

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VUDU, LLC,
Petitioner,

v.

IDEAHUB, INC.,
Patent Owner.

IPR2020-01688
Patent 10,270,830 B2

Before BRYAN F. MOORE, MIRIAM L. QUINN, and
MONICA S. ULLAGADDI, *Administrative Patent Judges*.

ULLAGADDI, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
Denying Patent Owner's Motion to Amend
35 U.S.C. § 318(a)

I. INTRODUCTION

Vudu, LLC (“Petitioner”) filed a Petition (Paper 1, “Petition” or “Pet.”) requesting an *inter partes* review of claims 1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, and 23 (the “challenged claims”) of U.S. Patent No. 10,270,830 B2 (Ex. 1001, “the ’830 patent”) pursuant to 35 U.S.C. §§ 311–319, accompanied by the supporting Declarations of Dr. Azer Bestavros (Ex. 1003), Mr. John Meredith (Ex. 1010), and Dr. Anthony Vetro (Ex. 1022). Ideahub, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 11 (“Preliminary Response” or “Prelim. Resp.”).

We instituted trial on the challenged claims on all grounds set forth in the Petition. Paper 16. Patent Owner did not file a response, but instead filed a Contingent Motion to Amend, proposing substitute claims 36–46 in the event the challenged claims are determined to be unpatentable. Paper 21. Petitioner filed an Opposition to Patent Owner’s Contingent Motion to Amend. Paper 23. On October 27, 2021, the panel entered its Preliminary Guidance (Paper 25) indicating that there was a reasonable likelihood that the substitute claims proposed in the Contingent Motion to Amend were unpatentable. Paper 25, 6–19.

Patent Owner filed a Revised Contingent Motion to Amend. Paper 26 (“Rev. MTA”). Petitioner filed an Opposition to Patent Owner’s Revised Motion to Amend. Paper 28 (“Opp. Rev. MTA” or “Opposition”). Patent Owner filed a Reply to Petitioner’s Opposition. Paper 32 (“Reply Opp. Rev.” or “Reply”). Petitioner filed a Sur-reply to Patent Owner’s Reply. Paper 42 (“Pet. Sur-reply”). We conducted an oral hearing on February 15, 2022. A transcript of the oral hearing has been entered in the record. Paper 46 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). We base our decision on the preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). Having reviewed the arguments of the parties and the supporting evidence, we determine that Petitioner has proven by a preponderance of the evidence that claims 1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, and 23 of the '830 patent are unpatentable. In addition, we deny Patent Owner's Revised Contingent Motion to Amend.

II. BACKGROUND

A. *Real Parties in Interest*

In addition to itself, Petitioner (Vudu, LLC) identifies the following entities as real parties in interest: Fandango Media, LLC; Fandango Holdings LLC; MTC Acquisition LLC; NBCUniversal Fandango Holdings, LLC; NBCUniversalMedia, LLC; and Walmart Inc. Pet. 3. In addition to itself, Patent Owner (Ideahub, Inc.) identifies Helios Streaming, LLC as a real party in interest. Paper 3, 1.

B. *The '830 Patent*

The '830 patent concerns a “method and apparatus for an adaptive Hypertext Transfer Protocol (HTTP) streaming service using metadata of media content. . . .” Ex. 1001, code (57). Figure 1, reproduced below, illustrates “a Dynamic Adaptive Streaming over HTTP (DASH) high-level data model.” *Id.* at 3:48–49.

FIG. 1

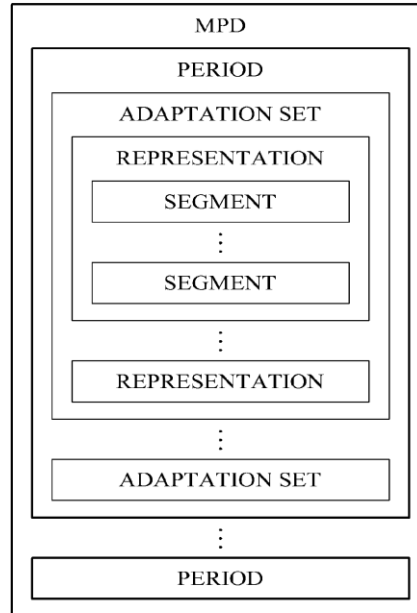


Figure 1 depicts a hierarchy of elements in the DASH data model. The data model of Figure 1 depicts a top-level media presentation description (MPD) which

may include a sequence of one or more periods. Each of the periods may include one or more adaptation sets. When an adaptation set includes one or more media content components, each of the media content components may be individually defined. Each of the adaptation sets may include one or more representations. Each of the representations may include one or more sub-representations. Each of the representations may include one or more segments. Segments may include media data, and/or metadata to access, decode, and present media content including the segments.

Ex. 1001, 7:22–35. The ’830 patent explains that the “metadata may include information used to describe a relationship between the representations, and include information for terminals having different display bit depth.” *Id.* at code (57). The ’830 patent discloses that these elements may be

implemented by the XML syntax as shown in Table 5, which is reproduced below.

TABLE 5

```
<!-- Adaptation Set -->
<xs:complexType name="AdaptationSetType">
  <xs:complexContent>
    <xs:extension base="RepresentationBaseType">
      <xs:sequence>
        <xs:element name="Accessibility" type="DescriptorType"
minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="Role" type="DescriptorType"
minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="Rating" type="DescriptorType"
minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="Viewpoint" type="DescriptorType"
minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="ContentComponent"
type="ContentComponentType" minOccurs="0"
maxOccurs="unbounded"/>
        <xs:element name="BaseURL" type="BaseURLType"
minOccurs="0" maxOccurs="unbounded"/>
        <xs:element name="SegmentBase" type="SegmentBaseType"
minOccurs="0"/>
        <xs:element name="SegmentList" type="SegmentListType"
```

The first portion of Table 5 depicts the XML syntax for an adaptation set.

The second portion of Table 5, reproduced below, depicts XML attributes and the SegmentTemplate element.

TABLE 5-continued

```

minOccurs="0"/>
  <xs:element name="SegmentTemplate"
type="SegmentTemplateType" minOccurs="0"/>
  <xs:element name="Representation" type="RepresentationType"
minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:attribute ref="xlink:href"/>
  <xs:attribute ref="xlink:actuate" default="onRequest"/>
  <xs:attribute name="id" type="xs:unsignedInt"/>
  <xs:attribute name="group" type="xs:unsignedInt"/>
  <xs:attribute name="lang" type="xs:language"/>
  <xs:attribute name="contentType" type="xs:string"/>
  <xs:attribute name="par" type="xs:string"/>
  <xs:attribute name="minBandwidth" type="xs:unsignedInt"/>
  <xs:attribute name="maxBandwidth" type="xs:unsignedInt"/>
  <xs:attribute name="minWidth" type="xs:unsignedInt"/>
  <xs:attribute name="maxWidth" type="xs:unsignedInt"/>
  <xs:attribute name="minHeight" type="xs:unsignedInt"/>
  <xs:attribute name="maxHeight" type="xs:unsignedInt"/>
  <xs:attribute name="minFrameRate" type="xs:string"/>
  <xs:attribute name="maxFrameRate" type="xs:string"/>
  <xs:attribute name="segmentAlignment"
type="ConditionalUintType" default="false"/>
  <xs:attribute name="subsegmentAlignment"
type="ConditionalUintType" default="false"/>
  <xs:attribute name="subsegmentStartsWithSAP" type="SAPType"
default="0"/>
  <xs:attribute name="bitstreamSwitching" type="xs:boolean"/>
  </xs:extension>
</xs:complexContent>
</xs:complexType>
<!-- Conditional Unsigned Integer (unsignedInt or boolean) -->
<xs:simpleType name="ConditionalUintType">
  <xs:union memberTypes="xs:unsignedInt xs:boolean"/>
</xs:simpleType>

```

The second portion of Table 5 depicts XML attributes.

The '830 patent discloses that "[s]egment information may be assigned to representations, through presence of elements 'BaseURL,' 'SegmentBase,' 'SegmentTemplate' and/or 'SegmentList.'" *Id.* at 17:57–59. "The segment information may provide information on location, availability and properties of all of one or more segments included in a representation." *Id.* at 17:59–62. The '830 patent further discloses that, "to express default values, the elements 'SegmentBase,' 'SegmentTemplate' and 'SegmentList'

may be included in the element ‘Period’ or ‘AdaptationSet.’” *Id.* at 17:67–18:3.

The ’830 patent explains that “[w]hen either ‘SegmentTemplate’ or ‘SegmentList’ exists in a level of a hierarchy, the other element may not be present on a lower hierarchy level.” *Id.* at 18:3–5. The ’830 patent further discloses that the “elements ‘SegmentBase,’ ‘SegmentTemplate’ and ‘SegmentList’ may inherit attributes and elements from the same element on a higher level.” *Id.* at 18:5–8.

C. Related Matters

As required by 37 C.F.R. § 42.8(b)(2), Patent Owner identifies judicial matters that would affect, or be affected by, a decision in this proceeding. In particular, the parties inform us that the ’830 patent is asserted in the following district court cases:

Helios Streaming, LLC v. Starz Entertainment, LLC, No. 8:19-cv-2140 (C.D. Cal.);

Helios Streaming, LLC v. Vudu, Inc., No. 1:19-cv-1792 (D. Del.);

Helios Streaming, LLC v. Crackle, Inc., No. 1:19-cv-1818 (D. Del.);

and

Helios Streaming, LLC v. Showtime Digital, Inc., No. 1:19-cv-1978 (D. Del.).

Patent Owner also identifies IPR2020-01689, which challenges U.S. Patent No. 10,313,414 (“the ’414 patent”), which claims priority to the ’830 patent.

Application No. 16/229,092 filed on December 21, 2018, now the ’414 patent, application No. 16/386,609 filed on April 17, 2019, now U.S.

Patent No. 10,645,13, and application No. 16/861,912 filed on April 29, 2020, now U.S. Patent No. 11,082,470, all claim priority to the '830 patent.¹

D. Illustrative Claim

Petitioner challenges claims 1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, and 23 of the '830 patent. Pet. 1. Claims 1, 8, 15, and 19 are independent. Claim 1 is illustrative and reproduced below.

