

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 10,757,156

Issue Date: August 25, 2020

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

Inter Partes Review No. IPR2024-00513

**PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT 10,757,156
CHALLENGING CLAIMS 1-18**

UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.1 *et seq.*

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PETITIONER’S EXHIBIT LIST

Table of Exhibits for U.S. Pat. 10,757,156 Petition for *Inter Partes* Review

Exhibit Number	Description
1001	U.S. Pat. 10,757,156 (“the ’156 Patent”)
1002	File History of U.S. Pat. 10,757,156
1003	Declaration of Dr. Henry Houh including Curriculum Vitae (“Houh declaration”)
1004	International P.C.T. Publication WO 2002049343 to Leaning et al. (“Leaning”)
1005	<RESERVED>
1006	<RESERVED>
1007	U.S. Patent No. 6,848,004 to Chang (“Chang”)
1008	WO1997044942 to Kliger (“Kliger”)
1009	337-TA-1265 ITC Investigation Initial Determination
1010	337-TA-1265 ITC September 11, 2023 Enforcement Complaint
1011	Internet Archive Affidavit for URLs including EX1019
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1013	<RESERVED>
1014	<RESERVED>
1015	<RESERVED>
1016	<RESERVED>
1017	U.S. Patent Publication No. 2003/0055995 to Ala-Honkola (“Ala-Honkola”)

1018	File History of U.S. Patent No. 8,868,772
1019	HTTP 1.1 Protocol - RCF2616 (https://web.archive.org/web/20020802040147/https://www.ietf.org/rfc/rfc2616.txt)

TABLE A: LISTING OF CLAIMS

Claim Designation	Claim Language
Claim 1	
1[Pre]	An apparatus for rendering a video that is adaptively received as a digital stream from a video server over a network, the apparatus comprising;
1[A][1]	a media player operating on the apparatus,
1[A][2]	wherein the media player is configured to stream the video from the video server via at least one transmission control protocol (TCP) connection over the network,
1[A][3]	wherein the video server stores multiple different copies of the video encoded at different bit rates as multiple sets of streamlets,
1[A][4]	wherein each of the streamlets yields a different portion of the video on playback,
1[A][5]	wherein the streamlets across the different copies yield the same portions of the video on playback,
1[A][6]	and wherein the streamlets in the different copies are aligned in time such that the streamlets that play back the same portion of the video for the different copies each begin at the same playback time in relation to the beginning of the video, and wherein the media player streams the video by:
1[B][1]	requesting sequential streamlets of one of the copies from the video server according to the playback times of the streamlets by transmitting hypertext transport protocol (HTTP) GET requests that identify the selected streamlets stored by the video server,
1[B][2]	wherein the sequential streamlets are selected by the media player from the based upon successive determinations to shift the playback quality to a higher or lower quality one of the different copies of the video;
1[C]	repeatedly generating, by the media player, a factor relating to the performance of the network that is indicative of an ability to sustain the streaming of the video;
1[D]	adapting the successive determinations to shift the playback quality based on the factor to achieve continuous playback of the video using the streamlets of the highest quality copy of the video that is determined to be sustainable at that time; and

1[E]	presenting the video for playback by providing the requested streamlets in order of ascending start time.
Claim 2	
[2]	The apparatus of claim 1, wherein the apparatus is configured to establish multiple Transmission Control Protocol (TCP) connections with a content server, and request streamlets of varying bitrates.
Claim 3	
[3]	The apparatus of claim 1, wherein each streamlet further comprises a portion of a content file provided by the server.
Claim 4	
[4]	The apparatus of claim 1, wherein the requesting the sequential streamlets comprises the apparatus transmitting hypertext transport protocol (HTTP) GET requests for selected streamlets, wherein each of the HTTP GET requests identifies the separate file stored by the video server that corresponds to the requested streamlet.
Claim 5	
[5]	The apparatus of claim 1 wherein each of the streamlets of each of the different copies is independently requestable and playable by the apparatus.
Claim 6	
[6]	The apparatus of claim 4, wherein the requesting of the sequential streamlets comprises the end user device transmitting hypertext transport protocol (HTTP) GET requests for selected streamlets.
Claim 7	
[7]	The apparatus of claim 1 wherein each of the streamlets in each of the plurality of different copies is a separate file stored by the video server.
Claim 8	
[8]	The apparatus of claim 1 wherein the media player upshifts to a higher quality one of the different copies when the factor is greater than a first threshold and downshifts to a lower quality one of the different copies when the factor is less than a second threshold.
Claim 9	
[9]	The apparatus of claim 1, wherein the requesting the sequential streamlets comprises the apparatus transmitting hypertext transport protocol (HTTP) GET requests for selected streamlets, and wherein each of the HTTP GET requests identifies a separately-identifiable portion of the one or more files that corresponds to the requested streamlet.

Claim 10	
[10]	The apparatus of claim 1, wherein the apparatus is configured to initially request low quality streamlets to enable instant playback of the content file, and subsequent upshifting according to the performance factor.
Claim 11	
[11]	The end user device of claim 1 wherein each of the streamlets in each of the plurality of different copies is a separately-identifiable portion of one or more files stored by the video server.
Claim 12	
[12]	The apparatus of claim 1 wherein the apparatus is a mobile computing device comprising a processor and a non-transitory data storage.
Claim 13	
13[PRE]	A method executable by an end user device to stream a video received via a connection with a server over a network, the method comprising:
13[A][1]	requesting, by the end user device, wherein the end user device streams the video from the video server via at least one transmission control protocol (TCP) connection over the network,
13[A][2]	a plurality of sequential streamlets of one of the copies from the server based on playback times of the streamlets wherein multiple different copies of the video encoded at different bit rates are stored as multiple sets of streamlets on the server,
13[A][3]	wherein each of the streamlets yields a different portion of the video on playback,
13[A][4]	wherein the streamlets across the different copies yield the same portions of the video on playback,
13[A][5]	and wherein each of the streamlets comprises a playback time such that each of the streamlets for each of the different copies that encode the same portion of the video begins at the same playback time in relation to the beginning of the video,
13[A][6]	wherein the end user device requests the streamlets by transmitting hypertext transport protocol (HTTP) GET requests that each identify one of the requested streamlets stored by the server; and wherein the end user device streams the video by:
13[B]	repeatedly generating, by the end user device, a factor that is indicative of an ability to sustain the streaming of the video;
13[C]	making successive determinations by the end user device to shift the playback quality based on the factor to achieve continuous playback

	of the video using the streamlets of the highest quality copy determined sustainable at that time; and
13[D]	presenting the video by playing back the requested media streamlets on the end user device in order of ascending playback time.
Claim 14	
[14]	The method of claim 13 wherein the making of the successive determinations to shift comprises upshifting to a higher quality one of the different copies when the at least one factor is greater than a first threshold and downshifting to a lower quality one of the different copies when the at least one factor is less than a second threshold.
Claim 15	
[15]	The method of claim 14 wherein each of the streamlets of each of the different copies is independently requestable and playable by the end user device.
Claim 16	
[16]	The method of claim 13 wherein each of the streamlets in each of the plurality of different copies is a separately-identifiable portion of one or more files stored by the video server.
Claim 17	
[17]	The method of claim 16 wherein the requesting of the sequential streamlets comprises the end user device transmitting hypertext transport protocol (HTTP) GET requests for selected streamlets, and wherein each of the HTTP GET requests identifies the separately-identifiable portion of the one or more files that corresponds to the requested streamlet.
Claim 18	
[18]	The method of claim 13, wherein the video captures a live event, and wherein the streamlets of the different copies are available to the end user device while the live event is occurring.

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 1-18 (“Challenged Claims”) of U.S. Patent No. 10,757,156 (“the ’156 Patent”) (EX1001). The ’156 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 ’156 Patent relates to adaptive-rate shifting of streaming content, including a server storing sets of files at different bit rates and the client repeatedly generating a factor relating to the network that is indicative of an ability to sustain streaming at the highest quality set of files determined sustainable at that time. The Grounds advanced here were not relied upon during prosecution of the ’156 Patent and teach such adaptive-rate shifting of content streaming.

II. MANDATORY NOTICES

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

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

B. Related Proceedings – § 42.8(b)(2)

The '156 Patent is currently asserted in the below proceedings.¹

- *Aylo Freesites Ltd f/k/a MG Freesites Ltd v. DISH Technologies LLC*, IPR2024-00147 (hereinafter “Ogdon-based IPR” because it relies on U.S. Patent No. 6,161,137 “Ogdon” as a primary reference)
- *Aylo Freesites Ltd f/k/a/ MG Freesites Ltd v. DISH Technologies LLC et al.* 1:24-cv-00086 (D. Del.) (the “Delaware Litigation”)
- *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. A Parent Media Co. Inc. et al.* 1:23-cv-01000 (D. Del.)
- *DISH Technologies LLC v. fuboTV Media Inc.* 1:23-cv-00986 (D. Del.)
- *DISH Technologies LLC v. Beachbody, LLC d/b/a/ BODi* 1:23-cv-00987 (D. Del.)
- *DISH Technologies LLC v. Vidgo Inc.* 2:23-cv-00624 (D. Utah)
- *DISH Technologies LLC v. BritBox, LLC* 1:23-cv-08971 (S.D.N.Y)

¹ The '156 Patent was also at issue in *MG Freesites Ltd et al. v. DISH Technologies LLC et al.* 3:23-cv-03674 (N.D. Cal.) (the “California Litigation”), but that case was dismissed for lack of personal jurisdiction on January 24, 2024.

- *DISH Technologies LLC v. Yanka Industries, Inc. d/b/a/ MasterClass*
1:23-cv-01305 (D. Del.)

Petitioner and its RPIs are only named parties in the Ogdon-based IPR and the Delaware Litigation defined above.

Petitioner has also filed Ogdon-based IPRs on Patent Owner's related U.S. Patent Nos. 8,868,772 (IPR2024-00048); 9,407,564 (IPR2024-00047); 11,470,138 (IPR2024-00044); 10,469,554 (IPR2024-00045); 10,951,680 (IPR2024-00046); 11,677,798 (IPR2024-00043); and 10,469,555 (IPR2024-00146). Additionally, Petitioner is concurrently filing IPRs based on the same recently discovered International P.C.T. Publication WO 2002049343 to Leaning et al. ("Leaning") relied on here on U.S. Patent Nos. 8,868,772 (IPR2024-00519); 9,407,564 (IPR2024-00518); 10,469,554 (IPR2024-00514); 10,469,555 (IPR2024-00515); 10,951,680 (IPR2024-00516); 11,470,138 (IPR2024-00512); and 11,677,798 (IPR2024-00517).

