UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GOOGLE LLC, MICROSOFT CORPORATION, and
MICROSOFT MOBILE INC.,
Petitioner,

v.

KONINKLIJKE PHILIPS N.V.,
Patent Owner.

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Case IPR2017-00447[1]
Patent 7,529,806 B1

————————————

Before KEVIN F. TURNER, ROBERT J. WEINSCHENK, and
KAMRAN JIVANI, *Administrative Patent Judges*.

WEINSCHENK, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a)

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[1] Microsoft Corporation and Microsoft Mobile Inc. (collectively,
"Microsoft") filed a petition in IPR2017-01754, and Microsoft has been
joined to this case.

I. INTRODUCTION

Google LLC ("Google") filed a Petition (Paper 2, "Pet.") requesting an *inter partes* review of claims 1–16 ("the challenged claims") of U.S. Patent No. 7,529,806 B1 (Ex. 1001, "the '806 patent"). Koninklijke Philips N.V. ("Patent Owner") filed a Preliminary Response (Paper 6, "Prelim. Resp.") to the Petition. On June 8, 2017, we instituted an *inter partes* review of claims 1–11 of the '806 patent on the following grounds:

Claims	Statutory Basis	Applied Reference(s)
1–7 and 9–11	35 U.S.C. § 102(b)[2]	Synchronized Multimedia Integration Language (SMIL) 1.0 Specification (June 15, 1998) (Ex. 1003, "SMIL 1.0")
1–11	35 U.S.C. § 103(a)	SMIL 1.0
1–11	35 U.S.C. § 103(a)	SMIL 1.0 and Kien A. Hua et al., *2PSM: An Efficient Framework for Searching Video Information in a Limited-Bandwidth Environment*, 7:5 Multimedia Systems, 396–408 (Sept. 1999) (Ex. 1006, "Hua")

Paper 7 ("Dec. on Inst."), 20–21.

After institution, Microsoft Corporation and Microsoft Mobile Inc. (collectively, "Microsoft") filed a petition in IPR2017-01754 requesting an *inter partes* review of the challenged claims of the '806 patent and filed a motion requesting joinder to this case. Paper 15, 2. On November 29, 2017, we joined Microsoft to this case and terminated IPR2017-01754. *Id.* at 16–

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[2] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, which was enacted on September 16, 2011, made amendments to 35 U.S.C. §§ 102, 103. AIA § 3(b), (c). Those amendments became effective eighteen months later on March 16, 2013. *Id.* § 3(n). Because the application from which the '806 patent issued was filed before March 16, 2013, any citations herein to 35 U.S.C. §§ 102, 103 are to their pre-AIA versions.

17; IPR2017-01754, Paper 17, 5. In this Decision, we refer to Google LLC, Microsoft Corporation, and Microsoft Mobile Inc. collectively as "Petitioner."

Also, after institution, Patent Owner filed a Response (Paper 11, "PO Resp.") to the Petition, and Petitioner filed a Reply (Paper 16, "Pet. Reply") to the Response. An oral hearing was held on February 13, 2018, and a transcript of the hearing is included in the record. Paper 24 ("Tr.").

On April 24, 2018, the Supreme Court held that a decision to institute under 35 U.S.C. § 314 may not institute on fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). As a result, we modified our Decision on Institution to include all the challenged claims and all the asserted grounds of unpatentability presented in the Petition. Paper 25, 2; Ex. 3001, 2. And, consistent with the parties' agreement, we authorized each party to file an additional brief addressing the challenged claims and asserted grounds of unpatentability included in our modified Decision on Institution. Paper 28, 2–3. Specifically, Patent Owner filed a Supplemental Response (Paper 26, "PO Supp. Resp.") to the Petition, and Petitioner filed a Supplemental Reply (Paper 27, "Pet. Supp. Reply") to the Supplemental Response.

We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a). For the reasons set forth below, Petitioner has shown by a preponderance of the evidence that claims 1–11 of the '806 patent are unpatentable, but Petitioner has not shown by a preponderance of the evidence that claims 12–16 are unpatentable.

A.   *Related Proceedings*

The parties indicate that the '806 patent is the subject of the following cases in the United States District Court for the District of Delaware ("District Court"): *Koninklijke Philips N.V. v. ASUSTeK Computer Inc.*, No. 1:15-cv-01125 (D. Del.); *Koninklijke Philips N.V. v. HTC Corp.*, No. 1:15-cv-01126 (D. Del.); *Koninklijke Philips N.V. v. Visual Land, Inc.*, No. 1:15-cv-01127 (D. Del.); *Koninklijke Philips N.V. v. Southern Telecom, Inc.*, No. 1:15-cv-01128 (D. Del.); *Koninklijke Philips N.V. v. Double Power Technology, Inc.*, No. 1:15-cv-01130 (D. Del.); *Koninklijke Philips N.V. v. Yifang USA, Inc.*, No. 1:15-cv-01131 (D. Del.); and *Koninklijke Philips N.V. v. Acer Inc.*, No. 1:15-cv-01170 (D. Del.). Pet. 2–3; Paper 4, 2–3.