[1.0] A method of providing media content performed by a DASH (Dynamic Adaptive Streaming over HTTP) client, the method comprising:

[1.1] receiving a Media Presentation Description (MPD) of a media content; and

[1.2] accessing segments of the media content based on information provided by the MPD,

[1.3] wherein the MPD includes one or more periods,

[1.4] wherein each of the periods includes one or more adaptation sets,

[1.5] wherein each of the adaptation sets includes one or more representations,

[1.6] wherein each of the representations includes one or more segments,

[1.7] wherein the MPD includes one or more attributes or elements that are common to each of the periods, each of the adaptation sets, each of the representations, and each of the segments,

[1.8] wherein the period includes one or more attributes or elements that are common to each of the adaptation sets, each of the representations, and each of the segments for that period,

[1.9] wherein the adaptation set includes one or more attributes or elements that are common to each of the representations and each of the segments for that adaptation set, and

¹ Priority information was obtained from the USPTO's Public Patent Application Information Retrieval (PAIR) System.

[1.10] wherein the representation includes one or more attributes or elements that are common to each of the segments for that representation.

E. Asserted Grounds

Petitioner presents the following challenges as summarized in the chart below. Pet. 6, 7. Petitioner supports these challenges with the First Declaration of Dr. Azer Bestavros (Ex. 1003).

Claim(s) Challenged	35 U.S.C. §	Reference/Basis
1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, 23	103(a) ²	DIS 23001-6 ³
1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, 23	102(a)	DIS 23009-1 ⁴
1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, 23	103(a)	DIS 23009-1
1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21	102(a)	3GPP TS 26.247 ⁵
1, 3, 4, 6, 8, 11, 13, 15, 18,	103(a)	3GPP TS 26.247

² The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), included revisions to 35 U.S.C. § 103 that became effective after the effective filing date of the challenged claims. Therefore, we apply the pre-AIA version of 35 U.S.C. § 103.

³ International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) Final Committee Draft (FCD) 23001-6, “Information technology—MPEG systems technologies – Part 6: Dynamic adaptive streaming over HTTP (DASH),” dated January 28, 2011 (Ex. 1004, “DIS 23001-6”).

⁴ ISO/IEC Draft International Standard (DIS 23009-1), “Information technology—Dynamic adaptive streaming over HTTP (DASH)— Part 1: Media presentation description and segment formats,” dated August 30, 2011 (Ex. 1005, “DIS 23009-1”).

⁵ 3rd Generation Partnership Project (3GPP) Technical Specification (TS) 26.247 V10.1.0 (2011-11), “3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Transparent end-to-end Packet-switched Streaming Service (PSS); Progressive Download and Dynamic Adaptive Streaming over HTTP (3GP-DASH) (Release 10)” (Ex. 1006, “3GPP TS 26.247”).

Claim(s) Challenged	35 U.S.C. §	Reference/Basis
19, 21		

III. ANALYSIS

A. *Legal Standards*

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.⁶ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. *Level of Ordinary Skill in the Art*

Petitioner contends that:

A person of ordinary skill in the art (“POSA”) in the relevant field as of the earliest priority date would have had at least the equivalent of a Bachelor’s degree in electrical engineering, computer engineering, computer science, or a related subject and two or more years of experience in the field of media streaming over the Internet.

Pet. 18–19 (citing Ex. 1003 ¶ 82). Patent Owner does not dispute Petitioner’s assertions regarding the level of ordinary skill in the art, nor

⁶ Patent Owner does not present objective evidence of nonobviousness.

does it present its own definition. We adopt Petitioner’s definition as it is consistent with the specification of the ’830 patent and the cited references.

C. Claim Construction

In *inter partes* review proceedings based on petitions filed on or after November 13, 2018, such as this one, we construe claims using the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), as articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and its progeny. See 37 C.F.R. § 42.100(b).

Petitioner proposes that we construe “adaptation set,” “SegmentBase,” and “SegmentTemplate.” Pet. 19–21. Patent Owner does not address claim construction in its briefing.

We need not construe any claim term to resolve any issues before us, and therefore, do not expressly define any claim term in our Decision. See *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (explaining that construction is needed only for terms that are in dispute, and only as necessary to resolve the controversy).

D. Priority Date

Petitioner contends that the challenged claims are not entitled to claim priority to the 2011 Korean application (KR10-2011-0023271) listed on the face of the ’830 patent, and thus the claims have a priority date no earlier than March 16, 2012. Pet. 22–24. Based on this asserted priority date, Petitioner contends that the asserted prior art references qualify as prior art under at least 35 U.S.C. § 102(a). *Id.* at 27–28, 31, 33. Patent Owner does not dispute Petitioner’s showing as to the priority date of the ’830 patent in any post-institution briefing.

The ’830 patent claims domestic priority to application No. 15/834,702, filed on December 7, 2017, now U.S. Patent No. 10,122,780

patent, which is a continuation of application No. 14/004,644, which is a National Stage Entry of application No. PCT/KR2012/001922 (“PCT ’922”) filed on March 16, 2012, now U.S. Patent No. 9,860,293 (“the ’293 patent”). Ex. 1001, code (63). The ’830 patent claims foreign priority to two Korean applications—KR10-2011-0023271, filed March 16, 2011, and KR10-2012-0026862, filed March 16, 2012. *Id.* at code (30). We consider whether the ’830 patent is entitled to the date of the earlier of the two foreign priority applications, KR10-2011-0023271, in order to determine whether DIS 23009-1 and 3GPP TS 26.247 constitute prior art.

KR10-2011-0023271 generally relates to an “accessibility feature . . . to support persons with disabilities who have difficulty in perceiving media content.” Ex. 1066, 8. Although it mentions certain elements and attributes of MPEG DASH—group, representation, sub-representation (*see, e.g., id.* at 10)—it does not discuss their hierarchy or inheritance relationships. *See* Pet. 23.

Petitioner has persuasively demonstrated that the challenged claims are not entitled to a priority date earlier than March 16, 2012 (the filing date of PCT ’922), because the disclosure of KR10-2011-0023271 does not support at least the limitations of: “the period includes one or more attributes or elements that are common to each of the adaptation sets, each of the representations, and each of the segments for that period,” as recited in independent claim 1 and as similarly recited in independent claim 8, as well as the “SegmentBase” recited in independent claim 15 and the “SegmentTemplate” recited in independent claim 19. *Id.*

Having reviewed the entirety of the record developed during trial, Patent Owner does not assert, in any post-institution briefing, that the challenged claims are entitled to an earlier priority date. *See Tech. Licensing*

Corp. v. Videotek, Inc., 545 F.3d 1316, 1327–28 (Fed. Cir. 2008) (indicating that patent owner bears a burden of production in arguing that the asserted references are not prior art based on entitlement to an earlier priority date). As such and for the reasons discussed below, Petitioner persuasively establishes that DIS 23001-6, DIS 23009-1, and 3GPP TS 26.247 qualify as prior art to the challenged claims, because Petitioner sufficiently establishes that the references were publicly accessible prior to the applicable priority date of March 16, 2012.

E. Public Accessibility

Petitioner asserts that “[t]wo of the prior art references at issue in this proceeding—DIS 23001-6 (released February 7, 2011) and DIS 23009-1 (released September 5, 2011)—are the first and second drafts of what became the adopted international MPEG DASH standard.” Pet. 14 (citing *id.* § XI.A) (emphasis omitted). Petitioner further explains that “TS 26.247 is 3GPP’s adopted version of the second draft MPEG DASH standard.” *Id.* (citing Ex. 1003 ¶ 134, Appx. C) (emphasis omitted).

According to Petitioner, “DIS 23001-6 and DIS 23009-1 qualify as printed publications because they were ‘disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, [could] locate [them].’” *Id.* at 24–25 (citing *SRI Int’l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1194 (Fed. Cir. 2008) (quoting *Bruckelmyer v. Ground Heaters, Inc.*, 445 F.3d 1374, 1378 (Fed. Cir. 2006))). Petitioner supports its arguments with the testimony of Dr. Anthony Vetro (Ex. 1022) and the testimony of Mr. John Meredith (Ex. 1010).

Patent Owner does not dispute Petitioner’s showing of public accessibility with respect to any of the cited references. For the reasons that

follow, we determine that Petitioner’s showing sufficiently establishes public availability and accessibility for at least DIS 23009-1 prior to March 16, 2012.

Petitioner asserts that DIS 23009-1 was published on the MPEG DMS in 2011. Pet. 25 (citing Ex. 1022 ¶¶ 19, 42–44, 51–55, 71–75). Dr. Vetro presents similar testimony as to DIS 23009-1—that it “was uploaded to the MPEG DMS system on September 5, 2011” (Ex. 1022 ¶¶ 71–72), available to anyone with the appropriate access credentials (*id.* ¶¶ 73–74), emailed to the MPEG DASH mailing list by Thomas Stockhammer (*id.* ¶ 75), conveyed via memorandum to INCITS/L3.1 members for retrieval, review, commenting, and voting on September 7, 2011 (*id.* ¶¶ 76–81 (citing-in-part Ex. 1033; Ex. 1048)), distributed to various liaison organizations (*id.* ¶ 82 (citing Ex. 1037)), and was available to the public for purchase from the ISO catalogue between September 7, 2011 and November 7, 2011 (*id.* ¶ 83).

Mr. Meredith also presents testimony as to the public availability and accessibility of DIS 23009-1. Ex. 1010 ¶¶ 51–59.

Patent Owner does not present arguments to the contrary. Having reviewed the entirety of the record developed during trial, we are persuaded that the cited evidence corroborates Dr. Vetro’s testimony and Mr. Meredith’s testimony and thus, supports Petitioner’s position that DIS 23009-1 was publicly available and accessible, prior to March 16, 2012, such that it was “disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, [could] locate [them].” *SRI*, 511 F.3d at 1194.

F. Challenges Based on DIS 23009-1

Petitioner contends that each of the challenged claims is unpatentable under 35 U.S.C. § 102(a) as anticipated by DIS 23009-1, as well as under 35 U.S.C. § 103(a) as obvious over DIS 23009-1. Petitioner contends that “DIS 23009-1 discloses every element of the Challenged Claims,” but that “[i]f Patent Owner contends that DIS 23009-1 does not disclose a limitation of a Challenged Claim, any such limitation would have been obvious to a POSA at the time of the purported invention in view of the general knowledge of a POSA as well as the express teachings of DIS 23009-1.” Pet. 62 (citing Ex. 1003 ¶¶ 262–263; Pet. §§ XII.B (Ground 2), VI (Technology Background)). Patent Owner does not present any arguments with respect to Petitioner’s original patentability challenges as it did not file a Patent Owner’s Response. For the reasons that follow, we are persuaded that Petitioner establishes that each of the challenged claims is unpatentable under 35 U.S.C. § 102 as anticipated by, and under 35 U.S.C. § 103 as obvious over, DIS 23009-1 by a preponderance of the evidence.

