10-14, 16-20, 22-28, and 30	103
2	Ogdon and Allen and SMIL 2.0	1-5, 7, 8, 10-14, 16-20, 22-28, and 30	103

The two grounds are supported by the Declaration of Dr. Henry Houh (EX1003) and other supporting evidence in the Exhibit List. EX1003, ¶¶ 47-48.

V. '554 PATENT

A. Summary

The '554 Patent (application no. 16/252,188) was filed on January 18, 2019 and issued on November 5, 2019. EX1001, Cover. The '554 Patent purports to relate to "multi-bitrate content streaming," such as video, over the Internet. EX1001, Abstract, 1:31-34. The '554 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 ’554 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, 6:36-47. The ’554 Patent describes encoding the same content file 200 into at least three different “quality” streams:

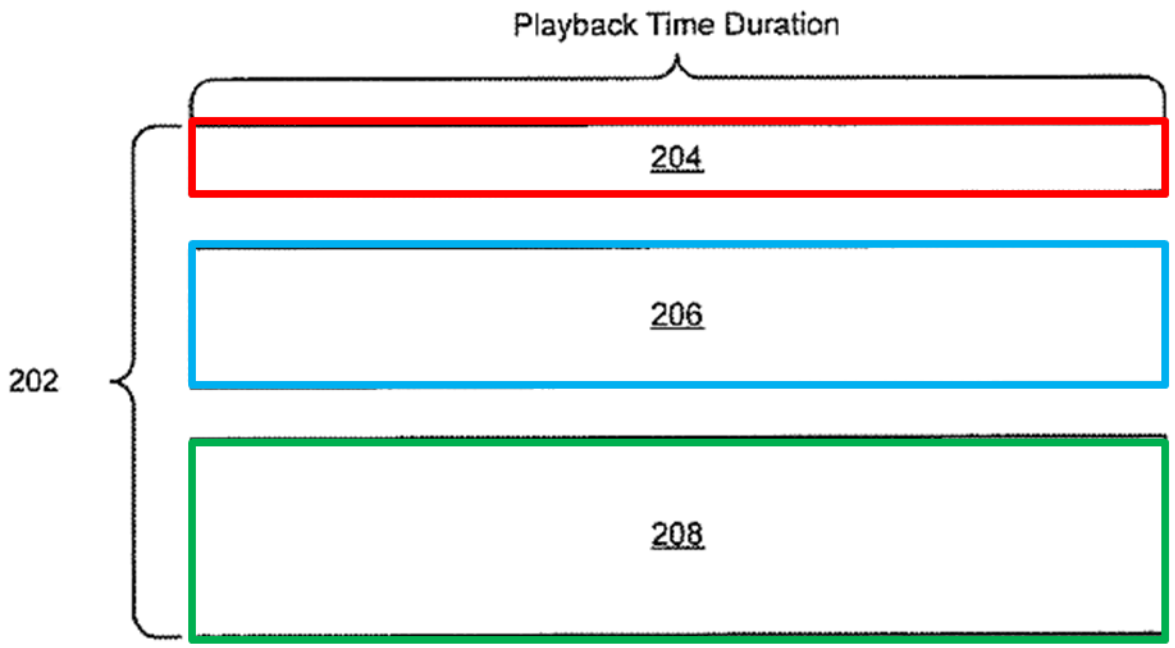

FIG. 2b

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.

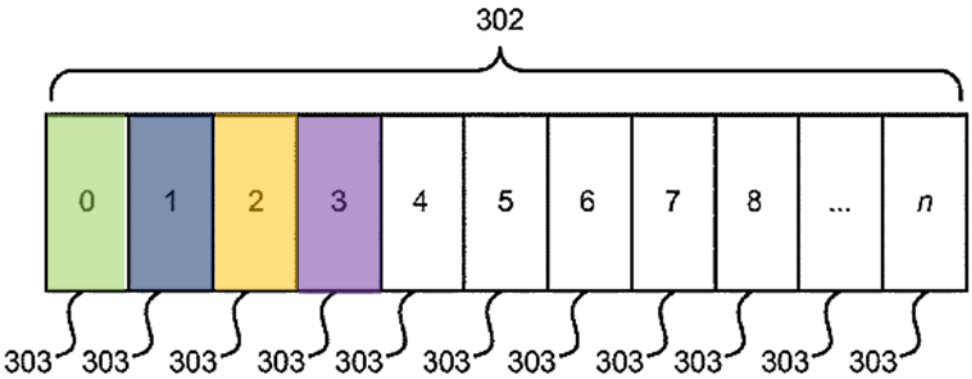

FIG. 3a

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.