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

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

III. CERTIFICATION OF GROUNDS FOR STANDING

Petitioner certifies that the '156 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 1-18 based on the grounds below.

Ground	Reference(s)	Challenged Claims	Basis
1	Leaning	1-18	103
2	Leaning and Ala-Honkola	1-18	103

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

V. '156 PATENT

A. Summary

The '156 Patent (Application No. 16/291,343) was filed on March 4, 2019, which is a continuation of Application No. 15/207,172 (U.S. 10,225,304), which is a continuation of Application No. 14/516,303 (U.S. 9,407,564), which is a continuation of Application No. 11/116,783 (U.S. 8,868,772), which claims priority to U.S. Provisional No. 60/566,831 filed on Apr. 30, 2004. The '156 Patent issued on August 25, 2020. EX1001, Cover.

The '156 Patent relates to “adaptive-rate shifting of streaming content,” such as video, over the Internet. EX1001, Abstract, 1:25-28.

The '156 Patent teaches “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, 6:20-34. As shown in Figure 2b below, the '156 Patent describes encoding the same content file into three different “quality” streams: low, medium, and high.

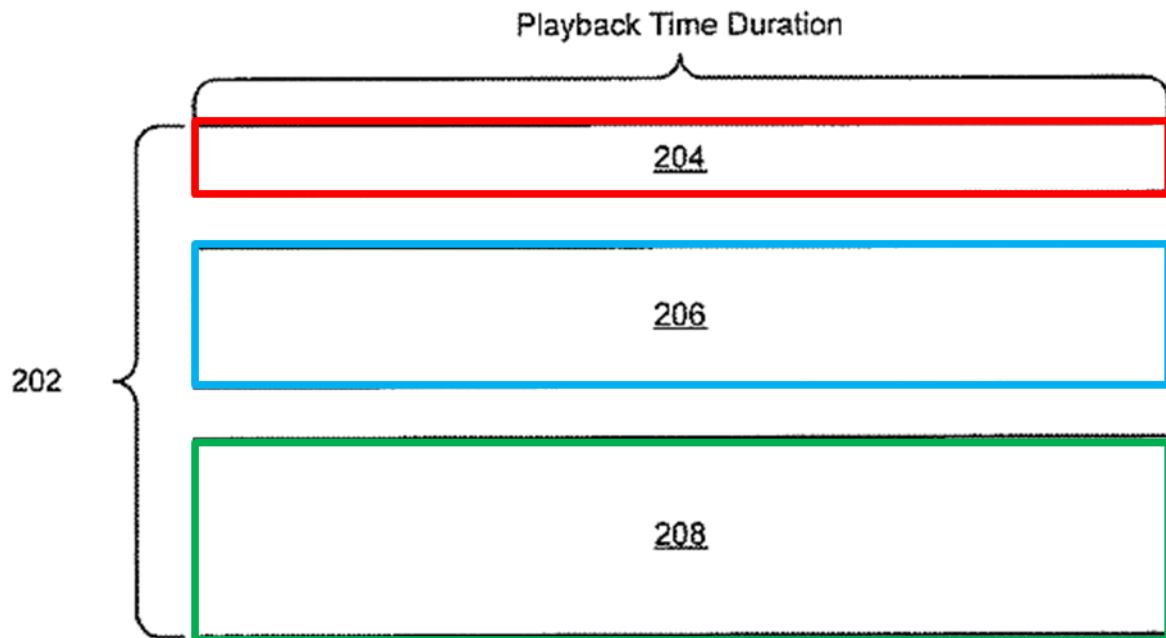


FIG. 2b

Id., FIG. 2b (annotated, low quality (red, 204), medium quality (blue, 206), and high quality (green, 208)), 6:64-7:8.

Each stream (204, 206, and 208) is “divided into a plurality of streamlets 212” 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.*, 7:9-21. This is shown in Figure 2c below.

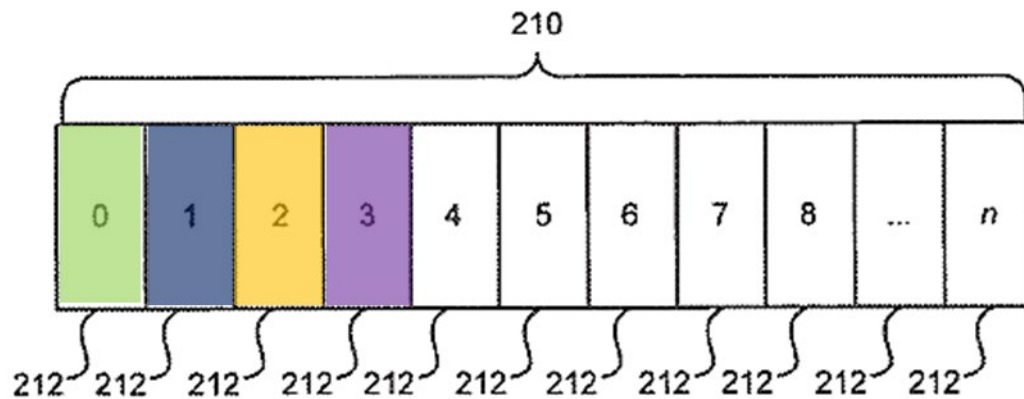


FIG. 2c

Id., FIG. 2c (annotated).

As the client receives a streamlet, it “calculates 708 a performance ratio” and “obtain[s] a performance factor.” *Id.*, 12:28-65, FIGs. 6 and 7. Thereafter, the client determines whether to upshift or downshift the stream quality based upon comparing the performance factor versus trigger thresholds and makes a “determination of whether use of the higher quality stream is sustainable.” *Id.*, 13:1-40.

B. Prosecution History

The '156 Patent was filed as Application No. 16/291,343 on March 4, 2019. On August 23, 2019, the United States Patent Office (“USPTO”) Examiner issued a non-final rejection of all pending claims. EX1002, 69-83. For instance, claims 1, 3,

5, 7, 9-11, 13-20 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Publication No. 2002/0144276 to Radford; claims 2, 12 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Radford and U.S. Patent No. 6,880,017 to Maree; and claims 4, 6, 8 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Radford and U.S. Publication No. 2003/0055995 to Ala-Honkola. *Id.* The Examiner found that Ala-Honkola taught that “the streamlet comprises a Hyper Text Transfer Protocol file” and “selecting a suitable transmission speed rate for the media stream and correspondingly a suitable data source” such that “the need of special media stream server is avoided.” *Id.*, 81.

On February 24, 2020, Applicant did not traverse the above findings of the Examiner with respect to Ala-Honkola in its response, but significantly amended the claims including deleting limitations that were rejected under 35 U.S.C. § 112. *Id.*, 91-102.

Based on the newly-amended language, Applicant argued the prior art “lacks any teaching . . . that the video server stores multiple different copies of the video encoded at different bit rates as multiple sets of streamlets, wherein each of the streamlets yields a different portion of the video on playback, wherein the streamlets across the different copies yield the same portions of the video on playback, and wherein the streamlets in the different copies are aligned in time such that the

streamlets that play back the same portion of the video for the different copies each begin at the same playback time in relation to the beginning of the video.” *Id.*, 91.

Then, after an Examiner-initiated interview where Applicant agreed to make all independent claims parallel to claim 1 (*id.*, 122), the Examiner issued a Notice of Allowance on April 30, 2020 (*id.*, 123-138).

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, no constructions are necessary. However, Petitioner acknowledges that in the ITC Investigation between

Patent Owner and iFIT Inc., the Chief Administrative Law Judge (“ALJ”) construed “streamlet” as “any sized portion of the content file.” EX1009, 38-43. The ALJ also construed “a factor relating to the performance of the network that is indicative of an ability to sustain the streaming of the video” according to its plain and ordinary meaning, “e.g., one or more factors relating to the performance of the network that is indicative of an ability to sustain the streaming of the video.” *Id.*, 53-61. Finally, the ALJ construed “repeatedly generating . . . a factor” as “generating a factor more than once” and construed “successive determinations” according to its plain and ordinary meaning. *Id.*, 61-64.

The PTAB is not bound by the ITC’s constructions. *Mediatek Inc. v. Advanced Micro Devices, Inc.*, IPR2018-00102, Paper 48 (Final Written Decision), at 10-11 (PTAB Apr. 29, 2019) (citing *Nobel Biocare Servs. AG v. Intradent USA, Inc.*, 903 F.3d 1365, 1375 (Fed. Cir. 2018)). Nevertheless, as shown herein, the asserted grounds render claims 1-18 of the ’156 Patent unpatentable even under the ITC’s constructions. By asserting that the ’156 Patent claims are unpatentable under the ITC’s constructions, Petitioner is not conceding that those constructions are correct and reserves its rights to challenge those constructions in any future proceeding.

In the ITC Investigation, iFIT proposed a design-around with respect to certain limitations of other patents in the family of the ’156 Patent. In response, DISH argued that even where limitations “require repeated up- and down-shifting,

the single, initial adaptive stream selection performed by iFIT's Redesigned Products *is equivalent*.” EX1010, 32 (emphasis added). Thus, although Petitioner does not necessarily agree with Patent Owner, Patent Owner should be held to its argument that a “single, initial adaptive stream selection” is equivalent to limitations that require repeated up- and down-shifting.

VIII. OVERVIEW OF THE PRIOR ART

A. State of the Art

The '156 Patent admits in the “Description of Related Art” section that “streaming media” was known, including streaming of “audio/video,” including on demand and live broadcasts. EX1001, 1:41-51. The '156 Patent further admits that TCP connections were known and that “[m]ost streaming solutions use a TCP connection” (*id.*, 2:16-50) and admits later in the Specification that HTTP GET requests were “standard” (*id.*, 9:40-42). Further, Patent Owner admits that the “standard HTTP/TCP protocol” is “the web standard upon which the Internet is built.” See *DISH Technologies LLC et al v. Aylo Premium Limited et al* Case No. 2:23-cv-00552-HCN, D.I. 1 at ¶ 30.