1. Overview of DIS 23009-1

DIS 23009-1 is the second finalized draft of the MPEG DASH standard and specifies a hierarchical model for DASH. DIS 23009-1 concerns an HTTP Server hosting DASH segments and a DASH Client that uses “the HTTP GET method or the HTTP partial GET method . . . to access Segments or parts thereof.” Ex. 1005 § 4.4. In Figure 3, reproduced below, DIS 23009-1 depicts the relationship between elements that implement DASH. *Id.* § 4.3 (Fig. 3).

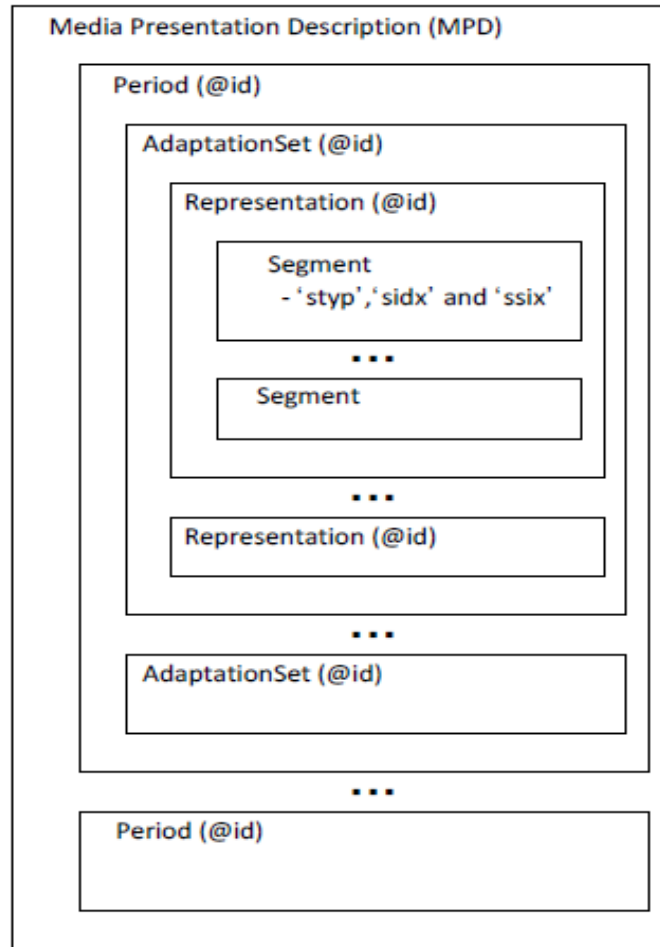


Figure 3 — DASH High-Level Data Model

Figure 3 depicts a hierarchy of elements in the DASH data model. In Figure 3, DIS 23009-1 depicts a hierarchy of elements in the DASH data model. *Id.* DIS 23009-1 discloses that a “DASH Media Presentation is described by a Media Presentation Description document,” which “describes the sequence of Periods in time that make up the Media Presentation.” *Id.* (emphasis omitted). “A Period typically represents a media content period during which a consistent set of encoded versions of the media content is available i.e. the set of available bitrates, languages, captions, subtitles etc. does not change during a Period,” and “[w]ithin a Period, material is arranged into Adaptation Sets.” *Id.* (emphasis omitted).

According to DIS 23009-1, “[a]n Adaptation Set represents a set of interchangeable encoded versions of one or several media content components.” *Id.* As an example, DIS 23009-1 describes how “there may be one Adaptation Set for the main video component and a separate one for the main audio component,” and “[i]f there is other material available, for example captions or audio descriptions, then these may each have a separate Adaptation Set.” *Id.* DIS 23009-1 also discloses that an “Adaptation Set contains a set of Representations,” which “describes a deliverable encoded version of one or several media content components.” *Id.* (emphasis omitted).

DIS 23009-1 further discloses that “[a] Representation includes one or more media streams (one for each media content component in the multiplex),” and that “[t]ypically, clients may switch from Representation to Representation during a Period in order to adapt to network conditions or other factors.” *Id.* DIS 23009-1 further discloses that “[c]lients may also ignore Representations that rely on codecs or other rendering technologies they do not support or that are otherwise unsuitable.” *Id.*

Finally, DIS 23009-1 discloses that, “[w]ithin a Representation, the content may be divided in time into Segments,” which “is the basic unit of data that is advertised in the Media Presentation Description.” *Id.* (emphasis omitted). “A URL is provided for each Segment meaning that a Segment is the largest unit of data that can be retrieved with a single HTTP request.” *Id.*

2. *Anticipation Challenges to Independent Claim 1 and Dependent Claims 3, 4, and 6*

[1.0] A method of providing media content performed by a DASH (Dynamic Adaptive

Streaming over HTTP) client, the method comprising:

Petitioner contends, and we agree, that “DIS 23009-1 discloses a ‘method of providing media content performed by a DASH (Dynamic Adaptive Streaming over HTTP) Client.’” Pet. 53 (citing Ex. 1005 §§ 4.1, 4.2, Fig. 2; Ex. 1003 ¶ 208). Petitioner further contends that “DIS 23009-1 discloses that a ‘DASH client’ performs a method of providing media content, *e.g.*, a method of ‘delivery of media content from standard HTTP servers to HTTP clients.’” *Id.* (citing Ex. 1005 §§ 4.1, 4.2).⁷

[1.1] receiving a Media Presentation Description (MPD) of a media content; and

Petitioner contends, and we agree, that “DIS 23009-1 discloses that the DASH Client receives a MPD of a media content.” *Id.* (citing Ex. 1005 §§ 4.1, 4.2, 5.2.1, Fig. 2; Ex. 1003 ¶¶ 209–210).

[1.2] accessing segments of the media content based on information provided by the MPD,

Petitioner contends, and we agree, that “DIS 23009-1 discloses that the DASH clients accesses segments of the media content using the ‘HTTP GET’ or ‘HTTP partial GET method,’” in which “the HTTP GET requests are generated based on information provided by the MPD, *i.e.* the ‘MPD provides sufficient information for the DASH Client to provide a streaming service to the user by requesting Segments from an HTTP server and demultiplexing, decoding and rendering the included media streams.” Pet. 53–54 (citing Ex. 1005 §§ 4.1, 4.4).

⁷ We need not determine whether the preamble is limiting as Petitioner sufficiently shows that the subject matter set forth in the preamble is disclosed.

[1.3] wherein the MPD includes one or more periods,
[1.4] wherein each of the periods includes one or more adaptation sets,
[1.5] wherein each of the adaptation sets includes one or more representations,
[1.6] wherein each of the representations includes one or more segments,

Petitioner contends, and we agree, that, “[i]n its ‘Hierarchical data model’ section, DIS 23009-1 discloses:”

A Media Presentation as described in the **MPD** consists of
—A sequence of **one or more Periods** as described in 5.5.2.
—**Each Period contains one or more Adaptation Sets** as described in 5.5.3. In case an Adaptation Set contains multiple media content components, then each media content component is described individually as defined in 5.5.4.
—**Each Adaptation Set contains one or more Representations** as described in 5.5.5.
...
—**Each Representation consists of one or more Segments** described in 6.

Pet. 54 (citing Ex. 1005 § 5.5.1.1); *see id.* (citing Ex. 1005 §§ 5.5.2.1, 5.5.2, 5.5.3.1, 5.5.3, 5.5.5.1, 5.5.9, 5.5.9.1; Ex. 1003 ¶¶213–220; Pet. § IX.A).

Petitioner contends, and we agree, that “DIS 23009-1 further discloses that an Adaptation Set ‘contains alternate encodings of one or more media content components,’ where each ‘alternate encoding is contained in a Representation.’” *Id.* at 55 (citing Ex. 1005 § 5.5.3.1; Pet. § IX.A).

[1.7] wherein the MPD includes one or more attributes or elements that are common to each of the periods, each of the adaptation sets, each of the representations, and each of the segments,
[1.8] wherein the period includes one or more attributes or elements that are common to each of

the adaptation sets, each of the representations, and each of the segments for that period,

[1.9] wherein the adaptation set includes one or more attributes or elements that are common to each of the representations and each of the segments for that adaptation set, and

[1.10] wherein the representation includes one or more attributes or elements that are common to each of the segments for that representation.

Petitioner explains that “[d]ue to the MPD hierarchical data model, DIS 23009-1 discloses that attributes and/or elements included at a certain hierarchical level (*e.g.*, MPD, Period, Adaptation Set, and Representation levels) are common to, or ‘inherited’ by, all hierarchical levels below that level unless otherwise overridden or superseded in a lower level.” Pet. 56 (citing Ex. 1005 § 5.5 (“Hierarchical Data Model”); Ex. 1003 ¶¶ 223–224, 227, 229, 230, 233; Pet. § VI.A).

With this understanding, Petitioner contends, and we agree, that:

(1) DIS 23009-1 discloses elements and/or attributes that may be included at the MPD level, such as the attribute `@mediaPresentationDuration` and such as the element `BaseURL`.

(2) DIS 23009-1 also discloses elements and/or attributes that may be included at the Period level, such as the attributes `@start` and `@duration` and such as the element `BaseURL`.

(3) DIS 23009-1 discloses elements and/or attributes that may be included at the Adaptation Set level, such as the attributes `@minWidth`, `@maxWidth`, `@minHeight`, `@maxHeight`, `@minBandwidth`, and `@maxBandwidth`, and such as the element `BaseURL`.

(4) DIS 23009-1 discloses elements and/or attributes that may be defined at the Representation level, such as the attribute `@bandwidth` and such as the element `BaseURL`.

Id. at 55–56 (citing Ex. 1005 §§ 5.5.1.2 (Table 4), 5.5.2.2 (Table 5), 5.5.3.2 (Table 6), 5.5.5.2 (Table 8)).