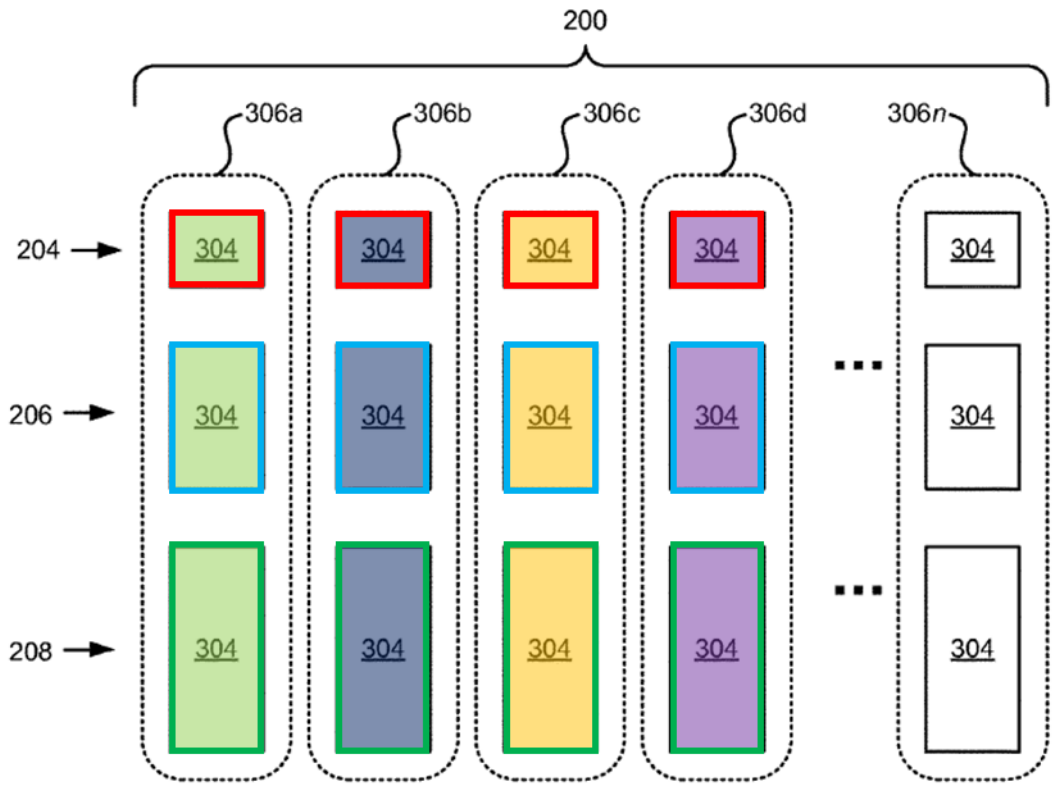

FIG. 3b

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 '554 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 '554 Patent was filed as Application No. 16,252,188 on January 18, 2019. On March 22, 2019, the Examiner rejected all claims (1-30) under 35 U.S.C. § 101 as unpatentable via non-statutory double patenting over U.S. Patent No. 9,571,551. EX1002, 83-90, 128. The Examiner also rejected the claims under 35 U.S.C. § 103

as obvious over Xu (US 7,369,610), Lango (2005,0055425), Meehan (US 2003/0103571), Tillman (US 6,496,980), Lee (US 2003/0023982), Rahman (US 7,934,159), and Seazholtz (US 5,812,786). *Id.*, 90-104.

After a telephonic interview with the Examiner, Applicant filed a terminal disclaimer, amended the claims, and argued that the cited prior art fails to teach at least groups of streamlets that encode the same portions of a media program at different qualities, for example, the prior art fails to teach "a first streamlet of each of the groups of streamlets has the same first duration and encodes the same first portion of the live event video in each of the low quality stream, the medium quality stream, and the high quality stream at different bitrates." *Id.*, 128-131. On September 13, 2019, the Examiner issued a Notice of Allowance of claims 1-30, and issued a Corrected Notice of Allowance of claims 1-30 on October 4, 2019. *Id.*, 659, 698.

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 ’554 Patent and family members of the ’554 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.

Additionally, Petitioner submits that “virtual timeline” may require construction. The ’554 Patent describes a “virtual timeline” as “a file that is configured to define a playlist for a user to view” which “may indicate that the publisher desires a user to watch a first show QMX 602a followed by QMX 602b and QMX 602c” such that “the publisher may define a broadcast schedule in a manner similar to a television station.” EX1001, 12:31-44, FIGs. 6a-6c. The ’554 Patent further explains that the Quantum Media Extension (QMX) files each

"describe an entire content file." *Id.* 12:35-36. Thus, Petitioner submits that "virtual timeline" should be construed as "a playlist of entire content files." EX1003, ¶¶ 43-46.