B.   *The '806 Patent*

The '806 patent relates to communicating content between computer systems. Ex. 1001, 1:6–9. The '806 patent explains that prior systems for delivering content involved either streaming or downloading the content from a server to a client. *Id.* at 1:18–22, 1:42–44. According to the '806 patent, the streaming approach is undesirable because it uses proprietary technology that excludes third parties from developing custom server software or client applications. *Id.* at 1:31–41. The downloading approach also is undesirable because playback can only begin after the entire content file is downloaded. *Id.* at 1:51–58.

The '806 patent sought to improve on these prior systems by providing "an open architecture solution for content delivery in a download approach that allows for a low or negligible play-out latency." *Id.* at 1:62–64. Specifically, the '806 patent describes splitting a content file into multiple parts, with each part requiring a relatively short download time. *Id.*

at 1:65–66. The client device downloads the first part of the content file and

begins playback while it downloads the other parts of the content file. *Id.* at

1:67–2:12. As a result, the playback delay is determined by the download

time of just the first part of the content file, rather than the entire content file.

Id. at 1:67–2:1.

C.   *Illustrative Claim*

Claims 1, 9, and 12 are independent. Claim 1 is reproduced below.

> 1. A method of, at a client device, forming a media presentation from multiple related files, including a control information file, stored on one or more server computers within a computer network, the method comprising acts of:
>
> downloading the control information file to the client device;
>
> the client device parsing the control information file; and
>
> based on parsing of the control information file, the client device:
>
> identifying multiple alternative flies [sic] corresponding to a given segment of the media presentation,
>
> determining which files of the multiple alternative files to retrieve based on system restraints;
>
> retrieving the determined file of the multiple alternative files to begin a media presentation, wherein if the determined file is one of a plurality of files required for the media presentation, the method further comprises acts of:
>
> concurrent with the media presentation, retrieving a next file; and
>
> using content of the next file to continue the media presentation.

Ex. 1001, 5:45–67.

II. ANALYSIS

A. *Level of Ordinary Skill in the Art*

Petitioner argues that a person of ordinary skill in the art would have had "an undergraduate degree in computer science or computer engineering, or the equivalent" and "3-5 years' experience developing multimedia presentations using a markup language and/or developing software tools to automate the development of multimedia presentations, or equivalent academic experience (e.g., a master's degree with a similar focus)." Pet. 15 (citing Ex. 1002 ¶ 23). Patent Owner does not dispute Petitioner's definition of the level of ordinary skill in the art. *See* PO Resp. 10. Patent Owner also does not provide its own definition. *See id.* Based on the evidence of record, including the types of problems and solutions described in the '806 patent and the asserted prior art, we adopt Petitioner's definition of the level of ordinary skill in the art. Pet. 15; Ex. 1002 ¶¶ 22–23.

B. *Claim Construction*

The claims of an unexpired patent are interpreted using the broadest reasonable interpretation in light of the specification of the patent in which they appear.[3] 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–45 (2016). "Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history." *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016). An applicant may provide a definition of a term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir.

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[3] We would construe the claim terms and phrases discussed below the same under *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

1994). In the absence of such a definition, limitations are not to be read into the claims from the specification. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

        1.   *a given segment of [a/the] media presentation*

     Claims 1 and 9 recite "a given segment of [a/the] media presentation." Ex. 1001, 5:54–55, 6:29–30. Petitioner proposes construing the phrase "a given segment of [a/the] media presentation" to mean "part or all of the media presentation." Pet. 19. Petitioner argues that its proposed construction is supported by the claim language and specification of the '806 patent. *Id.* at 17–19. Patent Owner proposes construing the phrase "a given segment of [a/the] media presentation" to mean "a media presentation with multiple segments." PO Resp. 11. Patent Owner argues that its proposed construction is supported by the claim language and specification of the '806 patent. *Id.*