According to Petitioner, “[a]s one example of this inheritance feature, DIS 23009-1 discloses that the ‘BaseURL’ element may be provided at each of the MPD, Period, Adaptation Set, and Representation levels:”

In addition to the document level (the level above the MPD level), base URL information may be present on the following levels:

- On MPD level in MPD.BaseURL element. For details refer to 5.5.1.2.
- On Period level in Period.BaseURL element. For details refer to 5.5.2.2.
- On Adaptation Set level in AdaptationSet.BaseURL element. For details refer to 5.5.3.2.
- On Representation level in Representation.BaseURL. For details refer to 5.5.5.2.

Pet. 56–57 (citing Ex. 1005 § 5.6.4 (“URLs at each level of the MPD are resolved according to RFC3986 with respect to the BaseURL element specified at that level of the document or the level above in the case of resolving base URLs themselves.”)). We agree with Petitioner’s argument based on the evidence presented.

We have reviewed the cited portions of DIS 23009-1 and Dr. Bestavros’s testimony and we are persuaded that they support Petitioner’s contentions. As such, we are persuaded that Petitioner establishes unpatentability of independent claim 1 as anticipated by DIS 23009-1 by a preponderance of the evidence.

[3.0] The method of claim 1,

[3.1] wherein the element included at a period level is a SegmentTemplate.

Petitioner contends that “DIS 23009-1 discloses that the Period level may include a ‘SegmentTemplate’ element, which ‘specifies default Segment Template information.’” Pet. 57–58 (citing Ex. 1005 §§ 5.5.2.2

(Table 5), 5.5.9.4 (describing Segment template element); Pet. § IX.B); *see* Ex. 1003 ¶¶ 234–235.

We have reviewed the cited portions of DIS 23009-1 and Dr. Bestavros’s testimony and we are persuaded that they support Petitioner’s contentions. As such, we are persuaded that Petitioner establishes unpatentability of dependent claim 3 as anticipated by DIS 23009-1 by a preponderance of the evidence.

[4.0] The method of claim 1,

[4.1] wherein the element included at an adaptation set level is a SegmentTemplate

Petitioner contends that “DIS 23009-1 discloses that the Adaptation Set level may include a SegmentTemplate element, which ‘specifies default Segment Template information.’” Pet. 58 (citing Ex. 1005 §§ 5.5.3.2 (Table 6); 5.5.9.4 (describing Segment template element); Pet. § IX.B); *see id.* (citing Ex. 1003 ¶¶ 236–237).

We have reviewed the cited portions of DIS 23009-1 and Dr. Bestavros’s testimony and we are persuaded that they support Petitioner’s contentions. As such, we are persuaded that Petitioner establishes unpatentability of dependent claim 4 as anticipated by DIS 23009-1 by a preponderance of the evidence.

[6.0] The method of claim 1,

[6.1] wherein the element included at a representation level is a SegmentBase.

Petitioner contends that “DIS 23009-1 discloses that the Representation level may include a ‘SegmentBase’ element, which ‘specifies default Segment Base information.’” Pet. 58 (citing Ex. 1005 §§ 5.5.5.2

(Table 8), 5.5.9.2 (describing Segment base information); Pet. § IX.C); *see id.* Ex. 1003 ¶¶ 238–239).

We have reviewed the cited portions of DIS 23009-1 and Dr. Bestavros’s testimony and we are persuaded that they support Petitioner’s contentions. As such, we are persuaded that Petitioner establishes unpatentability of dependent claim 6 as anticipated by DIS 23009-1 by a preponderance of the evidence.

3. *Anticipation Challenges to Independent Claim 8 and Dependent Claims 11, 13, and 18*

[8.0] A method of providing media content performed by a server or multiple servers, comprising:

Petitioner contends, and we agree, that “DIS 23009-1 discloses that one or more servers (‘HTTP Server’) performs a method of ‘delivery of media content from standard HTTP servers to HTTP clients.’” Pet. 58–59 (citing Ex. 1005 § 4.1); *see id.* at 58 (citing Ex. 1005, Fig. 1; Ex. 1003 ¶¶ 240–241); *supra* n.7 (declining to determine whether preamble is limiting).

[8.1] transmitting a Media Presentation Description (MPD) of a media content to a client;

Petitioner contends, and we agree, that “DIS 23009-1 discloses that the HTTP server(s) send a Media Presentation Description (MPD) of a media content to a DASH Client.” Pet. 59 (citing Ex. 1005 §§ 4.1, 4.2, 5.2.1); *see id.* (citing Ex. 1005, Fig. 2; Ex. 1003 ¶¶ 242–243).

[8.2] receiving a request, from the client, for a segment of the media content;

Petitioner contends, and we agree, that “DIS 23009-1 discloses that the HTTP server(s) receive a request, *e.g.*, a ‘HTTP GET’ request, from the

DASH client for a segment of the media content.” Pet. 59 (citing Ex. 1005 §§ 4.1, 4.4, Fig. 1; Ex. 1003 ¶¶244–245).

[8.3] transmitting the media content to the client,
Petitioner contends, and we agree, that “DIS 23009-1 discloses that the HTTP server(s) transmit the media content to the DASH client in response to the ‘HTTP GET’ or ‘HTTP partial GET’ requests.” Pet. 59 (citing Ex. 1005 §§ 4.1, 4.4, Fig. 1; Ex. 1003 ¶¶ 246–247).

[8.4] wherein the MPD includes one or more periods,

[8.5] wherein each of the periods includes one or more adaptationsets,

[8.6] wherein each of the adaptation sets includes one or more representations,

[8.7] wherein each of the representations includes one or more segments,

[8.8] wherein the MPD includes one or more attributes or elements that are common to each of the periods, each of the adaptation sets, each of the representations, and each of the segments

[8.9] wherein the period includes one or more attributes or elements that are common to each of the adaptation sets, each of the representations, and each of the segments for that period,

[8.10] wherein the adaptation set includes one or more attributes or elements that are common to each of the representations and each of the segments for that adaptation set, and

[8.11] wherein the representation includes one or more attributes or elements that are common to each of the segments for that representation.

According to Petitioner “[c]laim elements [8.4]-[8.11] correspond to claim elements [1.3]-[1.10], respectively, and the citations and remarks for

claim elements [1.3]-[1.10] apply equally to claim 8.” Pet. 59 (citing Pet. XII.B.1.d–1.e).

We have reviewed the cited portions of DIS 23009-1 and Dr. Bestavros’s testimony and we are persuaded that they support Petitioner’s contentions. As such, we are persuaded that Petitioner establishes unpatentability of independent claim 8 as anticipated by DIS 23009-1 by a preponderance of the evidence.

*[11.0] The method of claim 8,
[11.1] wherein the element included at an
adaptation set level is a SegmentTemplate.*

Petitioner contends that “[t]he citations and remarks for claims 4 and 8 apply equally to claim 11 because the claim limitations are identical.” Pet. 60 (citing Pet. §§ XII.B.3, XII.B.5).

We have reviewed the cited portions of DIS 23009-1 and Dr. Bestavros’s testimony and we are persuaded that they support Petitioner’s contentions. As such, we are persuaded that Petitioner establishes unpatentability of dependent claim 11 as anticipated by DIS 23009-1 by a preponderance of the evidence.

*[13.0] The method of claim 8,
[13.1] wherein the element included at a
representation level is a SegmentBase.*

Petitioner contends that “[t]he citations and remarks for claims 6 and 8 apply equally to claim 13 because the claim limitations are identical.” Pet. 60 (citing Pet. §§ XII.B.4, XII.B.5).

We have reviewed the cited portions of DIS 23009-1 and Dr. Bestavros’s testimony and we are persuaded that they support Petitioner’s contentions. As such, we are persuaded that Petitioner establishes

unpatentability of dependent claim 13 as anticipated by DIS 23009-1 by a preponderance of the evidence.

[18.0] The method of claim 8

[18.1] wherein the SegmentBase element is included at a representation level.

Petitioner contends that “[t]he citations and remarks for claims 8 and 6 apply equally to claim 18 because the claim limitations are identical.” Pet. 61 (citing Pet. §§ XII.B.4, XII.B.5).

We have reviewed the cited portions of DIS 23009-1 and Dr. Bestavros’s testimony and we are persuaded that they support Petitioner’s contentions. As such, we are persuaded that Petitioner establishes unpatentability of dependent claim 18 as anticipated by DIS 23009-1 by a preponderance of the evidence.

4. *Anticipation Challenge to Independent Claim 15*

[15.0] A method of providing media content performed by a DASH (Dynamic Adaptive Streaming over HTTP) client, the method comprising:

[15.1] receiving a Media Presentation Description (MPD) of a media content; and

[15.2] accessing segments of the media content based on information provided by the MPD,

[15.3] wherein the MPD includes one or more periods,

[15.4] wherein each of the periods includes one or more adaptation sets,

[15.5] wherein each of the adaptation sets includes one or more representations,

[15.6] wherein each of the representations includes one or more segments,

Petitioner cites its showing for preamble 1.0 and limitations 1.1 through 1.6 of claim 1 for teaching preamble 15.0 and limitations 15.1 through 15.6 of independent claim 15. Pet. 60 (citing Pet. § XII.B.1.a–1.d.). We have reviewed the cited portions of DIS 23009-1 and are persuaded that they disclose the subject matter of the preamble 15.0 and limitations 15.1 through 15.6. *Supra* n.7 (declining to determine whether preamble is limiting).

[15.7] wherein information on a location, availability or property for the one or more segments in a representation are comprised in a SegmentBase element.

Petitioner contends that “DIS 23009-1 discloses: ‘Representations are assigned Segment Information through the presence of the elements BaseURL, SegmentBase, SegmentTemplate and/or SegmentList,’ and the ‘Segment Information provides information on the location, availability and properties of all segments contained in one Representation.’” Pet. 60 (citing Ex. 1003 ¶¶ 252–253; Ex. 1005 §§ 5.5.5.2 (Table 8), 5.5.9.1, 5.5.9.2). We have reviewed the cited portions of DIS 23009-1 and are persuaded that they disclose limitation 15.7.

We have reviewed the cited portions of DIS 23009-1 and Dr. Bestavros’s testimony and we are persuaded that they support Petitioner’s contentions. As such, we are persuaded that Petitioner establishes unpatentability of independent claim 15 as anticipated by DIS 23009-1 by a preponderance of the evidence.