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 claims 1-5, 7, 8, 10-14, 16-20, 22-28, and 30 of the '554 Patent unpatentable even under the ITC's constructions. By asserting that the '554 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 '554 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 '554 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, ¶ 50. 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 ’554 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 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 '554 Patent. United States Publication No. 2004/0117427 (which claims priority to Allen) is cited on the face of the '554 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, ¶ 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 '554 Patent and was not considered by the ALJ in the ITC Investigation. Petitioner notes that during prosecution of the '554 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'554 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. 2c, 4, and 7, *with* EX1004, Abstract, 1:9-15, 3:38-63, 7:10-15, 7:40-63, 21:40-22:33, 23:40-24:3, FIG. 2; EX1005, Abstract, 1:10-12:22; EX1006, 61-62, 123-126; EX1003, ¶ 57.

Additionally, each prior art reference is reasonably pertinent to any purported problem addressed in the '554 Patent. *Id*.; EX1001, Title, Abstract, 1:30-2:67; EX1003, ¶ 58.

IX. SPECIFIC GROUNDS

A. Ground 1: Claims 1-5, 7, 8, 10-14, 16-20, 22-28, and 30 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**[1] (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

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

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 '554 Patent that it was known to use streaming "to deliver content on demand (previously recorded) or from live broadcasts." *See* Section VIII.A; EX1003, ¶ 59.

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, ¶ 60.

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, ¶¶ 61-62.

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, ¶ 63.

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, ¶ 64. 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, each group of streamlets comprising at least first and second streamlets, each of the streamlets corresponding to a portion of the live event video;"

Ogdon in view of Allen teaches 1[C]. *See* 1[B].

Ogdon further discloses that each stream (at each corresponding 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, ¶ 65.

Ogdon further discloses that each group comprises at least first and second streamlets (segments) because Ogdon teaches plural "ordered segments" and that each of the streamlets (segments) corresponds to a portion of the video because Ogdon discloses that each "subcollection of segments (*i.e.* presentation elements) [are] ordered according to their presentation sequence," (EX1004, 2:44-45) and that the presentation is "an ordered series of presentation segments" (*id.*, 3:46-47). *See also id.*, claim 21 ("there are subcollections of one or more segments, each subcollection having a predetermined presentation order"), FIG. 2C (step 508 "next collection of one or more (video) segments"). Thus, Ogdon discloses, or renders obvious, at least a first and a second streamlet (segment) corresponding to different portions of the video presentation; EX1003, ¶ 66.

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, ¶ 67; *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, ¶ 67. 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, ¶ 68.

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; and"

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, ¶ 69.

f. 1[E]: "wherein the first streamlet of each of the groups of streamlets has the same first duration and encodes the same first portion of the live event video in each of the low quality stream, the medium quality stream, and the high quality stream, and wherein the first streamlet of the low quality stream encodes the same first portion of the live event video at a different bitrate than the first streamlet of the high quality stream and the first streamlet of the medium quality stream."

Ogdon in view of Allen teaches 1[E]. *See* 1[B]-1[C].

Ogdon further discloses that the first streamlet (segment) at each quality level (bitrate) of each of the groups of streamlets has the same (or equal) first duration and encodes the same first portion of the live event video in each of the quality levels, and wherein the first streamlet of each quality level encodes the same first portion of the video at a different bitrate than the first streamlet of the other quality levels. 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."). Thus, Ogdon, as modified above (*see* 1[B]), teaches that the first streamlet of the low quality level encodes the same first portion of the video at a lower bitrate than the first streamlet of the high quality stream and the first streamlet of the medium quality stream.

Additionally, Ogdon 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, ¶¶ 70-71. Thus, Ogdon discloses that each corresponding version of each segment is the same digital content and same duration because they are replacements for one another. A POSITA would have understood this disclosure to teach an 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*.

Further, 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). 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, ¶ 72. 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*.

Additionally, as described above with respect to limitation 1[C], a POSITA would have been motivated to encode each segment of Ogdon into each corresponding quality level bitrate in real-time—which would generate corresponding segments of equal duration. EX1003, ¶ 73.