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, ¶¶ 48-49. For example, Chang describes “real time measurement and prediction of bandwidth for

adaptive content delivery of rich media according to available user bandwidth.” EX1007, Abstract. Chang discloses a client (via java applets) that performs real time bandwidth measurement according to user’s available bandwidth and fetches the corresponding bandwidth sensitive track content from the server via HTTP requests. *Id.*, 7:43-53, 8:59-9:5, 9:45-51, 10:15-14, 10:35-58. In another example, Kliger teaches a media player device that requests from a server the appropriate bandwidth object depending on network bandwidth. EX1008, 3:25-32, 5:25-28, 9:32-10:4, 12:33:13:8, claim 3.

B. Leaning

Leaning (EX1004) was filed on December 14, 2001 and published on June 20, 2002. Leaning is prior art under at least (pre-AIA) 35 U.S.C. § 102(b). Leaning is not cited on the face of the ’156 Patent² nor was it considered by the ALJ in the ITC action.

² As will be explained in Section XI, *infra*, a different United States Pre-Grant Publication (US2004/0030547) to Leaning titled “Encoding Audio Signals” with claims drawn to encoding of audio signals was cited on the face of a parent to the ’156 Patent. This publication is not related, *i.e.*, outside the patent family, to the

Leaning discloses delivery of video over the internet from a server to a client terminal by dividing the video into a sequence of “sub-files each of which is independently requested by the terminal, which thereby has control of the rate of delivery” and “switching between alternative sub-file sets representing alternative delivery modes of data rates.” EX1004, Abstract. Leaning further explains that a “server stores two or more versions of the recording, recorded at different compression rates” and client terminal’s “player program is able to switch automatically between them” by using an “index file” that provides a list of the data rates available and each set of sub-files for each different rate. EX1004, 6:5-7:5. The client in Leaning makes repeated assessments relating to network characteristics and determines to request a next sub-file of a higher (or lower) rate based on these assessments. EX1004, 8:1-9:8.

C. Ala-Honkola

Ala-Honkola (EX1017) was filed on October 10, 2001 and published on March 20, 2003. Ala-Honkola is prior art under at least (pre-AIA) 35 U.S.C. § 102(b). Ala-Honkola is cited on the face of the ’156 Patent and was used as a

Leaning reference presented here and was not considered during examination other than being included in a lengthy IDS.

secondary reference to reject the claims during prosecution, but was not considered in the ITC Investigation. The grounds involving Ala-Honkola are new and combine Ala-Honkola with a primary reference that was not considered by the Examiner.

Ala-Honkola discloses adaptive streaming of content including video. EX1017, Abstract. Ala-Honkola further teaches storing multiple copies of the content at different bitrates at a server and indexing the different quality copies of the content by time. *Id.*, ¶¶ 10, 22, 24, 25, 30-32, 46, 45, FIG. 1. Ala-Honkola further teaches a client making HTTP GET requests over multiple TCP connections for copies of a file at a server at different quality levels by requesting specific byte ranges (timing marks) and the client repeatedly checking the sustainability of streaming at the current bitrate and making repeated requests for higher or lower qualities at the present timing marks based on changing bandwidth. *Id.*, ¶¶ 4, 7-12, 14, 15, 30-45, FIGs. 1-2.

D. Analogous Art

Each prior art reference is analogous art to the claimed invention in the '156 Patent, and each is in the same field of endeavor of adaptive-rate streaming based on network conditions. *Compare* EX1001, title, Abstract, 1:25-28, 2:57-60, 3:5-4:12, FIGs. 2c, 4, and 7, *with* EX1004, Abstract, 6:5-7:5, 8:1-9:8, FIGs. 1-5; EX1019, 1, 6, 16, 31-47; EX1017, Abstract, ¶¶ 1, 10-11, 14, 25, 31-33, 38, FIGs. 1-2.

Additionally, the prior art references are reasonably pertinent to any purported problem addressed in the '156 Patent, such as “alleviat[ing] the problems of reliability, efficiency, and latency” and “offer[ing] instantaneous viewing” using “multiple connections between a source and a destination, requesting varying bitrate streams depending upon network conditions” *Id.*; EX1001, 2:51-2:60; EX1003, ¶¶ 54-55.

IX. SPECIFIC GROUNDS

A. Ground 1: Claims 1-18 Would Have Been Obvious in view of Leaning

1. Claim 1

- a. 1[Pre]: “An apparatus for rendering a video that is adaptively received as a digital stream from a video server over a network, the apparatus comprising;”

Whether or not the preamble is limiting, Leaning teaches 1[Pre]. Leaning discloses an apparatus (terminals 3) for rendering a video adaptively received as a digital stream from a video server (server 1) over a network (Internet 2). EX1004, EX1004, Abstract (“Delivery of recorded audio or video material over a telecommunications link (2) **from a server (1) to a terminal**³ (3) . . . Provision may

³ All emphases in citations to prior art references are added unless otherwise indicated.

be made for **switching** between alternative sub-file sets representing alternative delivery modes of data rates.”), 1:3-29 (“The present invention is concerned with the delivery, over a telecommunications link, of digitally coded material for presentation to a user. . . . there is provided a terminal for playing audio or video material which is stored on a remote server as a set of files representing successive temporal portions of the said material, the terminal comprising: a telecommunications interface for communication with the server; a buffer for receiving the files from the telecommunications interface; means for playing the contents of the buffer; and control means responsive to the state of the buffer to generate request messages for further files for replenishment of the buffer. In another aspect, the invention provides a method of transmitting digitally coded audio or **video** material comprising: partitioning the material into a plurality of discrete files each representing successive temporal portions of the said material; storing the files at a first station; and at a second station - a) transmitting to the first station requests for successive respective ones of the files; b) receiving the files; and c) decoding the files for replay of the material.”), 6:13-15 (“the server stores two or more versions of the recording, recorded at different compression rates (for example at compressions corresponding to (continuous) data rates of 8, 16, 24 and 32 kbit/s respectively) and **the player program is able to switch automatically between them.**”), 16:6-10, claim 1, FIG. 1; EX1003, ¶ 56.

b. 1[A][1]: “a media player operating on the apparatus,”

Leaning teaches 1[A][1]. Leaning discloses a media player (player program) operating on the apparatus (terminal 3). EX1004, 4:4-15 (“Turning now to the terminal . . . Figure 2 shows such a terminal with a central processor 30, memory 31, a disk store 32, a keyboard 33, video display 34, communications interface 35, and audio interface (‘sound card’) 36. For video delivery, a video card would be fitted in place of, or in addition to, the card 36. In the disk store are programs which may be retrieved into the memory 31 for execution by the processor 30, in the usual manner. These programs include a communications program 37 for call-up and display of html pages - that is, a ‘web browser’ program such as Netscape Navigator or Microsoft Explorer, and a further program 38 which will be referred to here as ‘**the player program**’ which provides the functionality necessary for the playing of audio files in accordance with this embodiment of the invention.”), 5:1-14; EX1003, ¶ 57.

c. 1[A][2]: “wherein the media player is configured to stream the video from the video server via at least one transmission control protocol (TCP) connection over the network,”

Leaning teaches 1[A][2]. Leaning discloses that the media player (player program) is configured to stream the video from the video server (server 1) via at least one TCP connection over the network (Internet). EX1004, 2:5-32 (“The system shown in Figure 1 has as its object the delivery, to a user, of digitally coded audio

signals . . . the system may be used to convey video signals instead of, or in addition to, audio signals. In this example, the **network is the internet** or other packet network operating in accordance with the **Hypertext Transfer Protocol (see RFCs 1945/2068 for details)** . . . In Figure 1, a **server 1 is connected via the internet 2 to user terminals 3**, only one of which is shown. The function of the server 1 is to store data files, to **receive from a user terminal a request** for delivery of a desired data **file** and, in response to such a request, to transmit the file to the user terminal via the network. Usually such a **request takes the form of a first part indicating the network delivery mechanism (e.g. http:// or file:// for the hypertext transfer protocol or file transfer protocol respectively)** followed by the network address of the server (e.g. `www.server 1.com`) **suffixed with the name of the file that is being requested**. . . . In these examples, the **use of the hypertext transfer protocol is assumed** . . . [server 1] is merely **an ordinary ‘web server’.**”), 4:4-21.

A POSITA would have understood Leaning’s teachings of a terminal connecting to an ordinary web server via the Internet to request subfiles from the server using HTTP (*i.e.*, HTTP 1.0 (RCF 1945) or HTTP 1.1 (RCF 2068)) to include teaching at least one TCP connection for such requests because a POSITA would have known that ordinary web servers supported both HTTP and TCP and that HTTP

operates over TCP connections. EX1003, ¶¶ 58-59;⁴ *see also* EX1004, 5:8-14 (“The program constructs a **request message for the file having this URL and transmits it to the server 1 via the communications interface 35 and the internet 2.** (Processes for translating the URL into an **IP** address . . . [is] **conventional** and will not therefore be described). We envisage that the **player program would send the requests** directly to the communications interface, rather than via the browser. **The server responds by transmitting the required sub-file.**”); EX1003, ¶ 59. For example, a POSITA would have known that a terminal requesting sequential subfiles from an ordinary web server using the HTTP 1.0 protocol (RFC1945) (EX1004, 2:10) as disclosed by Leaning would require using multiple TCP connections because each HTTP request in HTTP 1.0 must establish a new TCP connection to request and receive each sequential subfile. EX1003, ¶ 59. Thus, a POSITA would have understood Leaning to teach that HTTP operates via one or more TCP connections. *Id.*

⁴ Indeed, the ’156 Patent admits that TCP connections were known and used by most streaming solutions and Patent Owner also admits that the “standard HTTP/TCP protocol” is “the web standard upon which the Internet is built. *See* Section VIII.A

d. 1[A][3]: “wherein the video server stores multiple different copies of the video encoded at different bit rates as multiple sets of streamlets,”

Leaning teaches 1[A][3]. Leaning discloses that video server (server 1) stores multiple different copies (two or more versions of the recording) of the video encoded at different bit rates (compression rates). EX1004, 6:13-26 (“the server stores **two or more versions** of the recording, recorded at **different compression rates** (for example at compressions corresponding to (continuous) data rates of **8, 16, 24 and 32 kbit/s respectively**) . . . loaded onto the server in separate directories corresponding to the different rate, as in the following example structure, where ‘008k’, ‘024k’ in the directory name indicates a rate of 8 kbit/s or 24 kbit/s and so on.”), 9:3-7, 16:6-12 (“The **same principle** may be applied to the delivery of **video recordings**. . . the file is a video file (e.g. in H.261 or MPEG format) and the player program incorporates a video decoder. The manner of partitioning the file into sub-files is unchanged. As in the audio case, there may be **two or more recordings corresponding to different data rates, selected by the control mechanism already described.**”); EX1003, ¶ 60.