5. *Anticipation Challenges To Independent Claim 19 and Dependent Claims 21 and 23*

[19.0] A method of providing media content performed by a DASH (Dynamic Adaptive

Streaming over HTTP) client, the method comprising:

[19.1] receiving a Media Presentation Description (MPD) of a media content; and

[19.2] accessing segments of the media content based on information provided by the MPD,

[19.3] wherein the MPD includes one or more periods,

[19.4] wherein each of the periods includes one or more adaptation sets,

[19.5] wherein each of the adaptation sets includes one or more representations,

[19.6] wherein each of the representations includes one or more segments,

Petitioner contends that “[c]laim elements [19.0]-[19.6] correspond to claim elements [1.0]-[1.6], respectively, and the citations and remarks for claim elements [1.0]-[1.6] apply equally to claim 19.” Pet. 61 (citing Pet. §§ XII.B.1.a–1.d). We have reviewed the cited portions of DIS 23009-1 and are persuaded that they disclose the subject matter of the preamble 19.0 and limitations 19.1 through 19.6. *Supra* n.7 (declining to determine whether preamble is limiting).

[19.7] wherein information on a location, availability or property for the one or more segments in a representation are comprised in a SegmentTemplate element.

Petitioner further contends that “DIS 23009-1 discloses: ‘Representations are assigned Segment Information through the presence of the elements BaseURL, SegmentBase, SegmentTemplate and/or SegmentList,’ and the ‘Segment Information provides information on the location, availability and properties of all Segments contained in one

Representation.” Pet. 61 (quoting Ex. 1005 § 5.5.9.1) (emphasis omitted); see *id.* (citing Ex. 1005 §§ 5.5.2.2 (Table 5), 5.5.3.2 (Table 6), 5.5.9.4; Ex. 1003 ¶¶ 256–257). We have reviewed the cited portions of DIS 23009-1 and are persuaded that they disclose limitation [19.7].

We have reviewed the cited portions of DIS 23009-1 and Dr. Bestavros’s testimony and we are persuaded that they support Petitioner’s contentions. As such, we are persuaded that Petitioner establishes unpatentability of independent claim 19 as anticipated by DIS 23009-1 by a preponderance of the evidence.

[21.0] The method of claim 19,

[21.1] wherein the SegmentTemplate element is included at an adaptation set level.

Petitioner contends that “[t]he citations and remarks for claims 19 and 4 apply equally to claim 21 because the claim limitations are identical.” Pet. 61 (citing Pet. §§ XII.B.3, XII.B.10).

We have reviewed the cited portions of DIS 23009-1 and Dr. Bestavros’s testimony and we are persuaded that they support Petitioner’s contentions. As such, we are persuaded that Petitioner establishes unpatentability of dependent claim 21 as anticipated by DIS 23009-1 by a preponderance of the evidence.

[23.0] The method of claim 19,

[23.1] wherein a duration attribute and a SegmentTimeLine element are included at a period level, an adaptation set level, or a representation level.

Petitioner contends that “DIS 23009-1 discloses this limitation because it discloses a SegmentTimeline element and that a mandatory duration attribute (‘@d’) is included in the SegmentTimeline element.” Pet.

62 (citing Ex. 1005 §§ 5.5.2.2 (Period level), 5.5.3.2 (Adaptation Set level), 5.5.5.2 (Representation level), 5.5.9.2.1, 5.5.9.2.2 (Table 13), 5.5.9.6, 5.5.9.6.1; Ex. 1003 ¶¶ 259–261). According to Petitioner, “[t]he SegmentTimeline element may be included as multiple Segment base information as part of the Segment Base element . . . which may be included at a Period, Adaptation Set, or Representation level.” *Id.*

We have reviewed the cited portions of DIS 23009-1 and Dr. Bestavros’s testimony and we are persuaded that they support Petitioner’s contentions. As such, we are persuaded that Petitioner establishes unpatentability of dependent claim 23 as anticipated by DIS 23009-1 by a preponderance of the evidence.

6. *Obviousness Challenge Applying DIS 23009-1 to Independent Claims 1, 8, 15, and 19, as well as Dependent Claims 3, 4, 6, 11, 13, 18, 21, and 23*

With respect to Petitioner’s obviousness challenge applying DIS 23009-1, the Federal Circuit has held that “a disclosure that anticipates under § 102 also renders the claim invalid under § 103, for anticipation is the epitome of obviousness.” *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983) (quotation marks omitted). Our conclusions that Petitioner has shown unpatentability of claims 1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, and 23 as anticipated by DIS 23009-1 by a preponderance of the evidence informs our conclusion here that Petitioner has shown unpatentability of claims 1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, and 23 as obvious over DIS 23009-1 by a preponderance of the evidence. *See* Pet. 62.

G. *Challenges Based on DIS 23001-6 and 3GPP 26.247*

We do not reach the challenges applying DIS 23001-6 or the challenges applying 3GPP 26.247 because we determine that each of the

challenged claims are anticipated by and obvious in view of DIS 23009-1. *Supra* § III.F. See *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding that a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”); *Bos. Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App’x 984, 990 (Fed. Cir. 2020) (non-precedential) (recognizing that the “Board need not address issues that are not necessary to the resolution of the proceeding” and, thus, agreeing that the Board has “discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims”).

IV. MOTION TO AMEND

A. *Statutory and Regulatory Requirements*

Patent Owner proposes substitute claims 36–46 in its Revised Contingent Motion to Amend to replace challenged, original claims 1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, and 23 in the event these claims are found unpatentable. Rev. MTA i–ii. We have determined that original claims 1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, and 23 of the ’830 patent have been shown to be unpatentable by a preponderance of the evidence; therefore, we proceed to address Patent Owner’s Revised Contingent Motion to Amend.

Before considering the patentability of any proposed substitute claims, we first determine whether the motion to amend meets the statutory and regulatory requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121. As part of this showing, Patent Owner bears the burden of persuasion to show, by a preponderance of the evidence, that: (1) the amendment responds to a ground of unpatentability involved in the trial; (2) the amendment does not seek to enlarge the scope of the claims of the patent or introduce new subject matter; (3) the amendment proposes a reasonable number of substitute claims; and (4) the proposed claims are supported in

the original disclosure. 37 C.F.R. § 42.121(d)(1); *Lectrosonics, Inc. v. Zaxcom, Inc.*, Case IPR 2018-01129 (PTAB Feb. 25, 2019) (Paper 15) (precedential). Although Patent Owner must demonstrate that the statutory and regulatory requirements for a motion to amend are met, Petitioner “bears the burden of persuasion to show, by a preponderance of the evidence, that any proposed substitute claims are unpatentable.” 37 C.F.R. § 42.121(d)(2); *Lectrosonics*, Paper 15 at 4 (citing *Aqua Prods. Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017); *Bosch Auto. Serv. Sols. LLC v. Iancu*, 878 F.3d 1027 (Fed. Cir. 2017)).

1. *Requirements Under 35 U.S.C. § 316(d) and
37 C.F.R. § 42.121*

Patent Owner proposes a one-for-one substitution of challenged, original claims 1, 3, 4, 8, 11, 13, 15, 18, 19, 21, and 23 along with the cancellation of original claim 6 and therefore meets the requirement for a reasonable number of proposed substitute claims. Rev. MTA 2–3; 37 C.F.R. § 42.121(a)(3); *see also Lectrosonics*, Paper 15 at 4 (“There is a rebuttable presumption that a reasonable number of substitute claims per challenged claim is one (1) substitute claim.”). In particular, claims 36–46 are proposed to replace claims 1, 3, 4, 8, 11, 13, 15, 19, 21, and 23, respectively. Rev. MTA 20–32.

Patent Owner also proposes narrowing limitations in proposed substitute claims. Rev. MTA App’x A. A patent owner bears the burden of persuasion to show by a preponderance of the evidence that a motion to amend does not seek to enlarge the scope of the claims of the patent. 37 C.F.R. §§ 42.121(a)(2)(ii), 42.121(d)(1) (2021). Patent Owner argues that the proposed substitute claims do not enlarge the scope of the original claims because proposed substitute claims 36, 38–40, 42, 44, and 46

maintain the “preexisting limitations” of claims 1, 4, 8, 11, 15, 19, and 23 and add additional limitations. Rev. MTA 4–5. Patent Owner also argues that proposed substitute claim 37 “*replaces* the preexisting limitations of claim 3 with *another equally narrow limitation* and therefore does not broaden the scope of claim 3.” *Id.* at 4 (emphasis added). Patent Owner presents substantially similar arguments with respect to proposed substitute claims 41, 43, and 45. *Id.* at 4–5. Petitioner does not present any arguments regarding enlarging the scope of the claims. *See generally* Opp. Rev. MTA. We are persuaded by Patent Owner’s arguments that none of claims 36–46 enlarges the scope of the original claims as required by statute, 35 U.S.C. § 316(d)(3), and regulation, 37 C.F.R. § 42.121(a)(2)(ii).

We are further persuaded that narrowing limitations in proposed substitute claims are in direct response to the grounds of unpatentability involved in this trial, i.e., those based on DIS 23001-6, DIS 23009-1, and 3GPP TS 26.247. *Supra* § II.E.

We next consider whether Patent Owner has shown the proposed substitute claims are supported by the original disclosure. Patent Owner argues that “[e]ach element of the substitute claims is supported by the original disclosures and adds no new matter,” and more particularly, that “[e]ach element of Substitute Claims 36 through 46 [is] supported at least by U.S. Patent Application No. 14/004,644 (Ex. 2004) to which the ’830 patent claims priority.” Rev. MTA 5 (citing Ex. 1001, code (63)). Patent Owner identifies corresponding support for each limitation in bullet-point format. *Id.* at 5–15.