To the extent it is found that Ogdon does not disclose that the first streamlets of each of the quality level streams each has an equal playback duration, 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, ¶ 74. 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 2: "The system of claim 1, wherein the second streamlet of each of the groups of streamlets each has the same second duration and corresponds to the same second portion of the live event video in the low quality stream, the medium quality stream, and the high quality stream, the second streamlet of the low quality stream having the same bitrate as the first streamlet of the low quality stream."

Ogdon in view of Allen teaches claim 2. Ogdon further discloses that the second streamlet (segment) of each of the groups of streamlets has the same second duration and encodes the same second portion of the live event video in each of the low quality stream, medium quality stream, and high quality stream, and wherein the second streamlet of the low quality stream encodes the same second portion of the live event video at a lower bitrate than the second streamlet of the high quality stream and the second streamlet of the medium quality stream for the same reasons as described above with respect to the "first" segment. *See* 1[E]; EX1003, ¶ 75.

3. Claim 3: "The system of claim 2, wherein the first and second durations are different."

Ogdon in view of Allen teaches claim 3. A POSITA considering Ogdon would have been motivated to make the first and second durations (of the first and second segments, respectively) different. EX1003, ¶ 76. For example, a POSITA would have known that it was desirable to "reduce[] the start-up" for streaming content to

beneficially allow the user to view the stream more quickly. EX1013, 3:29-54; EX1003, ¶ 76. Given this knowledge, a POSITA would have been motivated to make a first duration (*e.g.*, of the first segment of a stream) shorter than a second duration (*e.g.*, of the second segment of a stream) because a shorter first segment when requested by the client (*e.g.*, at a low quality) can be more quickly downloaded and played back for the user while the client makes a determination of an appropriate quality level to select for the second streamlet based on a bandwidth determination from receiving the first segment. *Id.* In this way, the playback is started after only a short time and quickly adjusted to the most appropriate bandwidth version being played back for the user soon after the streaming begins. EX1003, ¶ 76.

Alternatively, it would have been "obvious to try" for a POSITA to make the first and second durations (of first and second segments, respectively) different rather than the same because this would have been a POSITA choosing between one of a finite number of possible solutions. EX1003, ¶ 77. Namely, a POSITA would have only two possible solutions for choosing segment durations: (1) all segments (including the first and second segments) have the same duration, or (2) some segments (*e.g.*, the first and second segments) each have different durations. *Id*. Therefore, it would have been obvious for a POSITA to try making the durations different as one of a finite number of 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 of each segment so that the first segment duration is different from the second segment duration would have been a simple and straightforward modification for a POSITA. *Id*.

4. 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, ¶ 78.

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, ¶ 79.

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, ¶ 80.

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, ¶ 81.

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) 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, ¶ 82.

5. 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, ¶ 83. 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 but

sufficiently short in duration to allow for rapid switching to different quality levels as necessary—this duration would have to be on the order of single digit seconds (*e.g.*, 1-5 seconds), double digit seconds, or minutes. *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*.

6. 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, ¶ 84.

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, ¶ 85.

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, ¶ 86

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, ¶ 87

7. 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* Section IX.A.1: 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 ("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"); EX1003, ¶ 88.

8. Claim 10: "The system of claim 7, 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 10. *See* 1[Pre], claim 7. EX1003, ¶ 89.

9. Claim 11: "The system of claim 7, wherein the first web server is further configured to: receive at least one virtual timeline request over the one or more internet connections from the one or more end user stations to retrieve a virtual timeline; and send the virtual timeline to the requesting one of the end user stations over the one or more network connections."

Ogdon in view of Allen teaches claim 11. Ogdon discloses that the first web server (webserver 96) is further configured to: receive at least one virtual timeline (playlist) request over the one or more internet connections (network) from the one or more end user stations (client node(s)) to retrieve a virtual timeline; and send the virtual timeline to the requesting one of the end user stations over the one or more network connections. EX1003, ¶ 90; *See* Section VII (proposed construction for "virtual timeline").

To the extent "virtual timeline" is construed more broadly than proposed by Petitioner to simply mean any playlist—including a playlist of only segments of a content file—Ogdon meets this limitation. Ogdon discloses storing a virtual timeline in the form of "scripts" that function as playlists because Ogdon discloses "ordering of predefined segments (or subcollections thereof) . . . presented and archived, and

subsequently represented" and "sequentially-ordered scripts can be created." EX1004, 3:11-23, 9:27-33 ("content manager system 104 for managing presentation scripts and data" and "distributes presentation data, such as scripting information for a presentation"). A POSITA would have understood "script" in this context to mean a playlist because it provides, in order, the alternative subcollections of segments for the client nodes to request. EX1004, claim 16 ("one of said first and said alternative subcollections identified in a predetermined script for said presentation"); EX1003, ¶ 91.