Leaning further discloses that these multiple copies are stored as multiple sets of streamlets (sets of subfiles at each compression rate in appropriate directories). EX1004, Abstract (“dividing the material into a **sequence of sub-files** each of which is independently requested by the terminal . . . switching between **alternative sub-**

file sets representing **alternative delivery modes of data rates.**”), 3:-22 (“the file **is divided into smaller files** before being stored on the server 1. We prefer that each of these smaller files is of a size corresponding to a fixed playing time, perhaps four seconds. . . . divided into **135 smaller files** each representing four seconds’ playing time. In this example these are given file names which include a serial number indicative of their sequence in the original file, for example: 000000.bin 000001.bin 000002.bin 000003.bin. . .000134.bin. . . . ‘sub-files’ is used here to distinguish them from the original file containing the whole recording: it should however be emphasised that, as far as the server is concerned, each sub-file’ is just a file like any other file.”), 5:4-6:8, 6:21-7:7 (describing the same set of 135 sub-files (000000.bin, 000001.bin, 000002.bin. . . 000134.bin) each encoded at a different bitrate (8k,

16k,18k, 24k, and 32k) and listed in an index file and saved in the directory appropriate for their bitrates); *see also id.*, 12:8-34, 13:23-14:19; EX1003, ¶ 61.

Directory	Subdirectory	Filename
mp3_bwv565	none	link.htm index.htm
mp3_bwv565	008k_11_m	000000.bin 000001.bin 000002.bin 000003.bin . 000134.bin
mp3_bwv565	016k_11_m	000000.bin 000001.bin 000002.bin 000003.bin . 000134.bin
mp3_bwv565	018k_11_s	000000.bin 000001.bin 000002.bin 000003.bin . 000134.bin
mp3_bwv565	024k_11_s	000000.bin 000001.bin 000002.bin 000003.bin . 000134.bin
mp3_bwv565	032k_11_s	000000.bin 000001.bin 000002.bin 000003.bin . 000134.bin

EX1004, 7 (annotated, showing each of the directories containing the different versions of the same recording (encoded at 8, 16, 24, and 32 kbit/s) and each containing the same set of subfiles (000000.bin-000134.bin) in the same order).

e. 1[A][4]: “wherein each of the streamlets yields a different portion of the video on playback,”

Leaning discloses 1[A][4]. *See* 1[A][2]-1[A][3]. Leaning discloses that each of the streamlets (subfiles) yields a different portion (temporal portion) of the video on playback. EX1004, 1:3-29 (“The present invention is concerned with the delivery,

over a telecommunications link, of digitally coded material for presentation to a user.
. . . there is provided a terminal for playing audio or video material which is stored on a remote server as a **set of files representing successive temporal portions** of the said material . . . the invention provides a method of transmitting digitally coded audio or video material comprising: **partitioning the material into a plurality of discrete files each representing successive temporal portions of the said material**; storing the files at a first station; and at a second station - a) transmitting to the first station requests for successive respective ones of the files; b) receiving the files; and c) decoding the files for replay of the material.”), FIG. 4; EX1003, ¶ 62.

f. 1[A][5]: “wherein the streamlets across the different copies yield the same portions of the video on playback,”

Leaning teaches 1[A][5]. *See* 1[A][3]. Leaning discloses that the streamlets (subfiles) across the different copies contains the same portions of the video on playback (*e.g.*, 000000.bin is the same portion of the video in each bitrate directory; 000001.bin is the same portion of the video in each bitrate directory; etc.) because each version has the same number of segments in the same order and having the same duration as each other. EX1004, EX1004, Abstract, 1:3-29, 3:5-18 (“the file is divided into smaller files before being stored on the server 1. **We prefer that each of these smaller files is of a size corresponding to a fixed playing time, perhaps**

four seconds. With a compressed format such as MP3 this may mean that the files will be of different sizes in terms of the number of bits they actually contain. Thus the Bach file of 9 minutes duration would be **divided into 135 smaller files each representing four seconds' playing time**”), 5:4-6:8, 6:21-7:1 (describing the same set of 135 sub-files (000000.bin, 000001.bin, 000002.bin. . . 000134.bin) each encoded at a different bitrate (8k, 16k, 18k, 24k, and 32k) and listed in an index file and saved in the directory appropriate for their bitrates), 7:1-2 (“Note that because the length of a sub-file corresponds, as explained earlier, to a **fixed length of time**, the **number of sub-files is the same for each directory**.”), 12:8-20 (“It is of interest to discuss further the process of partitioning the original file into sub-files. . . . there is **no expectation that a sub-file will be followed by a sub-file other than that which immediately follows it in the original sequence** . . . the sub-file size can be a fixed number of bits, or a fixed playing time length (or neither of these) . . . In the case of rate switching, it is, if not actually essential, **highly desirable that the sub-file boundaries are the same for each rate**, so that the **first sub-file received for a new rate continues from the same point in the recording that the last sub-file at the old rate ended**. To arrange that every sub-file should represent the same fixed time period (e.g. the 4 seconds mentioned above) is not the only way of achieving this, but it is certainly the most convenient.”); EX1003, ¶ 63.

- g. 1[A][6]: “and wherein the streamlets in the different copies are aligned in time such that the streamlets that play back the same portion of the video for the different copies each begin at the same playback time in relation to the beginning of the video, and wherein the media player streams the video by:”

Leaning teaches 1[A][6]. Leaning discloses that the streamlets (subfiles) in the different copies are aligned in time such that each begin at the same playback time in relation to the beginning of the video because each directory containing different bitrate copies of the video has the same number of subfiles in the same order with the same time durations encoding the same portion of the video. *See* 1[A][5]. EX1004, 12:6-20 (“In the case of rate switching, it is, if not actually essential, **highly desirable that the sub-file boundaries are the same for each**

rate, so that the first sub-file received for a new rate **continues from the same point in the recording** that the last sub-file at the old rate ended.”).

Directory	Subdirectory	Filename
mp3_bwv565	none	link.htm index.htm
mp3_bwv565	008k_11_m	000000.bin 000001.bin 000002.bin 000003.bin . . 000134.bin
mp3_bwv565	016k_11_m	000000.bin 000001.bin 000002.bin 000003.bin . . 000134.bin
mp3_bwv565	018k_11_s	000000.bin 000001.bin 000002.bin 000003.bin . . 000134.bin
mp3_bwv565	024k_11_s	000000.bin 000001.bin 000002.bin 000003.bin . . 000134.bin
mp3_bwv565	032k_11_s	000000.bin 000001.bin 000002.bin 000003.bin . . 000134.bin

EX1004, 7 (showing each of the directories containing the different versions (8, 16, 24, and 32 kbit/s) containing the same set of subfiles (000000.bin-000134.bin) in the same order).

Therefore, Leaning teaches that each of the subfiles across the different copies are “aligned in time” because at any point when switching to a new rate and requesting the next subfile in the list, the stream continues from the same point in

the recording that the prior sub-file ended. EX1003, ¶¶ 64-65. And as discussed above, it is the media player (player program) that streams the video. *See* 1[A][1]-1[A][2]; EX1003, ¶¶ 65-66.

- h. 1[B][1]: “requesting sequential streamlets of one of the copies from the video server according to the playback times of the streamlets by transmitting hypertext transport protocol (HTTP) GET requests that identify the selected streamlets stored by the video server,”

Leaning teaches 1[B][1].

Requesting sequential streamlets

Leaning teaches requesting sequential streamlets (subfiles) of one of the copies from the video server (server 1). As already described above, Leaning discloses that the subfiles of each of the copies are in the same sequential order. *See* 1[A][3], 1[A][5]-[A][6]. Leaning further discloses that end user device (terminal 3) independently requests, via the player program, each of the sequential streamlets (subfiles) of one of the copies from the video server in order. *See* 1[A][6]; EX1004, Abstract (“Delivery of recorded audio or video material over a telecommunications link (2) from a server (1) to a terminal (3) is accomplished by dividing the material into a **sequence of sub-files each of which is independently requested by the terminal**, which thereby has control of the rate of delivery. Provision may be made for switching between alternative sub-file sets representing alternative delivery modes of data rates.”), 1:12-19 (“According to one aspect of the invention there is

provided a terminal for playing audio or **video** material which is stored on a remote server as a set of files representing successive temporal portions of the said material, the terminal comprising: a telecommunications interface for communication with the server; a buffer for receiving the files from the telecommunications interface; means for playing the contents of the buffer; and **control means responsive to the state of the buffer to generate request messages for further files for replenishment of the buffer.**”), 2:15-18 (“The function of the server 1 is to store data files, to **receive from a user terminal a request for delivery of a desired data file and, in response to such a request, to transmit the file to the user terminal via the network.**”), 5:4-6:2 (“The **player program**, having received the URL, adds to this the filename of the first sub-file, to produce a complete address for the sub-file - i.e. www.server1.com/mp3_bwv565/000000.bin. . . . The **program constructs a request message for the file having this URL** and transmits it to the server 1 via the communications interface 35 and the internet 2. . . We envisage that the **player program would send the requests** directly to the communications interface, rather than via the browser. The server responds by transmitting the required sub-file. . . . The **player program increments the filename to 000001.bin and requests**, receives, decodes and stores this second sub-file as described in (4) and (5) above. . . . This process is repeated until a ‘file not found error’ is returned.”), 6:27-7:2, 8:6-16, claims 1 (“A terminal for playing audio or video material which is stored on a

remote server as a set of files representing successive temporal portions of the said material . . . characterised by control means operable to determine the addresses of further files to be requested and operable in response to the state of the buffer to generate request messages, containing such addresses, for further files for replenishment of the buffer”), 11 and 16; EX1003, ¶¶ 67-68.

Requesting according to the playback times of the streamlets

Leaning teaches that the client requests the segments “according to the playback times of the streamlets.” In the ITC Investigation, the ALJ did not explicitly construe “requesting sequential streamlets of one of the copies from the video server according to the playback times of the streamlets.” However, DISH argued, and the ALJ found, that requesting sequential media segments by unique filenames (*i.e.*, where each segment in the sequence has “a unique identifying number” corresponding to position in playback sequence) satisfied this limitation of requesting streamlets “according to the playback times.” EX1009, 118-120.