     The dispute between the parties focuses on whether a media presentation can consist of only a single file or must have multiple segments. Pet. 17–19; PO Resp. 11. The '806 patent consistently uses the term "segment" to indicate that a media presentation is divided into multiple segments. Ex. 1001, Abstract ("An electronic file, e.g., an MP3 file, is partitioned into a sequence of segments at the server side."), 1:65–66 ("To this end the content file is split into multiple parts. Each part or segment requires a relatively short download time."), 2:60–62, 2:67–3:2, 3:14–16, 3:31–33, 4:15–26 ("The segmentation of the content file into separately downloadable segments . . . ."), 4:35–38, Fig. 1. In contrast, the '806 patent does *not* use the term "segment" to refer to a media presentation that consists of only a single file. *Id.* at 2:7–9. Therefore, because Patent Owner's

proposed construction is consistent with the specification of the '806 patent,

we construe the phrase "a given segment of [a/the] media presentation" to

mean "a media presentation with multiple segments."[4]

2. *system restraints / system constraints*

Claim 1 recites "system restraints," and claim 9 recites "system

constraints." Ex. 1001, 5:57, 6:33. Petitioner proposes construing the terms

"system restraints" and "system constraints" to mean "constraints upon a

system." Pet. Reply 9. Petitioner argues that its proposed construction is

supported by the specification of the '806 patent. *Id.* at 9–11. Patent Owner

proposes construing the terms "system restraints" and "system constraints"

to mean "constraints on a system imposed by resources." PO Resp. 14.

Patent Owner argues that its proposed construction is supported by the

specification of the '806 patent. *Id.*

For the reasons discussed below, we determine that Petitioner has

shown by a preponderance of evidence that claims 1 and 9 are unpatentable

even if we apply Patent Owner's narrower proposed construction of the

terms "system restraints" and "system constraints." *See infra* Sections

II.D.2, II.D.10. Therefore, we determine that it is unnecessary to resolve the

parties' dispute regarding the meaning of the terms "system restraints" and

"system constraints" in order to resolve the parties' disputes regarding the

asserted grounds of unpatentability in this case. *See Vivid Techs., Inc. v. Am.

Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) ("[O]nly those terms

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[4] Our construction is consistent with the District Court's determination that
the term "media presentation" means "data having multiple segments."
Ex. 1014, 7.

need be construed that are in controversy, and only to the extent necessary to resolve the controversy.").

3. *Means-Plus-Function Limitations*

Claim 12 recites several limitations that begin with the phrase "means for." Ex. 1001, 6:41–62. The parties agree that these limitations of claim 12 are means-plus-function limitations. Pet. 19–20; PO Supp. Resp. 1–2. We address the means-plus-function limitations of claim 12 in detail below. *See infra* Sections II.C.2, II.D.13.

4. *Remaining Claim Terms and Phrases*

Patent Owner proposes the following additional constructions:

Claim Term or Phrase	Proposed Construction
forming a media presentation from multiple related files, including a control information file (claim 1)	a media presentation with multiple segments
alternative files (claims 1 and 9)	alternative files for a given segment of a media presentation
partitioning of media presentation between the multiple related files (claims 2, 3, and 6)	partitioning of media presentation information between multiple segments

PO Resp. 11–14. Petitioner does not propose express constructions for the terms and phrases above, but Petitioner disputes Patent Owner's position that a media presentation must have multiple segments. Pet. 15–20; Pet. Reply 13–17.

The dispute between the parties again focuses on whether a media presentation can consist of only a single file or must have multiple segments. Pet. 15–20; PO Resp. 11–14; Pet. Reply 13–17. As discussed above, we resolve that dispute by construing the phrase "a given segment of [a/the] media presentation" to mean "a media presentation with multiple segments." *See supra* Section II.B.1. Therefore, we determine that it is unnecessary to

resolve the parties' disputes regarding the meaning of the terms and phrases above in order to resolve the parties' disputes regarding the asserted grounds of unpatentability in this case. *See Vivid Techs.*, 200 F.3d at 803.

C. *Anticipation of Claims 1–7 and 9–13 by SMIL 1.0*

Petitioner argues that claims 1–7 and 9–13 are anticipated by SMIL 1.0. Pet. 4. A claim is anticipated if each limitation of the claim is disclosed in a single prior art reference arranged as in the claim. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008). We have considered the parties' arguments and supporting evidence, and we determine that Petitioner has not shown by a preponderance of the evidence that claims 1–7 and 9–13 are anticipated by SMIL 1.0.

1. *Claims 1 and 9*

Claims 1 and 9 recite, *inter alia*, "a given segment of [a/the] media presentation." Ex. 1001, 5:54–55, 6:29–30. As discussed above, we adopt Patent Owner's proposed construction of this phrase, namely that "a given segment of [a/the] media presentation" means "a media presentation with multiple segments." *See supra* Section II.B.1. Petitioner's anticipation analysis for claims 1 and 9 does not address a media presentation with multiple segments. *See* Pet. 25–26. Thus, Petitioner has not shown sufficiently that claims 1 and 9 are anticipated by SMIL 1.0. Nonetheless, as discussed below, Petitioner has shown sufficiently that claims 1 and 9 would have been obvious over SMIL 1.0. *See infra* Sections II.D.2, II.D.10.