2. *Revised Substitute Dependent Claims 38, 40, and 46*

Petitioner contends that “Patent Owner has not identified sufficient written description support for ‘wherein the user characteristic information

includes the usedWith attribute and the equivalentTo attribute,’ as required by claims 38, 40, and 46, claim elements [38.6], [40.6], and [46.6], respectively.” Opp. Rev. MTA 3 (citing Ex. 2004 ¶¶ 255–257, Table 13; Ex. 2005 ¶¶ 254–256; Paper 26, 8, 10, 15). According to Petitioner, the portions of the disclosure cited by Patent Owner “merely describe the ‘usedWith’ and ‘equivalentTo’ attributes, and contain no disclosure that the claimed ‘***user characteristic information***’ includes the usedWith attribute and the equivalentTo attribute.” *Id.* (citing Ex. 1094 ¶¶ 29–30). Dr. Bestavros explains that “there is no identification as to what portion or portions of the MPD file correspond to ‘user characteristic information,’ or explanation as to how those portions of the MPD file include the usedWith attribute and an equivalentTo attribute.” *Id.* (citing Ex. 1094 ¶ 30). Petitioner further contends that “[t]he Korean Priority Application (EX1066) contains a similar description of the ‘usedWith’ and ‘equivalentTo’ attributes, and also does not provide sufficient written description support.” *Id.* (citing Ex. 1066, 11 (Table 2); Ex. 1094 ¶ 29).

Claim limitations [38.6], [40.6], and [46.6] recite the disputed limitation “wherein the user characteristic information includes the usedWith attribute and the equivalentTo attribute.” Among the cited portions in paragraphs 255 through 257 of Application No. 14/004,644 (“the ‘644 application,” Ex. 2004) is the disclosure that, “[t]o describe the relationship between representations, the elements ‘Group’, ‘AdaptationSet’, ‘Representation’ or ‘SubRepresentation’ may further include” the usedWith attribute and the equivalentTo attribute, as well as the XML syntax for the elements. Ex. 2004 ¶¶ 255–257, Table 13; *see also* Ex. 2005 ¶¶ 254–256,

Table 13 (substantially identical disclosure as to the relationship between representations and usedWith and equivalentTo attributes).⁸

In its Reply, Patent Owner responds by citing additional portions of the '644 application and arguing that

[t]he claimed “user characteristic information” thus refers generally to “**additional configuration information**” that is “used to select representations based on a user characteristic.” For example, accessibility features of a representation (i.e., “user characteristic information”) may be used to support disabled users by selecting an appropriate representation. The specification then describes the attributes claimed in [38.6]—usedWith and equivalentTo—“hereinafter” and explains that they “may be useful for accessibility.”

Reply Rev. Opp. 1 (Ex. 2004 ¶¶ 232, 234, 253).

The newly-cited portion in paragraph 232 of the '644 application does not describe additional configuration information nor user characteristic information. Instead, it describes “an additional configuration to select a representation based on a user characteristics and terminal characteristics.” Ex. 2004 ¶ 232. It is unclear from Patent Owner’s argument whether Patent Owner intends for the claimed “user characteristic information” to include or refer to additional configuration information, accessibility features of a representation, or both. Reply Rev. Opp. 1 (citing Ex. 2004 ¶¶ 232, 234, 253). In any event, merely because paragraph 253 uses the term “[h]ereinafter” before it discloses “two simple attributes [] for the above-described purpose”—and not even in close proximity to the “user characteristics” and “additional configuration” in paragraph 232—is not sufficient to provide support for “the user characteristic information includ[ing] the usedWith attribute and the equivalentTo attribute,” as recited

⁸ Ex. 2005 is Application No. 16/168,933 (“the '933 application”).

in limitations [38.6], [40.6], and [46.6]. None of the cited portions (i.e., Ex. 2004 ¶¶ 232, 234, 253, 255–257, Table 13; Ex. 2005 ¶¶ 254–256, Table 13) indicates a sufficient connection or relationship, or the claimed inclusive relationship, between user characteristic information and the usedWith and equivalentTo attributes. *Contra* Reply Opp. Rev. MTA 1 (Patent Owner arguing that the cited disclosures “clearly show this relationship between the claimed attributes and user characteristic information”).

For the foregoing reasons, we determine that claims 38, 40, and 46 do not find sufficient written description support in the ’644 application nor in the ’933 application, whether considered individually or collectively, and thus, these claims contain new matter.

B. Patentability of the Revised, Proposed Substitute Claims

Patent Owner and Petitioner address the patentability of the revised, proposed substitute claims with respect to the following grounds. Petitioner supports its challenges to the revised, proposed substitute claims with the Supplemental Declaration (Ex. 1093) and Second Supplemental Declaration (Ex. 1094) of Dr. Bestavros.

Claim(s) Challenged	35 U.S.C. §	Reference/Basis
36–46	103(a)	DIS 23001-6, M20060 ⁹
36–46	103(a)	DIS 23009-1, M20060
36, 38–40, 42, 44, 46	103(a)	DIS 23001-6, OIPF-HAS ¹⁰
36, 38–40, 42, 44, 46	103(a)	DIS 23001-6, OIPF-Liaison ¹¹

⁹ ISO/IEC JTC1/SC29/WG11, Coding of Moving Pictures and Audio, Input Contribution MPEG2011/M20060, Mar. 2011 (Ex. 1097, “M20060”).

¹⁰ Open IPTV Forum (OIPF), HTTP Adaptive Streaming Specification, Release 2, Sept. 2010 (Ex. 1095, “OIPF-HAS”).

¹¹ OIPF Liaison Letter to 3GPP SA4, June 2010 (Ex. 1096, “OIPF-Liaison”).

Claim(s) Challenged	35 U.S.C. §	Reference/Basis
36, 38–40, 42, 44, 46	103(a)	DIS 23009-1, OIPF-HAS
36, 38–40, 42, 44, 46	103(a)	DIS 23001-6, OIPF-Liaison
37, 41, 43, 45	103(a)	DIS 23001-6, OIPF-HAS, Browne
37, 41, 43, 45	103(a)	DIS 23001-6, OIPF-Liaison, Browne
37, 41, 43, 45	103(a)	DIS 23009-1, OIPF-HAS, Browne
37, 41, 43, 45	103(a)	DIS 23009-1, OIPF-Liaison, Browne ¹²

1. *Prior Art Status of M20060*

Patent Owner attempts to disqualify M20060 from being applied as prior art under 35 U.S.C. § 102(a) by arguing that the reference was not authored by “another” within the meaning of the statute. “Another” means other than applicants, *In re Land*, 368 F.2d 866, 151 USPQ 621 (CCPA 1966), in other words, a different inventive entity. The inventive entity is different if not all inventors are the same. The fact that the ’830 patent and M20060 have two inventors in common is immaterial. *See Ex parte DesOrmeaux*, 25 USPQ2d 2040 (Bd. Pat. App. & Inter. 1992) (The examiner made a pre-AIA 35 U.S.C. § 102(e) rejection based on an issued U.S. patent to three inventors. The rejected application was a continuation-in-part of the issued parent with an extra inventor. The Board found that the patent was “by another” and thus could be used in a pre-AIA 35 U.S.C. § 102(e)/103 rejection of the application.).

¹² Browne, *High Definition Postproduction, Editing and Delivering HD Video*, Focal Press, 2007 (Ex. 1092, “Browne”).

In its Reply to Petitioner’s Opposition, Patent Owner argues that M20060 is authored by the same inventive entity as that of the ’830 patent and ’414 patent, i.e., Mr. Lee and Mr. Thang.¹³ Reply Opp. Rev. 5. That is, Patent Owner takes the position that the other four authors listed on the front page of M20060—Jung Won Kang, Seong-Jun Bae, Soon-heung Jung, Sang Taick Park—did not contribute to the disclosures cited by Petitioner to teach or suggest the subject matter of the limitations proposed in the revised, proposed substitute claims. For these reasons, Patent Owner argues that M20060 is not “by another” within the meaning of § 102(a) and is not prior art to either the ’830 patent or the ’414 patent. *Id.* To support its argument that Mr. Lee and Mr. Thang are the sole inventors of the disclosures cited in M20060, Patent Owner submits Declarations under 37 C.F.R. § 1.132 for Mr. Thang (Ex. 2007) and Mr. Lee (Ex. 2006), although Mr. Thang’s Declaration was withdrawn. Paper 43 (Patent Owner’s Notice of Withdrawal of Exhibit 2007).

In our Order Granting Petitioner’s Motion to Exclude, we were persuaded by Petitioner to expunge Mr. Lee’s Declaration as Mr. Lee was not made available for cross-examination. Paper 47, 18.

As neither the Lee Declaration nor the Thang Declaration remain in the record to support Patent Owner’s “inventive entity” argument, Patent Owner’s argument is not supported by underlying evidence. Accordingly, we determine that Patent Owner’s argument regarding the “inventive entity” of M20060 is unavailing. In view of the foregoing, Patent Owner’s attempt

¹³ M20060 lists six people on its front page—Jung Won Kang, Seong-Jun Bae, Soon-heung Jung, Sang Taick Park, Truong Cong Thang, and Jin Young Lee.

to disqualify M20060 from being applied as prior art under 35 U.S.C. § 102(a) is unsuccessful.

2. *Revised, Proposed Substitute Independent Claim 36*

The preamble and limitations 36.1 through 36.9 of revised, proposed substitute claim 36 correspond to the preamble (i.e., 1.0) and limitations 1.1 through 1.10 of original claim 1. With respect to the preamble and limitations 36.1 through 31.9, we adopt our anticipation and obviousness analyses of the preamble and limitations 1.1 through 1.10 of original claim 1 as set forth above in Sections III.F.2 and III.F.6. We address limitations 36.11 through 36.15 below.

[36.11] wherein the MPD includes a usedWith attribute and an equivalentTo attribute,

[36.12] wherein the usedWith attribute indicates a first audio representation which is used with a video representation,

[36.13] wherein the first audio representation is a representation for audio description,

[36.14] wherein the equivalentTo attribute indicates a subtitle representation which is used instead of a second audio representation, and

[36.15] wherein the subtitle representation is a timed text media component for the second audio representation.

Petitioner presents an alternative position in which “[a] POSA would have been motivated to add the additional ‘metadata’ described in M20060,” the @usedWith and @equivalentTo attributes, “to the MPDs described in the DIS 23001-6 or DIS 23009-1 references” Opp. Rev. MTA 7 (citing Ex. 1094 ¶ 33).

According to Petitioner, “M20060 discloses that an audio description (an audio representation) is used with a video component (a video representation), where the audio representation is a representation for audio description.” *Id.* at 8 (citing Ex. 1097 § 3, 4). We are persuaded by Petitioner’s contentions as the cited portion of M20060 discloses a “@usedWith” attribute that indicates “a representation group for audio description should be used with a certain representation group of video component.” Ex. 1097 § 3, 4.