Here, as explained above, Leaning discloses precisely what DISH argued, and the ALJ determined, met requesting “according to the playback times” (*i.e.*, player independently requesting each of the subfiles 000000.bin to 000134.bin in order at the appropriate quality level). *See* 1[Pre]-1[B][1]. Therefore, according to DISH and

the ITC's interpretation, Leaning discloses requesting streamlets (subfiles) according to their playback times. EX1003, ¶¶ 69-71.

Petitioner does not concede that DISH and the ITC are correct in their interpretation that simply requesting files in order is requesting “according to the playback times” because each subfile may be a different time duration and the player may not know which specific playback time it is requesting. For example, if 000000.bin is 5 seconds, 000001.bin is 3.5 seconds, and 000002.bin is 4 seconds then the player would request 000000.bin then 000001.bin then 000002.bin—but the player would not be requesting these subfiles *according to playback time* but rather requesting them *according to their order*.

However, under DISH and the ALJ's interpretation, Leaning explicitly discloses that each sequential subfile is preferably the **same time duration** (e.g., 4 seconds) such that a request for 000000.bin is a request for playback time 0-4 seconds; a request for 000001.bin is a request for playback time 4-8 seconds; and a request for 000003.bin is a request for playback time 8-12 seconds; and so on. EX1004, 3:5-18 (“We prefer that each of these smaller files is of a size corresponding to a fixed playing time, perhaps **four seconds**. . . . would be **divided into 135 smaller files each representing four seconds' playing time**”), 5:4-6:8, 6:21-7:1; *see also id.*, FIG. 4. Therefore, under DISH and the ALJ's interpretation, Leaning does disclose requesting according to the playback time because all the

segments are 4 seconds in duration so the playback time of each segment is readily and accurately ascertainable. EX1003, ¶¶ 72-73.

To the extent requesting according to the playback time requires some indication of the playback time to be a part of each subfile request, this limitation would have been obvious to a POSITA in view of Leaning. EX1003, ¶ 74. Though Leaning's exemplary naming convention provided is to name each subfile with a number in ascending order (EX1004, 3:10-11 ("In this example these are given file names which include a serial number indicative of their sequence in the original file.)); Leaning also teaches that "any naming convention can be used" for the subfiles (*id.*, 6:5-8).

Thus, a POSITA would have understood that each subfile could be named (and therefore requested) according its playback time instead of as an integer (*e.g.*, 000000.bin would be named "00:00.bin" to indicate playback time of 0 seconds; 000001.bin would be named "00:04.bin" to indicate playback time of 4 seconds; 000002.bin would be named "00:08.bin" to indicate playback time of 8 seconds; and so on). EX1003, ¶ 75; *see also* EX1004, 15:19-28 (describing including "Odbits" in the index file to provide the player program with indications of playback time relative to the beginning of the recording in the form of "hours:minutes:seconds"). When such files are requested by subfile name as taught by Leaning (EX1004, 3:30-31), they are thus requested "according to their playback times" because they are

named according to their playback times. EX1003, ¶ 75. And a POSITA would have been motivated to name segments (subfiles) according to their playback times in this way because it still would allow for ordering the subfiles in proper playback order such that when a POSITA viewed the directory of files saved on the servers the subfiles would be listed in order of how they will be played and it would provide the benefit of ascertaining an estimate of the overall length of the recording by simply viewing the name of the final segment in the directory. *Id.* A POSITA would have had a reasonable expectation of success with such a modification because it would simply involve changing the naming convention for the file names of subfiles stored on the server—which was contemplated by Leaning. *Id.*

HTTP GET Requests

Finally, Leaning teaches that the client requests may be made by transmitting HTTP GET requests. EX1003, ¶ 76. As explained with respect to limitation 1[A][2], Leaning discloses that the player requests subfiles from the conventional web server using “the Hypertext Transfer Protocol” and cites to RCFs for HTTP 1.0 and HTTP 1.1 protocols. EX1004, 2:5-32. Leaning also provides a request example of “http://www.server1.com/mp3_bwv565/000003.bin” where ‘www.server1.com’ is the URL of the server 1” which requests file “000003.bin” stored on server 1 by its URL. EX1004, 3:28-31; EX1003, ¶ 77.

It was known to a POSITA that the only way to request and receive the “000003.bin” file using HTTP in the example provided was by a request-URI (*i.e.*, “http://www.server1.com/mp3_bwv565/000003.bin” URL) to the server via an “HTTP GET” request. EX1003, ¶ 78. A POSITA considering the disclosures of Leaning (*i.e.*, operating via HTTP between a client and an ordinary web server to request and receive files) would have understood that HTTP required ordinary web servers to support HTTP GET requests and thus would have understood Leaning’s disclosure of a terminal using HTTP to request subfiles from a server to include teaching the use of HTTP GET requests. EX1003, ¶ 78; EX1019, 31 (“The methods GET and HEAD MUST be supported by all general-purpose servers”).

It was known to a POSITA that HTTP requests for items on a server by providing the URL are commonly made by a client transmitting “HTTP GET” requests.⁵ See EX1019, 46 (HTTP 1.1 protocol describing “GET” as the means by which to “retrieve whatever information (in the form of an entity) is identified by the Request-URI”); EX1003, ¶ 79. A Request-URI stands for Request-Uniform Resource Identifier and “Uniform Resource Identifiers are simply formatted strings

⁵ The ’156 Patent itself admits that HTTP GET requests were “standard.” EX1001, 9:40-42.

which identify—via name, location, or any other characteristic—a resource” (EX1019, 16) such that an HTTP GET request is “used to identify a resource on an origin server or gateway” (EX1019, 32). Thus, a POSITA would have understood the above teachings from Leaning to teach that the player program makes HTTP GET requests for each sequential subfile. EX1003, ¶ 79.

Further, to the extent it is deemed necessary, a POSITA would have been motivated to modify Leaning to make its requests for subfiles from servers via standard HTTP GET requests because GET requests are one of a finite number of identified methods available in the HTTP protocol, and thus one of a finite number of identified predictable solutions (indeed, the only solution) for requesting files from a server with a reasonable expectation of success. EX1019, 45-47; EX1003, ¶ 80. There also would have been a reasonable expectation of success because HTTP is a universally known and used protocol and GET requests are a standard method within that protocol for requesting files from a server. *Id.*

- i. **1[B][2]: “wherein the sequential streamlets are selected by the media player from the based upon successive determinations to shift the playback quality to a higher or lower quality one of the different copies of the video;”**

Leaning teaches 1[B][2]. Leaning discloses sequential streamlets selected by the media player. *See* 1[A][3]-[A][6]. Leaning also teaches that this selection is from the based upon [*sic*] “successive determinations.” More particularly, the player

program makes multiple determinations one after the other before shifting up in quality and before shifting down in quality.

For example, when determining to shift down, the Player determines (1) if the buffer is empty, (2) if the measured rate is less than the current rate, and (3) if the measured Buffer Low Percentage more than a Step Down Threshold before shifting down; when determining to shift up, the Player determines (1) if the measured rate exceeds the current rate, and (2) if the measured rate exceeds the next higher rate for a given period of time before shifting up. EX1004 8:17-26. Once the successive determinations conclude that the player should shift up or shift down, “rate change is effected simply by the player program changing the relevant part of the sub-file address for example, changing ‘008k’ to ‘024k’ to increase the data rate from 8 to 24 kbit/s and changing the current rate parameter to match” and “the next request to the server becomes a request for the higher (or lower) rate, and the sub-file from the new directory is received, decoded and entered into the buffer.” EX1004, 9:3-7, 9-11 (flowchart showing successive determinations to shift up or shift down), claims 4 (“server storing a plurality of sets of files, which sets correspond to respective different delivery modes, the terminal including: means operable to effect mode **switching by providing that subsequent request messages shall request files from a set different from the set to which the immediately preceding request related**”), 5 (“said sets of files correspond to respective different data rates, in which:

the terminal includes means for **monitoring the received data rate**; the mode switching means is operable, in the event that the **measured rate is below** that needed for the set to which the currently requested file belongs, to provide that subsequent said request messages shall request files from a set corresponding to a **lower data rate**”), 6 (“in the event that the **measured rate is sufficient** to support delivery of files of a **higher data rate** than that of the set to which the currently requested file belongs, to provide that subsequent said request messages shall request files from a set corresponding to a **higher data rate**”), 11 and 12; EX1003, ¶¶ 81-82.

j. 1[C]: “repeatedly generating, by the media player, a factor relating to the performance of the network that is indicative of an ability to sustain the streaming of the video;”

Leaning teaches 1[C]. Patent Owner contended in the file history of parent U.S. Patent No. 8,868,772 that there is allegedly sufficient disclosure for such a factor being “indicative of latency, delays or losses of the requested portions, and available bandwidth of the TCP connections.” EX1018, 447-448 (footnotes omitted).

Leaning discloses repeatedly generating “a factor relating to the performance of the network that is indicative of an ability to sustain the streaming of the video” because it teaches repeatedly generating a “measured rate” (*i.e.*, the measured and comparing it to a “current rate” (*i.e.*, the bitrate of the current stream) to determine