Ogdon further discloses that the host 200 ensures the sequential playback of the streams at appropriate resolutions by sending one or more commands (which may be considered virtual timelines in the form of a playlist) to the client indicating the next ordered collection of segments for the client to request from the servers at resolutions appropriate for the client based upon its network bandwidth. EX1004, FIG. 2C (step 508 "The host 200 sends one or more commands to the client presentation software 88 at each client node 56 indicating: (A) the next collection of one or more (video) segments from one or more presentation versions for presenting at the client node and (B) a list of network 70 addresses (URLs) of the content webserver(s) 96 from which this next collection of segments can be retrieved"), 3:24-63 (host transmit "presentation controlling commands to the client nodes so that there is retrieval of the presentation segments from one or more versions of the

one or more network content server nodes depending on, for example, performance characteristics of network transmissions" and clients receive "the ordered segments" requested and obtained from the webserver(s)).

Ogdon further describes such commands as a virtual timeline (playlist) because the "host 200 designates time according to at least one of the following categories: . . . a specific time interval indicated in a script command for the presentation, e.g., a 'virtual time' command as indicated by commands (rows) of the script shown in FIG. 3." EX1004, 22:10-47, FIG. 3, 25:63-26:14; EX1003, ¶¶ 92-93.

To the extent Petitioner's proposed construction is adopted and "virtual timeline" means "a playlist of entire content files," Ogdon teaches this limitation under this interpretation too. For example, Ogdon teaches a virtual playlist (script) scheduling sequential full presentations with scheduled show times because Ogdon discloses that a host "receives content webserver 96 identifications, and presentation script identifications from a show scheduler 204" which "provides the functionality of the present information for scheduling presentation performance times" and "the show scheduler 204 provides the pre-show control 136 with scheduled show times and dates." EX1004, 12:9-19; 25:43-44 ("a single script may be used for a plurality of related presentations").

Thus, based on the above disclosures of Ogdon, a POSITA would understand that Ogdon teaches the server receiving at least one virtual timeline request over the one or more internet connections from the one or more end user stations to retrieve a virtual timeline and sending the virtual timeline to the requesting one of the end user stations over the one or more network. EX1003, ¶¶ 94-95.

10. Claim 12: "The system of claim 11, wherein the virtual timeline corresponds to the currently selected one of the low quality stream, the medium quality stream, and the high quality stream."

Ogdon in view of Allen teaches claim 12. *See* claims 1, 7, and 11; EX1003, ¶ 96.

11. Claim 13: "The system of claim 11, wherein the virtual timeline defines a playlist for a user to view."

Ogdon in view of Allen teaches claim 13. *See* Claims 1, 7 and 11. Ogdon discloses that that the user views the video file segments and full video presentations that are played out by the client. EX1004, 7:59-63 ("a client presentation software system 88 that coordinates with the browser 78 for requesting, receiving and displaying presentation segments (from the network 70) as appropriate during the presentation"), 26:37-39 ("provide a particular presentation content file (e.g., of presentation elements) at a client node 56 in time for display."). Further, to the extent this claim requires allowing a user to view the actual playlist, a POSITA would have

known that a script file that contains a playlist, as described by Ogdon, is viewable by a user who opens the file in a text editor. EX1003, ¶ 97.

12. Claim 14: "The system of claim 11, wherein the virtual timeline comprises a file that is configured to define a playlist for a user to view."

Ogdon in view of Allen teaches claim 14. *See* Claims 1, 7, 11, and 13; EX1003, ¶ 98.

13. Claim 16:

a. 16[Pre]: "An end user station to stream a live event 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 16[Pre]. Ogdon discloses an end user station / 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, ¶ 99.

b. 16[A]: "a processor;

Ogdon teaches 16[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, ¶¶ 100-101. 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, ¶ 101.

c. 16[B]: "a digital processing apparatus memory device comprising non-transitory machine-readable instructions that, when executed, cause the processor to:"

Ogdon teaches 16[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, ¶¶ 102-103.