According to Petitioner, “M20060 discloses a subtitle (*i.e.*, a subtitle representation) which is used instead of an audio component (*i.e.*, a second audio representation), and the subtitle is a timed text media component for the second audio representation.” Opp. Rev. MTA 9 (citing Ex. 1097 § 3, 4). We are persuaded by Petitioner’s contentions as the cited portion of M20060 discloses an “@equivalentTo” attribute that indicates that “a representation group for subtitle could be used instead of a certain representation group of audio component.” Ex. 1097 § 3, 4.¹⁴ Petitioner points to the disclosure of “ttml” in each of DIS 23006-1 and 23001-9, which Petitioner contends stands for “timed text markup language.” Ex. 1004 § F.1, 72; Ex. 1005 § G.1, 115. We are persuaded that ttml means “timed Text markup language” based on the references cited by Petitioner.

a. Rationale for Combining DIS 23009-1 and M20060

According to Petitioner, “DIS 23001-6 or DIS 23009-1 in combination with M20060 discloses each new claim element recited in the new limitations of Substitute Claims 36-46.” Opp. Rev. MTA 7. As

¹⁴ Pin cites for Exhibits 1004, 1005, and 1097 take the format of “Section Number, Paper Number” (e.g., Ex. 1097 § 3, 4).

rationale for combining DIS 23009-1 with M20060, Petitioner persuasively contends that:

A POSA would have been motivated to add the additional “metadata” described in M20060 to the MPDs described in the DIS 23001-6 or DIS 23009-1 references in order to enable the client to choose the most suitable version of media content among alternative versions of media content. For example, M20060 describes that the additional metadata (*e.g.*, the extended accessibility element and the usedWith, equivalentTo, bitDepth, minBitDepth, and maxBitDepth attributes) helps “both users and clients to select appropriate representations” by, for example, “1) supporting accessibility, 2) describing relationships of representations, and 3) describing media’s bit depth.”

Moreover, a POSA would have had an expectation of success in modifying the MPDs in DIS 23001-6 or DIS 23009-1 to include the additional metadata described below because it simply would have been a matter of adding additional metadata to the MPD XML schemas described in DIS 23001-6 or DIS 23009-1.

Id. (citing Ex. 1094 ¶ 33; Ex. 1097 § 1, 1). Dr. Bestavros persuasively explains that “M20060 expressly references the DIS 23001-6 reference and proposes specific modifications to the MPEG DASH metadata included in the MPD XML schema.” Ex. 1094 ¶ 34 (citing Ex. 1097 § 1, 1 (introduction of M20060); Ex. 1097, 7 (references cited by M20060)).

M20060 supports Petitioner’s contentions because it discloses that there is little metadata for describing the relationship between representation groups. It is difficult for a client to know, for example, which video stream a given audio description should be associated with. In some cases, two representation groups may be semantically equivalent, and only one group should be selected depending on the context.

Ex. 1097, 3.

b. Patent Owner's Arguments

Patent Owner's arguments mainly concern grounds 3 through 10 and the OIPF-HAS, OIPF-Liason, and Browne. *See generally* Reply Opp. Rev. Other than disputing the prior art status of M20060, Patent Owner makes no other arguments regarding the substance of this reference. *Id.* We address in the next paragraph Patent Owner's argument that "Petitioner is wrong that DIS discloses the `usedWith` or `equivalentTo` attributes, which are recited by each of the proposed claims" and thus, that "Petitioner's grounds ***all*** fail," because we address Petitioner's challenge based on one of the DIS references, DIS 23009-1. *Id.* at 2.

More particularly, Patent Owner argues that "'dependencyID' and 'group' are already described in the '830 specification itself, and do not 'correspond to' the `usedWith` and `equivalentTo` attributes of the proposed claims." *Id.* at 8. Patent Owner takes the position that "[a]s dependencyID and `usedWith` are separate and distinct attributes, Petitioner is [] wrong that dependencyID 'corresponds to' `usedWith` or has the 'same function and effect' as `usedWith`." *Id.* at 3 (citing Opp. Rev. MTA 8). Patent Owner further takes the position that "Petitioner's argument regarding the '@group' attribute in DIS similarly fails" because "[t]he '830 specification itself teaches a 'group' attribute that is distinct from `equivalentTo`." *Id.* According to Patent Owner, in contrast to a group attribute, "`equivalentTo` provides accessibility information to a disabled person that a specific ***subtitle*** (text) representation is used ***instead of*** a specific ***audio*** representation." *Id.* (citing claim limitation [36.14]; Ex. 2004 ¶¶ 253–256, Table 12).

As discussed above with respect to revised, proposed substitute claim limitations 36.11 through 36.15, Petitioner presents an alternative position in

which Petitioner cites the @usedWith and @equivalentTo attributes disclosed in M20060 to teach the claimed “usedWith” and “equivalentTo” attributes. As such, we need not reach Patent Owner’s arguments as to Petitioner’s other alternative position—citing the “dependencyID” attribute to teach the claimed “usedWith” attribute and the “group” attribute to teach the claimed “equivalentTo” attribute—in its Opposition. Opp. Rev. MTA 8 (citing Paper 25, 8–9).

c. Summary as to Independent Claim 36

As set forth above, the preamble and limitations 36.1 through 36.9 of revised, proposed substitute claim 36 correspond to the preamble (i.e., 1.0) and limitations 1.1 through 1.10 of original claim 1. We are persuaded that the preamble and limitations 36.1 through 36.9 are disclosed by DIS 23009-1 for the reasons set forth in Section III.F.2 and rendered obvious by DIS 23009-1 for the reasons set forth in Section III.F.6. As such, we are persuaded that the preamble and limitations 36.1 through 36.9 of revised, proposed substitute claim 36 are rendered obvious by the combination of DIS 23009-1 and M20060.

We have reviewed Petitioner’s contentions, Patent Owner’s arguments, and the cited evidence and we are persuaded that the combination of DIS 23009-1 and M20060 teaches each of limitations 36.11 through 36.15. Opp. Rev. MTA 7–9 (citing Ex. 1097 § 3, 4; Ex. 1094 ¶ 33; Ex. 1004 § F.1, 72; Ex. 1005 § G.1, 115). We are also persuaded that Petitioner’s rationale for combining DIS 23009-1 with M20060 is sufficiently supported by sufficient rational underpinnings and that a POSITA would have had a reasonable expectation of success in making the combination. See, e.g., at 7 (citing Ex. 1094 ¶ 33; Ex. 1097 § 1, 1); Ex. 1094

¶ 34 (citing Ex. 1097 § 1, 1 (introduction of M20060); Ex. 1097, 7 (references cited by M20060)).

In view of the above, Petitioner establishes unpatentability of revised, proposed substitute claim 36 over the combination of DIS 23009-1 and M20060 by a preponderance of the evidence.

3. *Revised, Proposed Substitute Claims 39, 42, and 44*

Revised, proposed substitute claims 39, 42, and 44 correspond to original claims 8, 15, and 19, respectively. With respect to the preamble and limitations 39.1 through 39.11 of revised, proposed substitute claim 39, we adopt our anticipation and obviousness analyses of the preamble (i.e., 8.0) and limitations 8.1 through 8.11 of original claim 8 set forth in Sections III.F.3 and III.F.6. Similarly, with respect to the preamble and limitations 42.1 through 42.7 of revised, proposed substitute claim 42, we adopt our anticipation and obviousness analyses of the preamble (i.e., 15.0) and limitations 15.1 through 15.7 of original claim 15 set forth in Sections III.F.4 and III.F.6. With respect to the preamble and limitations 44.1 through 44.7 of revised substitute claim 44, we also adopt our anticipation and obviousness analyses of the preamble and limitations 19.1 through 19.6 of original claim 19 set forth in III.F.5 and III.F.6.

Petitioner contends that “[t]he remarks for claim 36 apply equally to claims 39, 42, and 44.” Opp. Rev. MTA 9. As the added limitations of proposed substitute claims 39 (i.e., limitations 39.12 through 39.16), 42 (i.e., limitations 42.9 through 42.12), and 44 (limitations 44.9 through 44.12) are substantially identical to those set forth in revised, proposed substitute claim 36 (i.e., limitations 36.11 through 36.15), we are persuaded that added limitations of proposed substitute claims 39, 42, and 44 are taught by the combination of DIS 23009-1 and M20060, and that Petitioner sets forth a

rationale for combining with sufficient rationale underpinnings and a reasonable expectation of success, for the reasons set forth above in Section IV.B.2.a.

In view of the above, we are persuaded that Petitioner establishes unpatentability of revised, proposed substitute claims 39, 42, and 44 over the combination of DIS 23009-1 and M20060 by a preponderance of the evidence.

4. *Revised, Proposed Substitute Dependent Claim 43*

Revised, proposed substitute claim 43 corresponds to original claim 18.¹⁵ Revised, proposed substitute claim 43 depends from revised, proposed substitute claim 42, and revised, proposed substitute claim 42 corresponds to original claim 15. As such, we adopt our anticipation and obviousness analyses of the preamble (i.e., 15.0) and limitations 15.1 through 15.7 of original claim 15 set forth in Sections III.F.4 and III.F.6 with respect to the preamble and limitations 42.1 through 42.7 of base proposed substitute claim 42 from which proposed substitute claim 43 depends. We also adopt the analysis of limitations 36.11 through 36.15 of revised, proposed substitute claim 36 set forth in Section IV.B.2 with respect to the added, base limitations 42.8 through 42.12, from which revised, proposed substitute claim 43 depends. We address limitations 43.1 through 43.8 below.

[43.1] wherein the element included at an adaptation set level is a SegmentTemplate,

This limitation is similar to the limitation recited in original claim 4. With respect to claim 4, Petitioner contends, and we agree, that “DIS 23009-

¹⁵ Revised, proposed substitute claim 43 does not include the limitation “wherein the SegmentBase element is included at a representation level” that is recited in original claim 18.

1 discloses that the Adaptation Set level may include a SegmentTemplate element, which ‘specifies default Segment Template information.’” Pet. 58 (citing Ex. 1005 §§ 5.5.3.2 (Table 6); 5.5.9.4 (describing Segment template element); Pet. § IX.B); see *id.* (citing Ex. 1003 ¶¶ 236–237).

We adopt our anticipation and obviousness analyses of claim 4 set forth in III.F.2 and III.F.6 with respect to limitation 43.1.