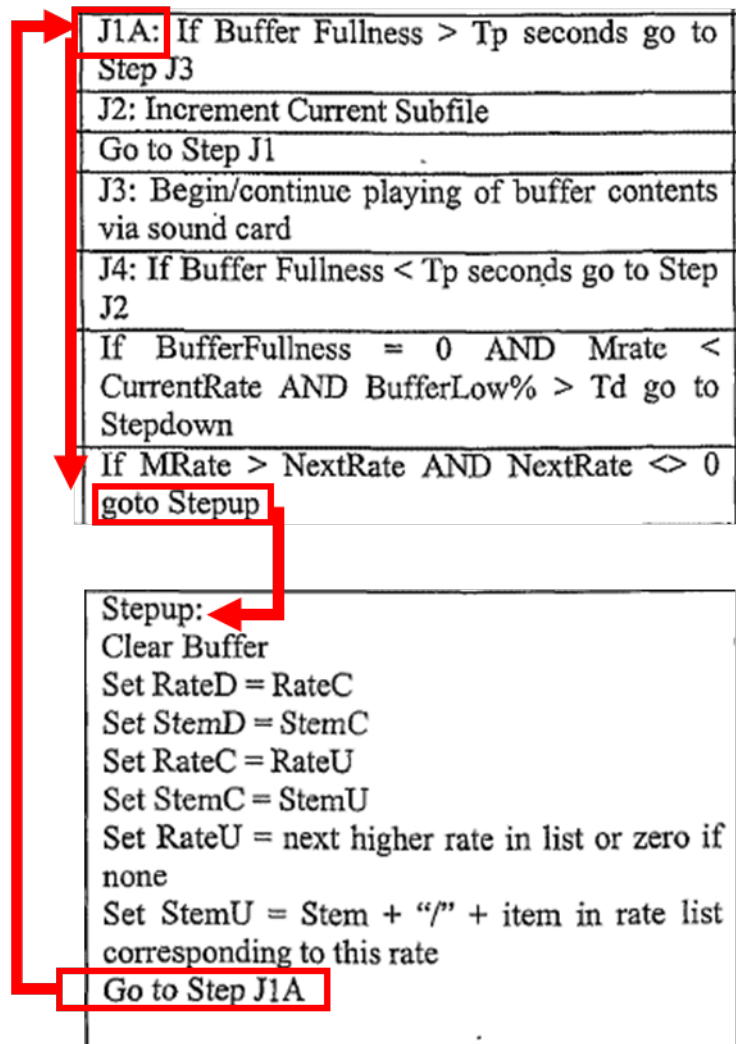
if the current stream is sustainable. EX1004, 8:7-26, claims 5 and 6. Additionally, Leaning repeatedly generates another factor (“Buffer Low Percentage”) which is “the percentage of time that the buffer contents represent less than 20% of the playout time (i.e. the buffer is getting close to being empty).” EX1004, 8:27-28. Leaning also explains “that interruption” of the video stream “can be avoided and therefore it is preferable to employ a criterion which anticipates underflow and avoids it in the majority of cases” by omitting the first determination (*i.e.*, whether the buffer is completely empty) and generating measured rate and Buffer Low Percentage factors as indicators of whether the current streaming rate is sustainable. EX1004, 15:3-8, 8:11-16 (repeatedly generates the factor because “process **from then on** is that the player program **measures the actual data rate being received from the server, averaged over a period of time (for example 30 seconds)**. It does this by timing every URL request; the transfer rate achieved (number of bits per second) between the client and server is determined. The **accuracy of this figure improves as the number of requests goes up**. The player maintains two stored parameters which indicate, respectively, the current rate, and the **measured rate.**”), 8:17-11:1; 1[B][2]; EX1003, ¶¶ 83-84.

- k. 1[D]: “adapting the successive determinations to shift the playback quality based on the factor to achieve continuous playback of the video using the streamlets of the highest

quality copy of the video that is determined to be sustainable at that time; and”

Leaning teaches 1[D]. As explained above, Leaning discloses adapting the successive determinations to shift the playback quality based on generated factors to achieve continuous playback of the video using the streamlets (subfiles) of the highest quality copy of the video that is determined to be sustainable at that time. *See* 1[B][2]-1[C]. Leaning teaches choosing the highest quality copy that is sustainable (*i.e.*, if measured rate > current rate AND measured rate > next highest rate for period of time, then shift up until no longer true—meaning shift up to highest sustainable version). EX1004, 8:24-26 (“if the measured rate exceeds not only the current rate **but also the next higher rate** for a given period of time (e.g. 120 seconds: this could if desired be made adjustable by the user) **increase the current rate.**”), 9:3-7, 9-11 (flowchart showing successive determinations to shift up to highest rate deemed sustainable). For example, the excerpted and annotated portion of Leaning’s process flow chart below shows that the player on the terminal beginning with step J1A moves through the process and if “MRate [measured rate] is greater than NextRate [next highest rate] AND NextRate $\diamond$ 0 [there exists a next higher rate] then goto Stepup; and the Stepup process shifts up by changing the RateC [current rate] to the RateU [next highest rate] and changes RateU to the next higher rate, or to “0” if the current rate is the highest rate then loops back to step J1A

and continues the process. Thus, Leaning discloses looping “Stepup” until the highest sustainable rate is achieved up to the highest available rate (by setting RateU to zero). EX1004, 9-11; EX1003, ¶ 85.



EX1004, 10 (flowchart excerpted and annotated); EX1003, ¶ 85.

1. 1[E]: “presenting the video for playback by providing the requested streamlets in order of ascending start time.”

Leaning discloses 1[E]. Leaning teaches decoding and presenting the subfiles of the video for payback in order of ascending start time. EX1004, 1:13-28, 4:4-21,

5:23-6:2, 12:16-18, 14:6-11, claim 1 (“means for playing the contents of the buffer”); EX1003, ¶ 86.

2. **Claim 2: “The apparatus of claim 1, wherein the apparatus is configured to establish multiple Transmission Control Protocol (TCP) connections with a content server, and request streamlets of varying bitrates.”**

Leaning teaches claim 2. As explained above with respect to limitation 1[A][2], Leaning discloses operating over the Internet using HTTP and teaches using more than one TCP connection at least because Leaning teaches use of HTTP 1.0—which a POSITA would have known requires a new TCP connection for each subfile request and thus by requesting sequential subfiles Leaning teaches establishing multiple TCP connections with a content server, and requesting sequential streamlets (subfiles) of varying bitrates due to rate switching. *See* 1[A][2]; 1[B][2]-1[D]; EX1003, ¶ 87.

3. **Claim 3: “The apparatus of claim 1, wherein each streamlet further comprises a portion of a content file provided by the server.”**

Leaning teaches claim 3. *See* 1[Pre], 1[A][4] (explaining that each segment (subfile) is a portion of a video provided by the server); EX1003, ¶ 88.

- 4. Claim 4: “The apparatus of claim 1, wherein the requesting the sequential streamlets comprises the apparatus transmitting hypertext transport protocol (HTTP) GET requests for selected streamlets, wherein each of the HTTP GET requests identifies the separate file stored by the video server that corresponds to the requested streamlet.”**

Leaning teaches claim 4. As explained above, Leaning teaches the requesting the sequential streamlets (subfiles) comprises the apparatus transmitting hypertext transport protocol (HTTP) GET requests for selected streamlets (subfiles), wherein each of the HTTP GET requests identifies the separate file stored by the video server that corresponds to the requested streamlet. *See* 1[B][1]; *see also* EX1004, 3:29-30 (“a sub-file, when required, may be requested in the form: **http:\\www.serverl.com/mp3_bwv565/000003.bin**”). Additionally, Leaning further explains that “the expression ‘sub-files is used here to distinguish them from the original file containing the whole recording: it should however be emphasised that, as far as the server is concerned, each ‘sub-file’ is just a file like any other file.” EX1004, 3:20-22; EX1003, ¶ 89.

- 5. Claim 5: “The apparatus of claim 1 wherein each of the streamlets of each of the different copies is independently requestable and playable by the apparatus.”**

Leaning teaches claim 5. Leaning discloses that each of the streamlets (subfiles) of each of the different copies is independently requestable and playable by the apparatus *See* 1[B][1] 1[E]; EX1004, Abstract (“Delivery of recorded audio

or video material over a telecommunications link (2) from a server (1) to a terminal (3) is accomplished by dividing the material into a **sequence of sub-files each of which is independently requested by the terminal**, which thereby has control of the rate of delivery. Provision may be made for **switching between alternative sub-file sets** representing alternative delivery modes of data rates.”); EX1003, ¶ 90.

6. **Claim 6: “The apparatus of claim 4, wherein the requesting of the sequential streamlets comprises the end user device transmitting hypertext transport protocol (HTTP) GET requests for selected streamlets.”**

Leaning teaches claim 6. Leaning teaches a client terminal transmitting HTTP GET requests for selected sequential streamlets (subfiles). *See* 1[B][1]; EX1003, ¶ 91.

7. **Claim 7: “The apparatus of claim 1 wherein each of the streamlets in each of the plurality of different copies is a separate file stored by the video server.”**

Leaning teaches claim 7. Leaning discloses that the streamlets (subfiles), including in each of the plurality of different copies (versions), may be stored at the video server (server 1) as separate files. *See* 1[Pre], 1[A][3], claim 4 (segments are separate files stored on server(s)); EX1003, ¶ 92.

- 8. Claim 8: “The apparatus of claim 1 wherein the media player upshifts to a higher quality one of the different copies when the factor is greater than a first threshold and downshifts to a lower quality one of the different copies when the factor is less than a second threshold.”**

Leaning teaches claim 8. As explained above, Leaning teaches generating at least one factor (“measured rate” and/or “Buffer Low Percentage”) for determining whether or not to shift up and whether or not to shift down. *See* 1[C]. Leaning further discloses that the player program determines to upshift to a higher quality one of the different copies when the “measured rate” factor is greater than the “next higher rate” for a given period of time (first threshold). *See* 1[B][2]-1[C]; EX1004, 8:17-26, claims 4 (“server storing a plurality of sets of files, which sets correspond to respective different delivery modes, the terminal including: means operable to effect mode switching by providing that subsequent request messages shall request files from a set different from the set to which the immediately preceding request related”), 5 (“said sets of files correspond to respective different data rates, in which: the terminal includes means for monitoring the received data rate; the mode switching means is operable, in the event that the measured rate is below that needed for the set to which the currently requested file belongs, to provide that subsequent said request messages shall request files from a set corresponding to a lower data rate”), 6 (“in the event that the measured rate is sufficient to support delivery of files of a higher data rate than that of the set to which the currently requested file belongs,

to provide that subsequent said request messages shall request files from a set corresponding to a higher data rate”). Leaning also discloses that the player program determines to downshift to a lower quality one of the different copies when the “measured rate” factor is less than the “current rate” (second threshold) (and when the Buffer Low Percentage more than a Step Down Threshold). *Id.*; EX1003 ¶ 93.

9. **Claim 9: “The apparatus of claim 1, wherein the requesting the sequential streamlets comprises the apparatus transmitting hypertext transport protocol (HTTP) GET requests for selected streamlets, and wherein each of the HTTP GET requests identifies a separately-identifiable portion of the one or more files that corresponds to the requested streamlet.”**

Leaning teaches claim 9. *See* 1[Pre], 1[A][4] (each subfile is a separate file), 1[B][1] (HTTP GET requests for each sequential subfile (portion of the recording) separately named, separately identifiable, and each independently requested); EX1003, ¶ 94.