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, ¶ 104. 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. 16[C][1]: "establish one or more network connections between the end user station and the server,"

Ogdon teaches 16[C][1]. Ogdon discloses establishing one or more network connections between the end user station (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, ¶ 105.

e. 16[C][2]: "wherein the server is configured to access at least one of a plurality of groups of streamlets;"

Ogdon teaches 16[C][2]. Ogdon discloses that the server (webserver(s)) is configured to access at least one of a plurality of groups (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, ¶ 106.

f. 16[C][3]: "wherein the live event 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 16[C][3]. *See* 1[B]; EX1003, ¶ 107.

g. 16[C][4]: "each of the low quality stream, the medium quality stream, and the high quality stream comprising a group of streamlets encoded at the same respective one of the different bitrates, each group comprising at least first

and second streamlets, each of the streamlets corresponding to a portion of the live event video;"

Ogdon in view of Allen teaches 16[C][4]. *See* 1[C]; EX1003, ¶ 108.

h. 16[C][5]: "wherein at least one of the low quality stream, the medium quality stream, and the high quality stream is encoded at a bit rate of no less than 600 kbps; and"

Ogdon in view of Allen teaches 16[C][5]. *See* 1[D]; EX1003, ¶ 109.

i. 16[C][6]: "wherein the first streamlets of each of the low quality stream, the medium quality stream and the high quality stream each has an equal playback duration and each of the first streamlets encodes the same portion of the live event video at a different one of the different bitrates;"

Ogdon in view of Allen teaches 16[C][6]. *See* 1[E]; EX1003, ¶ 110.

j. 16[D]: "select a specific 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 16[D]. *See* 16[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 end user station (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, ¶ 111.

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

k. 16[E]: "place a streamlet request to the server over the one or more network connections for the first streamlet of the selected stream;"

Ogdon teaches 16[E]. Ogdon discloses placing a streamlet request to the server over the internet connection for the first streamlet of the selected stream. *See*

16[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, ¶ 112.

l. 16[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 16[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, ¶ 113.

14. **Claim 17: "The end user station of claim 16, wherein the second streamlet of each of the groups of streamlets each has the same second duration and corresponds to the same second portion of the live event video in the low quality stream, the medium quality stream, and the high quality stream, the second streamlet of the low quality stream having the same bitrate as the first streamlet of the low quality stream."**

Ogdon in view of Allen teaches claim 17. *See* claim 2; EX1003, ¶ 114.

15. **Claim 18: "The end user station of claim 17, wherein the first and second durations are different."**

Ogdon in view of Allen teaches claim 18. *See* claim 3; EX1003, ¶ 115.

16. **Claim 19: "The end user station of claim 16, 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 19. *See* claim 5; EX1003, ¶ 116.

17. **Claim 20: "The end user station of claim 16, 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 20. *See* claim 8; EX1003, ¶ 117.

18. **Claim 22: "The end user station 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 22. *See* claim 10; EX1003, ¶ 118.

19. Claim 23: "The end user station of claim 16, wherein the end user station is further configured to: request and receive a virtual timeline; and wherein one or more streamlet requests are based on the at least one virtual timeline."

Ogdon in view of Allen teaches claim 23. *See* claim 11; EX1003, ¶ 119.

20. Claim 24: "The end user station of claim 23, wherein the virtual timeline corresponds to the currently selected one of the low quality stream, the medium quality stream, and the high quality stream."

Ogdon in view of Allen teaches claim 24. *See* claim 12; EX1003, ¶ 120.

21. Claim 25: "The end user station of claim 23, wherein the virtual timeline defines a playlist for a user to view."

Ogdon in view of Allen teaches claim 25. *See* claim 13; EX1003, ¶ 121.

22. Claim 26:

a. 26[Pre]: "A process executable by one or more servers to stream a live event video for playback by one or more end user stations, the process comprising:"

Ogdon in view of Allen teaches 26[Pre]. *See* claim 1[Pre]; EX1003, ¶ 122.

b. 26[A]: "storing, by the one or more servers, a plurality of streams including a low quality stream, a medium quality stream, and a high quality stream,"

Ogdon in view of Allen teaches this 26[A]. *See* claim 1[A]-1[B]; EX1003, ¶ 123.

c. 26[B]: "wherein the low quality stream, the medium quality stream, and the high quality stream each comprise a group of streamlets encoded at a respective one of a plurality of different bitrates, each group comprising at least first and

second streamlets, each of the streamlets corresponding to a portion of the live event video;"

Ogdon in view of Allen teaches 26[B]. *See* claim 1[C]; EX1003, ¶ 124.

d. 26[C]: "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; and"

Ogdon in view of Allen teaches 26[C]. *See* claim 1[D]; EX1003, ¶ 125.

e. 26[D]: "wherein the first streamlet of each of the groups of streamlets has the same first duration and encodes the same first portion of the live event video in the low quality stream, the medium quality stream, and the high quality stream, the first streamlet of the low quality stream having a different one of the different bitrates than the first streamlet of the high quality stream and the first streamlet of the medium quality stream;"

Ogdon in view of Allen teaches 26[D]. *See* claim 1[E]; EX1003, ¶ 126.

f. 26[E]: "receiving 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,"

Ogdon in view of Allen teaches 26[E]. *See* claim 4[A]-4[B]; EX1003, ¶ 127.

g. 26[F]: "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 26[F]. *See* claim 4[B]; EX1003, ¶ 128.

h. **26[G]: "retrieving 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 26[G]. *See* claim 4[C]; EX1003, ¶ 129.

i. **26[H]: "sending 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 26[H]. *See* claim 4[D]; EX1003, ¶ 130.