[43.2] wherein the SegmentTemplate element comprises information on a location, availability, or property for the one or more segments in a representation,

This limitation is similar to limitation 15.7 of original claim 15 and limitation 19.6 of original claim 19. With respect to claim 19, Petitioner contends, and we agree, that “DIS 23009-1 discloses: ‘Representations are assigned Segment Information through the presence of the elements BaseURL, SegmentBase, SegmentTemplate and/or SegmentList,’ and the ‘Segment Information provides information on the location, availability and properties of all Segments contained in one Representation.’” Pet. 61 (quoting Ex. 1005 § 5.5.9.1) (emphasis omitted); see *id.* (citing Ex. 1005 §§ 5.5.2.2 (Table 5), 5.5.3.2 (Table 6), 5.5.9.4; Ex. 1003 ¶¶ 256–257).

We adopt our anticipation and obviousness analyses of claim 15 and 19 set forth in III.F.4, III.F.5, and III.F.6 with respect to limitation 43.2.

[43.3] wherein the SegmentTemplate element includes a duration attribute and a SegmentTimeline element,

This limitation is similar to the limitation recited in dependent claim 23. With respect to claim 23, Petitioner contends, and we agree, that DIS 23009-1 discloses this limitation because it “discloses a SegmentTimeline element and that a mandatory duration attribute (‘@d’) is included in the

SegmentTimeline element.” Pet. 62 (citing Ex. 1005 §§ 5.5.2.2 (Period level), 5.5.3.2 (Adaptation Set level), 5.5.5.2 (Representation level), 5.5.9.2.1, 5.5.9.2.2 (Table 13), 5.5.9.6, 5.5.9.6.1; Ex. 1003 ¶¶ 259–261). According to Petitioner, “[t]he SegmentTimeline element may be included as multiple Segment base information as part of the Segment Base element . . . which may be included at a Period, Adaptation Set, or Representation level.” *Id.*

We adopt our anticipation and obviousness analyses of claim 23 set forth in III.F.5 and III.F.6 with respect to limitation 43.3.

[43.4] wherein the MPD includes a bit depth attribute used to select different representations for clients having different display bit depths and the bit depth attribute indicates a number of bits used to represent a luma or chroma sample of visual content,

[43.5] wherein the representation includes the bit depth attribute,

[43.6] wherein when a value of a bit depth varies in different video pictures of the representation, a value of the bit depth attribute indicates a maximum value of the bit depth,

Petitioner points to the “**bitDepth** attribute” in Table 3 of M20060, which “indicates the number of bits used to represent a luma/chroma sample of visual content. If the bit depth varies (e.g. with different video pictures), the value of this attribute shall be the maximum value of bit depths.” Ex. 1094 ¶¶ 35, 20 (citing Ex. 1097 § 4, 5). As set forth in Table 3, the @bitDepth attribute is part of a representation or representation group. Ex. 1097 § 4, 5. M20060 supports Petitioner’s contention because it discloses that:

Bit depth is the number of bits used to represent a luma/chroma sample of visual content. In practice, visual content can be encoded with different bit depths (e.g. some profiles of AVC allow bit depth range from 8bits to 16bits). On the other hand, different terminal displays may have different bit depths as well. To select different representations for terminals having different display bit depths, we propose the following attributes for representation and representation group.

Ex. 1097 § 4, 5.

[43.7] wherein the adaptation set includes a minBitDepth attribute and a maxBitDepth attribute, and

[43.8] wherein the minBitDepth attribute indicates a minimum bit depth value in all representations in the adaptation set and the maxBitDepth attribute indicates a maximum bit depth value in all representations in the adaptation set.¹⁶

Petitioner contends, and we agree, that “M20060 discloses the bit depth, minBitDepth, and maxBitDepth attributes.” Opp. Rev. MTA 9 (citing Ex. 1097 § 4, 5–6). In the cited portion, M20060 also discloses that “two attributes minBitDepth and maxBitDepth are added to Representation Group.” Ex. 1097 § 4, 6. More particularly, Table 4 includes “semantics of @minBitDepth, ‘Minimum bitDepth value in all Representations in this Group’” and “semantics of @maxBitDepth, ‘Maximum bitDepth value in all Representations in this Group.’” Ex. 1094 ¶¶ 35, 21 (citing Ex. 1097 § 4, 6). Dr. Bestavros persuasively explains that “Patent Owner argued that the ‘Group’ element corresponds to an ‘Adaptation Set’ element.” *Id.* at fn.1

¹⁶ Revised, proposed substitute claim 43 is a dependent claim and eliminates the limitation “wherein the element included at an adaptation set level is a SegmentTemplate.” This limitation is recited in claim 18 (i.e., the claim that revised, proposed substitute claim 43 is proposed to replace).

(citing Ex. 1003 ¶¶ 73–78, 91). We discern no dispute between the parties in this regard.

We are persuaded that the combination of DIS 23009-1 and M20060 teaches the limitations recited in revised, proposed substitute claim 43 because the cited portions of the references and Dr. Bestavros’s testimony support Petitioner’s contentions. For the reasons discussed in Section IV.B.2.a, we are persuaded that Petitioner’s rationale for combining DIS 23009-1 and M20060 is supported by sufficient rational underpinning and a reasonable expectation of success.

In view of the above, Petitioner establishes unpatentability of revised, proposed substitute claim 43 over the combination of DIS 23009-1 and M20060 by a preponderance of the evidence.

5. *Revised, Proposed Substitute Claims 37, 41, and 45*

Revised, proposed substitute claims 37, 41, and 45 correspond to original claims 3, 13, and 21.¹⁷ With respect to the base limitations of revised, proposed substitute claims 36, 39, and 44 from which revised, proposed substitute claims 37, 41, and 45 depend, we adopt our analysis set

¹⁷ Revised, proposed substitute claim 37 does not include the limitation “wherein the element included at a period level is a SegmentTemplate” that is recited in original claim 3. Revised, proposed substitute claim 41 does not include the limitation “wherein the element included at a representation level is a SegmentBase” that is recited in original claim 13. Revised, proposed substitute claim 45 does not include the limitation “wherein the SegmentTemplate element is included at an adaptation set level” that is recited in original claim 21.

forth in Sections IV.B.2 (citing Section III.F.2 and III.F.6) and IV.B.3 (citing Section III.F.3 through III.F.6).

Petitioner contends that “[c]laims 37, 38, 40, 41 and 45 contain claim limitations that are duplicative with the claim elements discussed above for claims 43 and 46.” Opp. Rev. MTA 10. As the added limitations of proposed substitute claims 37 (limitations 37.1 through 37.5), 41 (limitations 41.1 through 41.5), and 45 (limitations 45.1 through 45.5) are substantially identical to those set forth in limitations 43.3 through 43.8 of revised, proposed substitute claim 43, we are persuaded that revised, proposed substitute claims 37, 41, and 45 are unpatentable over the combination of DIS 23009-1 and M20060 for the reasons set forth above in Section IV.B.4.

That is, we are persuaded that the combination of DIS 23009-1 and M20060 teaches the limitations recited in revised, proposed substitute claim 37, 41, and 43 because the cited portions of the references and Dr. Bestavros’s testimony support Petitioner’s contentions. For the reasons discussed in Section IV.B.2.a, we are also persuaded that Petitioner’s rationale for combining DIS 23009-1 and M20060 is supported by sufficient rational underpinning and a reasonable expectation of success.

In view of the above, Petitioner establishes unpatentability of revised, proposed substitute claims 37, 41, and 45 over the combination of DIS 23009-1 and M20060 by a preponderance of the evidence.

6. *Petitioner’s Remaining Challenges to the Revised, Proposed Substitute Claims*

We do not reach grounds 1 and 3–10 because we determine that revised, proposed substitute claims 36–46 are shown to be unpatentable in ground 2, as discussed in detail above. *Supra* § III.G (citing *SAS*, 138 S. Ct. at 1348; *Boston Sci. Scimed*, Nos. 2019-1594, -1604, -1605, 2020 WL

2071962, at *4 (non-precedential)). We further do not consider Petitioner's challenges to the revised, proposed substitute claims under 35 U.S.C. § 101, nor Patent Owner's responses to the same.

7. *Patent Owner's Remaining Arguments*

Patent iOwner presents arguments with respect to grounds 1 and 3–10. Reply Opp. Rev. 5–10. We do not reach these arguments as we determine that the revised, proposed substitute claims are unpatentable over ground 2, the challenge applying DIS 23009-1 in view of M20060.

V. CONCLUSION¹⁸

For the foregoing reasons, we conclude that Petitioner has satisfied its burden of establishing, by a preponderance of the evidence, that claims 1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, and 23 of the '830 patent are unpatentable as follows:

Claim(s) Challenged	35 U.S.C. §	Reference/Basis¹⁹	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21,	103(a)	DIS 23001-6		

¹⁸ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

¹⁹ In view of our determination that claims 1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, and 23 are anticipated by and rendered obvious over DIS 23009-1, we do not reach the grounds for which the last two columns of this table are blank (i.e., grounds applying DIS 23001-6 and/or 3GPP TS 26.247).

Claim(s) Challenged	35 U.S.C. §	Reference/Basis¹⁹	Claims Shown Unpatentable	Claims Not Shown Unpatentable
23				
1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, 23	102(a)	DIS 23009-1	1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, 23	
1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, 23	103(a)	DIS 23009-1	1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, 23	
1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21	102(a)	3GPP TS 26.247		
1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21	103(a)	3GPP TS 26.247		
Overall Outcome			1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, 23	

We further conclude that Patent Owner has *not* satisfied its burdens on a motion to amend, and Petitioner has sufficiently established by a preponderance of the evidence that proposed substitute claims 36–46 are unpatentable. Thus, we deny the Revised Contingent Motion to Amend as follows:

Motion to Amend Outcome	Claims
Original Claims Cancelled by Amendment	
Substitute Claims Proposed in Amendment	36–46
Substitute Claims: Motion to Amend Granted	
Substitute Claims: Motion to Amend Denied	36–46
Substitute Claims: Not Reached	

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner establishes by a preponderance of the evidence that claims 1, 3, 4, 6, 8, 11, 13, 15, 18, 19, 21, and 23 of the '830 patent are unpatentable;

FURTHER ORDERED that Patent Owner's Revised Contingent Motion to Amend is *denied*; and

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

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