10. **Claim 10: “The apparatus of claim 1, wherein the apparatus is configured to initially request low quality streamlets to enable instant playback of the content file, and subsequent upshifting according to the performance factor.”**

Leaning teaches claim 10. Leaning teaches that the apparatus is configured to initially request low quality streamlets (*e.g.*, requesting first subfile at 024k) to enable instant playback of the content file, and subsequent upshifting according to the performance factor (*e.g.*, upshifting to 032k when “measured rate” exceeds 32

kbit/s for a set period of time). *See* 1[B][2]-1[C], Claim 8; EX1004, (“It then **begins to request** the audio sub-files as described earlier, **from the first-mentioned ‘rate’** directory in the index file - **viz. 024k_11_s** (or the terminal could override this by modifying this to a default rate set locally for that terminal). The process from then on is that the player program **measures the actual data rate** being received from the server, averaged over a period of time (for example 30 seconds). It does this by timing every URL request; the transfer rate achieved (number of bits per second) between the client and server is determined. The accuracy of this figure improves as the number of requests goes up. The player maintains two stored parameters which indicate, respectively, the current rate, and the **measured rate.**”).

Fig.3.

```
<html>
<head>

<!-- Odbits: Mode = "recorded" -->
<!-- Audio = "mp3-024k_11_s mp3-032k_11_s mp3-018k_11_s mp3-016k_11_m
mp3-008k_11_m" -->
<!-- LFI = "44" -->
<!-- SL = "178" -->
<!-- Title = "Toccata and Fugue in D minor" -->
<!-- Author = "J.S. Bach" -->
<!-- Created = "6 Nov 2000" -->
<!-- Copyright = "© 1999" -->
<!-- Comments = "One of Bach's many organ works." -->
</head>
<body>
An announcement to appear on the display
</body>
</html>
```

EX1004, FIG. 3 (annotated, showing initially requested 24 kbit/s which is lower than higher potential quality level 32 kbit/s); EX1003, ¶¶ 95.

- 11. Claim 11: “The end user device of claim 1 wherein each of the streamlets in each of the plurality of different copies is a separately-identifiable portion of one or more files stored by the video server.”**

Leaning teaches claim 11. *See* 1[Pre], 1[A][4]; EX1003, ¶ 96.

- 12. Claim 12: “The apparatus of claim 1 wherein the apparatus is a mobile computing device comprising a processor and a non-transitory data storage.”**

Leaning teaches claim 12. Leaning discloses that apparatus is a mobile computing device (*e.g.*, handheld computer or mobile telephone) comprising a processor and a non-transitory data storage. EX1004, 4-21; EX1003, ¶ 97.

13. Claim 13

- a. 13[Pre]: “A method executable by an end user device to stream a video received via a connection with a server over a network, the method comprising:”**

Whether or not the preamble is limiting, Leaning teaches 13[Pre].

Leaning discloses a method executable by an end user device (terminal 3) to stream a video received via a connection with a server (server 1) over a network (*e.g.*, Internet); *See* 1[Pre]; EX1003, ¶ 98.

- b. 13[A][1]: “requesting, by the end user device, wherein the end user device streams the video from the video server via**

at least one transmission control protocol (TCP) connection over the network,”

Leaning teaches 13[A][1]. *See* 1[A][2], 1[B][1]-1[B][2], 1[D]; EX1003, ¶ 99.

- c. 13[A][2]: “a plurality of sequential streamlets of one of the copies from the server based on playback times of the streamlets wherein multiple different copies of the video encoded at different bit rates are stored as multiple sets of streamlets on the server,”**

Leaning teaches 13[A][2]. *See* 1[A][3], 1[B][1]; EX1003, ¶ 100.

- d. 13[A][3]: “wherein each of the streamlets yields a different portion of the video on playback,”**

Leaning teaches 13[A][3]. *See* 1[A][4]; EX1003, ¶ 101.

- e. 13[A][4]: “wherein the streamlets across the different copies yield the same portions of the video on playback,”**

Leaning teaches 13[A][4]. *See* 1[A][5]; EX1003, ¶ 102.

- f. 13[A][5]: “and wherein each of the streamlets comprises a playback time such that each of the streamlets for each of the different copies that encode the same portion of the video begins at the same playback time in relation to the beginning of the video,”**

Leaning teaches 13[A][5]. *See* 1[A][6]; EX1003, ¶ 103.

- g. 13[A][6]: “wherein the end user device requests the streamlets by transmitting hypertext transport protocol (HTTP) GET requests that each identify one of the requested streamlets stored by the server; and wherein the end user device streams the video by:”**

Leaning teaches 13[A][6]. *See* 1[A][6] and 1[B][1]; EX1003, ¶ 104.

- h. 13[B]: “repeatedly generating, by the end user device, a factor that is indicative of an ability to sustain the streaming of the video;”**

Leaning teaches 13[B]. *See* 1[C]; EX1003, ¶ 105.

- i. 13[C]: “making successive determinations by the end user device to shift the playback quality based on the factor to achieve continuous playback of the video using the streamlets of the highest quality copy determined sustainable at that time; and”**

Leaning teaches 13[C]. *See* 1[B][2], 1[D]; EX1003, ¶ 106.

- j. 13[D]: “presenting the video by playing back the requested media streamlets on the end user device in order of ascending playback time.”**

Leaning teaches 13[D]. *See* 1[E]; EX1003, ¶ 107.

- 14. Claim 14: “The method of claim 13 wherein the making of the successive determinations to shift comprises upshifting to a higher quality one of the different copies when the at least one factor is greater than a first threshold and downshifting to a lower quality one of the different copies when the at least one factor is less than a second threshold.”**

Leaning teaches claim 14. *See* claim 8; EX1003, ¶ 108.

- 15. Claim 15: “The method of claim 14 wherein each of the streamlets of each of the different copies is independently requestable and playable by the end user device.”**

Leaning teaches claim 15. *See* 1[B][1], 1[E], claim 5; EX1003, ¶ 109.

- 16. Claim 16: “The method of claim 13 wherein each of the streamlets in each of the plurality of different copies is a separately-identifiable portion of one or more files stored by the video server.”**

Leaning teaches claim 16. *See* 1[Pre], 1[A][4], claims 3, 9, 11; EX1003, ¶ 110.

- 17. Claim 17: “The method of claim 16 wherein the requesting of the sequential streamlets comprises the end user device transmitting hypertext transport protocol (HTTP) GET requests for selected streamlets, and wherein each of the HTTP GET requests identifies the separately-identifiable portion of the one or more files that corresponds to the requested streamlet.”**

Leaning teaches claim 17. *See* 1[Pre], 1[A][4], 1[B][1], claims 3, 9; EX1003, ¶ 111.

- 18. Claim 18: “The method of claim 13, wherein the video captures a live event, and wherein the streamlets of the different copies are available to the end user device while the live event is occurring.”**

Leaning teaches claim 18. Leaning discloses that the video captures a live event, and wherein the streamlets (subfiles) of the different copies (versions) are available to the end user device (terminal) while the live event is occurring. EX1004, 8:1-5 (“‘Mode’ indicates ‘recorded’ (as here) or ‘live’ (to be discussed below).”), 19:6-21 (“The files to be delivered have been referred to as ‘recordings’. However, it is **not necessary that the entire audio or video sequence should have been encoded - or even exist - before delivery is commenced.** Thus a computer could be provided to receive a **live feed**, to code it using the chosen coding scheme, and

generate the sub-files ‘on the fly’ and upload them to the server, so that, once a few sub-files are present on the server, delivery may commence. . . . The same system can be used for a **live audio (or video) feed**. It is in a sense still ‘recorded’ - the difference being primarily that delivery and replay commence before recording has finished, although naturally there is an inherent delay in that one must wait until at least one sub-file has been recorded and loaded onto the server 1.”), 20:1-41; EX1003, ¶¶ 112.

Additionally, Patent Owner admits in the background section of the ’138 Patent that it was known to use streaming “to deliver content on demand (previously recorded) or from live broadcasts.” *See* Section VIII.A; EX1003, ¶ 113.

B. Ground 2: Claims 1-18 Would Have Been Obvious in view of Leaning and Ala-Honkola

The sections of Ground 1 (Section IX.A) are incorporated into this section by reference. EX1003, ¶ 114.

1. Claims 1 and 13

As explained above in Section IX.A, Leaning teaches all limitations of claims 1-18 including all limitations of independent claims 1 and 13. To the extent it is argued that Leaning lacks certain limitations, Ala-Honkola teaches these limitations as described below. EX1003, ¶ 115.

a. 1[A][2]; 13[A][1]

As explained in Section IX.A.1:1[A][2], Leaning teaches that the media player (player program) is configured to stream the video from the video server (server 1) via at least one (including more than one) Transmission Control Protocol (TCP) connection over the network (Internet). However to the extent Patent Owner argues that Leaning alone does not teach at least one TCP connection Ala-Honkola teaches this limitation. EX1003, ¶ 116.

For example, Ala-Honkola teaches client-controlled adaptive rate streaming wherein the client makes repeated requests to switch to higher or lower bitrate quality copies of the video based on changing bandwidth. EX1017, ¶¶ 4, 7-12, 14, 15, 30-45, FIGs. 1-2. Further, Ala-Honkola teaches that such requests are HTTP GET requests that “can be sent via one TCP connection” but “it should be noted that several TCP connections may be needed or used for transmitting consecutive streams.” *Id.*, ¶ 39; EX1003, ¶ 117.

A POSITA would have been motivated to modify Leaning such that terminals 3 made their HTTP requests for subfiles from the server 1 via one (or more than one) TCP connection, as taught by Ala-Honkola, because TCP connections, as the standard Internet protocol for establishing connections between a client and server, would have been a reliable means for allowing terminal 3 to request subfiles from the server 1. EX1003, ¶ 118; *see also* Section IX.A.1:1[A][2]. A POSITA would

have had a reasonable expectation of success with such a modification because TCP is and was a reliable protocol for delivery of requested data from a server to a client. *Id.*

b. 1[B][1]; 13[A][6]

HTTP GET Requests

As explained above in Section IX.A.1:1[B][1], Leaning teaches that the client requests the subfiles using HTTP GET requests. However, to the extent it is argued that HTTP GET requests are not taught by Leaning, Ala-Honkola also teaches client requests to a server for files in the context of streaming should be HTTP GET requests. EX1017, ¶ 14 (“selection of the new data source” transmitted “**using a GET method of an HTTP protocol**”), ¶ 22 (“GET method of an HTTP protocol”), ¶¶ 33-34 (“using a **GET method**, which is **one of the methods defined in the HTTP 1.1 protocol**”), ¶ 38.