23. **Claim 27: "The process of claim 26, wherein the second streamlet of each of the groups of streamlets each has the same second duration and corresponds to the same second portion of the live event video in the low quality stream, the medium quality stream, and the high quality stream, the second streamlet of the low quality stream having the same bitrate as the first streamlet of the low quality stream."**

Ogdon in view of Allen teaches claim 27. *See* claim 17; EX1003, ¶ 131.

24. **Claim 28: "The process of claim 26, wherein the first and second durations are different."**

Ogdon in view of Allen teaches claim 28. *See* claim 3; EX1003, ¶ 132.

25. **Claim 30:**

a. **30[Pre]: "A process executable by a content player device to stream a live event video over a network from a server for playback of the video by the content player device, the process comprising:"**

Ogdon teaches 30[Pre]. *See* claim 16[Pre]-16[B]; EX1003, ¶ 133.

b. 30[A]: "establishing one or more network connections between the content player device and the server,"

Ogdon teaches 30[A]. *See* claim 16[C][1]; EX1003, ¶ 134.

c. 30[B]: "wherein the server accesses a plurality of streams including a low quality stream, a medium quality stream, and a high quality stream,"

Ogdon in view of Allen teaches 30[B]. *See* claim 16[C][2]-16[C][3]; EX1003, ¶ 135.

d. 30[C]: "wherein the low quality stream, the medium quality stream, and the high quality stream each comprise a group of streamlets encoded at a respective one of a plurality of different bitrates, each group comprising at least first and second streamlets, each of the streamlets corresponding to a portion of the live event video;"

Ogdon in view of Allen teaches 30[C]. *See* claim 16[C][4]; EX1003, ¶ 136.

e. 30[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; and"

Ogdon in view of Allen teaches 30[D]. *See* claim 16[C][5]; EX1003, ¶ 137.

f. 30[E]: "wherein the first streamlet of each of the groups of streamlets has the same first duration and encodes the same first portion of the live event video in the low quality stream, the medium quality stream, and the high quality stream, the first streamlet of the low quality stream having a different bitrate than the first streamlet of the high quality stream and the first streamlet of the medium quality stream;"

Ogdon in view of Allen teaches 30[E]. *See* claim 16[C][6]; EX1003, ¶ 138.

g. 30[F]: "selecting, by the content player device, a currently selected 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 30[F]. *See* claim 16[D]; EX1003, ¶ 139.

h. 30[G]: "placing a 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;"

Ogdon teaches 30[G]. *See* claim 16[E]; EX1003, ¶ 140.

i. 30[H]: "receiving the requested streamlet from the server via the one or more network connections; and rendering, by the content player device, the received streamlet for playback of the live event video."

Ogdon teaches 30[H]. *See* claim 16[F]; EX1003, ¶ 141.

B. Ground 2: Claims 1-5, 7, 8, 10-14, 16-20, 22-28, and 30 Would Have Been Obvious in view of Ogdon, Allen, and SMIL 2.0

The sections of Ground 1 (Section IX.A) are incorporated into this section by reference. As explained above in Section IX.A, Ogdon in view of Allen teaches claims 1-5, 7, 8, 10-14, 16-20, 22-28, and 30. 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, ¶ 142.

1. Claims 1, 16, 26, and 30:

As explained above in Section IX.A, Ogdon in view of Allen teaches all limitations of independent claims 1, 16, 26, and 30.

To the extent it is argued that Ogdon in view of Allen lack certain limitations, for example that each corresponding first streamlet has the same or equal first duration (as described in limitations 1[E], 16[C][6], 26[D], and 30[E]), 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, ¶¶ 143-146. A POSITA would have been motivated to ensure that each alternative segment in Ogdon had the same or equal duration, *e.g.*, 5 seconds as taught by SMIL 2.0, in order to ensure that when a switch is made to an alternative segment the alternative segment is a perfect replacement for preferred segment and so that when switching to a different version during the presentation the user still experiences a seamless presentation. EX1003, ¶ 146. 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 alternative corresponding segment is the same duration would have been a straightforward modification for a POSITA. *Id*.

2. Claims 2, 17, and 27:

Ogdon in view of Allen and SMIL 2.0 teaches that the second streamlet of each of the groups of streamlets has the same second duration in each of the quality levels for the same reasons as described above with respect to the "first" segment. *See* Section IX.B.1; EX1003, ¶ 147.

3. Claims 5 and 19:

Ogdon in view of Allen and SMIL 2.0 teaches a streamlet duration of 5 seconds. *See* Section IX.B.1; EX1003, ¶ 148.

4. Claims 11-14 and 23-25:

As explained above, Ogdon in view of Allen teaches these claims. To the extent it is determined that Ogdon fails to teach a "virtual timeline" in the form of "a playlist of entire content files," SMIL 2.0 teaches such limitations. *See* Section VII (proposed construction for "virtual timeline"). For example, SMIL 2.0 teaches generating a playlist of entire content files "vid2.mpg" followed by "vid3.mpg" using the "<seq>" element:

```
<seq>
   <img src="img1.jpg" />
   <video src="vid2.mpg" />
   <video src="vid3.mpg" />
</seq>
```

EX1006, 207.

A POSITA would have been motivated to create a virtual timeline playlist in Ogdon of entire content files, as taught by SMIL 2.0, in order to set out a video presentation schedule of similar presentations for clients to view in succession. EX1003, ¶¶ 149-150. 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 and generating a playlist of entire

content files would have been a straightforward modification for a POSITA. EX1003, ¶ 150.

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 ’554 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 '554 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).

Further, 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 disclsoes 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 16[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 Litigations.

Third Factor. This factor favors institution given the District Court Litigations are in their earliest stages because the case management conference has not yet occurred in the California Litigation and no answer has been submitted yet

in the Utah Litigation, thus no discovery, claim construction, nor any other significant milestones have occurred.

Fourth Factor. This factor favors institution. Petitioner stipulates that if this '554 Patent IPR is instituted, Petitioner will not pursue invalidity grounds in the District Court Litigations of the Challenged Claims on any ground raised, or that could have been reasonably raised in this IPR for the Challenged Claims. *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12, at 18-19 (PTAB Dec. 1, 2020).

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

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

Additionally, *Gen. Plastic Indus. Co. v. Canon Kabushiki Kaisha* factors weigh against discretionary denial because there is no prior petition filed on the challenged claims of the'554 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 '554 Patent. Further, Ogdon, Allen, and SMIL 2.0 are not cited on the face of the '554 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 1-5, 7, 8, 10-14, 16-20, 22-28, and 30.

DATED: October 13, 2023

Respectfully submitted,

By: /Frank M. Gasparo/
Frank M. Gasparo (Reg. No. 44,700)
Attorney for Petitioner
VENABLE LLP
151 W. 42nd Street, 49th Floor
New York, NY 10036
T 212-370-6273
F 212-307-5598
fmgasparo@Venable.com

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 13,616 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 CFR § 42.24(a)). This is within the 14,000 word limit allowed under § 42.24(a)(1)(i).

DATED: October 13, 2023

Respectfully submitted,

By: /Frank M. Gasparo/

Frank M. Gasparo (Reg. No. 44,700)
Attorney for Petitioner
VENABLE LLP
151 W. 42nd Street, 49th Floor
New York, NY 10036
T 212-370-6273
F 212-307-5598
fmgasparo@Venable.com

CERTIFICATE OF SERVICE

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

- Petition for *Inter Partes* Review of U.S. Patent 10,469,554
- Exhibits
- Petitioner's Power of Attorney

to be served via overnight delivery on the USPTO Patent Center (PAIR) Correspondence Address for U.S. Patent 10,469,554 as follows:

54583 - DISH Technologies L.L.C.
9601 S. Meridian Blvd
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:

BAKER BOTTS L.L.P.
G. Hopkins Guy, III (SBN 124811)
Hien "David" Lien (SBN 313754)
1001 Page Mill Road
Building One, Suite 200
Palo Alto, CA 94304-1007

Email: Hop.guy@bakerbotts.com
david.lien@bakerbotts.com

DATED: October 13, 2023

Respectfully submitted,

By: /Frank M. Gasparo/

Frank M. Gasparo (Reg. No. 44,700)
Attorney for Petitioner
VENABLE LLP
151 W. 42nd Street, 49th Floor
New York, NY 10036
T 212-370-6273
F 212-307-5598
fmgasparo@Venable.com