A POSITA would have been motivated to use HTTP GET requests, as taught by Ala-Honkola, for requesting specific streamlets (subfiles) in Leaning because HTTP GET requests were a well-known and reliable means of requesting and obtaining files from a server and thus ensure Leaning’s client terminal properly receives each quality subfile for continuous playing. EX1003, ¶¶ 119-121. Further, GET requests are one of a finite number of possible methods available in the HTTP protocol, and thus one of a finite number of identified predictable solutions for

requesting files from a server with a reasonable expectation of success. EX1003, ¶ 121. A POSITA would have had a reasonable expectation of success with such a combination because both Leaning and Ala-Honkola are directed to similar systems for adaptive streaming and such a modification would simply entail using known HTTP GET requests from the HTTP Protocol to request subfiles from the server and reliably receive the requested subfiles. *Id.*

2. Claim 2

As explained above in Section IX.A.1: claim 2, Leaning teaches claim 2. To the extent it is argued that Leaning does not teach multiple TCP connections, Ala-Honkola also teaches this limitation. *See* 1[A][2] (Ala-Honkola teaching “several TCP connections”); EX1003, ¶ 122.

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. Petitioner acknowledges that the ALJ in the ITC Investigation accepted Patent Owner’s argument that there was a presumption of a nexus between the claims that were asserted in the ITC Investigation and the Move Media Player (which was acquired by DISH) and ultimately found certain secondary

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

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

Second, Petitioner disagrees that the Move Media Player has a nexus to the '156 Patent because any of Move's success is not tied to unique characteristics of the claimed invention. As the prior art discussed in the Grounds above shows, the purportedly unique and successful aspects of the Move system that the ALJ relied on to find a nexus were already in existence in the prior art and thus cannot form the basis of any nexus to the claimed invention. *See Yita LLC v. MacNeil IP LLC*, 69

F.4th 1356, 1364 (Fed. Cir. 2023) (“[O]ur case law makes clear that objective evidence of nonobviousness lacks a nexus if it exclusively relates to a feature that was *known* in the prior art—not necessarily well-known”) (emphasis in original) (internal citations and quotations omitted).

More specifically, the purported “unique” claimed feature of “a smooth end user experience” that “up-shifts and down-shifts in response to network and client CPU availability,” was already present in the prior art. For example, Leaning discloses upshifting and downshifting quality of the stream in response to, for example, network congestion to ensure a smooth and uninterrupted stream. *See, e.g.*, Section IX.A.1 Ground 1 claims 1[B][2]-1[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 explained in the Grounds above, at least Leaning discloses using simple HTTP protocol for clients to request transfer of files from standard web servers, rather than specialized media servers. *See, e.g.*, Section IX.A.1 Ground 1 claims 1[B][2]; EX1004, 2:9-32, 3:19-4:3.

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

XI. NO BASIS FOR DISCRETIONARY DENIAL

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

1. *Fintiv* Factors

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 factor is neutral because Petitioner has not yet moved to stay the Delaware Litigation pending IPR.

Second Factor. This factor favors institution as a Final Written Decision is likely before a trial occurs given no trial date is yet scheduled for the Delaware Litigation—which was just filed on January 24, 2024.

Third Factor. This factor favors institution given the Delaware Litigation is in its earliest stages and no schedule has yet been set.

Fourth Factor. This factor favors institution. Petitioner stipulates that if this '156 Patent IPR is instituted, Petitioner will not pursue invalidity grounds in the Delaware Litigation of the Challenged Claims on any ground raised, or that could have been reasonably raised in this IPR for the Challenged Claims. *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12, at 18-19 (PTAB Dec. 1, 2020).

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

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

2. General Plastic Factors

Additionally, the *Gen. Plastic Indus. Co. v. Canon Kabushiki Kaisha* factors weigh against discretionary denial. IPR2016-01357, Paper 19, at 16-18 (PTAB Sept. 6, 2017).

First Factor. This factor favors institution or is at least neutral. Although many of the same claims were challenged in a prior petition by Petitioner (in the Ogdon-based IPR), in the instant petition, Petitioner additionally challenges claim 18—which was not challenged in the Ogdon-based IPR. *See Tesla, Inc. v. Charge Fusion Tech., LLC*, IPR2023-00062, Paper 13 at 9 (PTAB May 11, 2023) (finding Factor 1 weighed in favor of institution of follow-on petition where “fewer claims were challenged in” the prior petition).

Second Factor. This factor favors institution. Petitioner has been diligent in searching for prior art and first became aware of the primary reference Leaning on Friday January 5, 2024. Once Leaning was discovered and sufficiently analyzed, Petitioner immediately and diligently proceeded to draft and file this Leaning-based Petition and Leaning-based petitions for seven other related patents (*See* Section II.B). Despite Leaning’s strength as an invalidating reference, it was not discovered or relied upon by any USPTO examiners, the respondents at the ITC, or prior targets

of DISH's district court assertions of the '156 and related patents. This supports finding that there was no reason that Petitioner should have known of Leaning at the time of filing the Ogdon-based IPR.

Although U.S. Patent No. 8,868,772, a parent Patent to the '156 Patent, cites on its face US2004/0030547 (also to Leaning et al.) published just two months before the alleged Priority Date and titled "Encoding Audio Signals" with claims and Abstract drawn to encoding of audio signals, it is not in the same family as the Leaning reference relied upon in this Petition. Running a family search on the cited US2004/0030547 does not turn up this Leaning reference. Further, the US2004/0030547 reference is not cited on the face of the '156 Patent just one of 340 references cited on the face of the Parent 8,868,772 Patent and it was never used by the Examiner or identified by the Applicant during prosecution of the parent 8,868,772 Patent, the '156 Patent, or any related patents other than being cited on an IDS. Therefore, Petitioner discovered Leaning within a reasonable period of time and was diligent in filing this petition.

Finally, although Petitioner is relying on the same secondary reference of Ala-Honkola that was used as a secondary references in the Ogdon-based IPR, this does not weigh against institution. Leaning is relied upon to teach every limitation for all challenged claims and Ala-Honkola is only relied upon as an alternative teaching for TCP and HTTP GET limitations.

Third Factor. This factor favors institution. DISH has not yet filed its POPR and, as explained above, Petitioner only discovered the Leaning reference on January 5, 2024 and worked diligently to draft and file this (and seven other Leaning-based petitions) beginning on January 10, 2024 and filed the instant Petition and the other seven Leaning-based petitions as soon as reasonably possible. Further, DISH's POPR arguments filed in IPR proceedings for other Ogdon-based petitions for related patents were directed to the Ogdon reference—not Leaning. Thus Petitioner did not and could not use Petitioner's arguments as a “roadmap” for this Leaning-based petition. *See LG Elecs., Inc. v. Bell N. Rsch., LLC*, IPR2020-0319, Paper 15 (PTAB June 23, 2020) (rejecting Patent Owner's arguments that Petitioner used knowledge gained from the POPR to improve the petition where the Board could “not discern specific arguments in the current petition that are in response to arguments made in a prior preliminary response”).

Fourth Factor. This factor favors institution. Petitioner filed this Petition shortly after discovering Leaning and worked diligently to draft the instant Petition (and seven other Leaning-based petitions).

Fifth Factor. This factor favors institution. Petitioner has adequately explained its diligence since discovering the Leaning.

Sixth Factor. This factor favors institution. Given the at least seven other district court litigations where DISH has asserted the '156 Patent against parties not

related to Petitioner, and given the strength of Leaning as an invalidating reference, it is highly likely that if the Board exercises its discretion to deny this Petition the Board will see a similar or copycat Leaning-based petition in the future from one or more of these other parties.

Seventh Factor. This factor is neutral. Any trial in the present proceeding could be resolved within the one-year statutory timeframe.

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 '156 Patent. Leaning is not cited on the face of the '156 Patent. As noted above, a parent to the '156 Patent does cite on its face US2004/0030547 (also to Leaning et al.) titled “Encoding Audio Signals” with abstract and claims drawn to encoding of audio signals, but US2004/0030547 is not in the same family as the PCT Leaning reference relied upon in this Petition. Even though the cited US2004/0030547 does have overlapping disclosures with Leaning, Leaning has relevant disclosures in the Abstract, specification, and published claims directed to subject matter such as a

terminal for playing streaming audio or video from a remote server that are not disclosed in US2004/0030547 and that are relied upon in this Petition such that US2004/0030547 is not cumulative of Leaning.

As Ground 1 above demonstrates, Leaning teaches each and every limitation of every claim in the '156 Patent. *See* Section IX.A. Alternatively, as Ground 2 demonstrates, Leaning in view of Ala-Honkola teaches each and every limitation of every claim in the '156 Patent. *See* Section IX.B.

Moreover, US2004/0030547 was not submitted during prosecution of the '156 Patent. Even though it was listed in an IDS during prosecution of the parent U.S. 8,868,772 Patent along with 235 other references and is one of 340 references on the face of the 8,868,772 Patent. EX1018, 1286-1308. But other than the Examiner of the 8,868,772 Patent generally stamping that every reference in the IDS was considered (EX10, 2258), there is no evidence that the Examiner actually considered the disclosures of US2004/0030547; it was never used in a rejection and never addressed in the prosecution history of the '156 Patent, the parent 8,868,772 Patent, or any related patents.

XII. CONCLUSION

Petitioner requests *inter partes* review and cancellation of claims 1-18.

DATED: January 30, 2024

Respectfully submitted,

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CERTIFICATION OF COMPLIANCE UNDER 37 CFR § 42.24(d)

Pursuant to 37 C.F.R. §42.24(d), Petitioner certifies that this Petition for *Inter Partes* Review has total 12,489 words as counted by Microsoft Word, exclusive of the table of contents, table of authorities, mandatory notices under § 42.8, certificate of service, word count, and appendix of exhibits or claim listing (37 C.F.R. § 42.24(a)). This is within the 14,000 word limit allowed under § 42.24(a)(1)(i).

DATED: January 30, 2024

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CERTIFICATE OF SERVICE

I hereby certify that on January 30, 2024 I caused a true and correct copy of the foregoing materials:

- Petition for *Inter Partes* Review of U.S. Patent 10,757,156
- Exhibits
- Petitioner's Power of Attorney

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

Correspondence Address for U.S. Patent 10,757,156 as follows:

54583 – Dish Technologies L.L.C.
9601 S. Meridian Blvd
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I also caused a courtesy copy of the foregoing materials to be served via email on DISH's counsel of record in the district court litigation:

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