2. *Claim 12*

Claim 12 recites, *inter alia*, "means for parsing, based on parsing of the control information file: identifying multiple alternative files corresponding to a give segment of the media presentation; determining

which file of the multiple alternative files to retrieve based on system constraints; [and] retrieving the determined file of the multiple alternative files to begin a media presentation." Ex. 1001, 6:46–54. The parties agree that the above limitation of claim 12 is a means-plus-function limitation. Pet. 19–20; PO Supp. Resp. 1–2. To show the unpatentability of a claim including a means-plus-function limitation based on prior art, Petitioner must 1) identify the specific portions of the specification that describe the structure corresponding to the claimed function; and 2) specify where that structure or an equivalent is found in the cited prior art patents or printed publications. 37 C.F.R. §§ 42.104 (b)(3), (4); *Fresenius USA, Inc. v. Baxter Int'l, Inc.*, 582 F.3d 1288, 1299–1300 (Fed. Cir. 2009) (affirming grant of JMOL of no invalidity because "Fresenius neither identified the structure in the specification that corresponds to the means for delivering dialysate nor compared it to the structures present in the prior art").

Petitioner does not identify in the Petition any corresponding structure for the above means-plus-function limitation of claim 12 or explain how SMIL 1.0 discloses that corresponding structure or an equivalent. *See* Pet. 19–20, 37–39; Pet. Supp. Reply 4–5. As discussed above, after institution, we joined Microsoft to this case based on the petition that Microsoft filed in IPR2017-01754. Paper 15, 2, 16–17. Microsoft's petition identifies the corresponding structure for the above means-plus-function limitation of claim 12 as a client media player or multipurpose computing device that is programmed to perform the recited functions using the algorithm described in the following portions of the '806 patent: 2:53–3:61,

4:20–26, and Figure 1.[5] IPR2017-01754, Paper 1, 17–20. Microsoft's petition, however, does not compare SMIL 1.0's disclosure with the corresponding algorithm allegedly described in the '806 patent (at 2:53–3:61, 4:20–26, and Figure 1), or otherwise explain how SMIL 1.0 discloses the corresponding algorithm allegedly described in the '806 patent (at 2:53–3:61, 4:20–26, and Figure 1) or an equivalent. *See id.* at 36–38; Pet. Supp. Reply 4–5. Thus, even if we adopt the proposed corresponding structure set forth in Microsoft's petition for the above means-plus-function limitation of claim 12, Petitioner has not shown sufficiently that claim 12 is anticipated by SMIL 1.0.[6] *See Fresenius*, 582 F.3d at 1299–1300 (affirming grant of JMOL of no invalidity because "Fresenius neither identified the structure in the specification that corresponds to the means for delivering dialysate *nor compared* it to the structures present in the prior art") (emphasis added).

Petitioner argues that "[t]he Supreme Court's decision in *SAS Institutes, Inc. v. Iancu* obligates the Board to 'resolve the patentabilty' of '*every* claim the petitioner has challenged.'" Pet. Supp. Reply 1. Thus, according to Petitioner, we must either 1) determine that the means-plus-function limitations of claim 12 lack sufficient corresponding structure and are "indefinite"; or 2) construe the means-plus-function limitations of claim 12 and "decide patentability on the merits under that construction." *Id.* at 2.

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[5] Microsoft's proposed corresponding structure is consistent with the District Court's identification of the corresponding structure. Ex. 1014, 9–10.

[6] Microsoft's proposed corresponding structure is not set forth in Google's Petition. *Compare* Pet. 19–20, *with* IPR2017-01754, Paper 1, 17–20. But, for the reasons discussed above, even if we consider Microsoft's additional arguments, we reach the same conclusion, namely that Petitioner has not shown sufficiently that claim 12 is anticipated by SMIL 1.0.

As discussed above, even if we adopt the proposed corresponding structure set forth in Microsoft's petition for the above means-plus-function limitation of claim 12, we determine that Petitioner has not met its burden to show that claim 12 is anticipated by SMIL 1.0.

3.   *Claims 2–7, 10, 11, and 13*

Claims 2–7, 10, 11, and 13 depend from claims 1, 9, or 12. Ex. 1001, 6:1–16, 6:35–39, 6:63–64. Because Petitioner has not shown by a preponderance of the evidence that claims 1, 9, or 12 are anticipated by SMIL 1.0, Petitioner also has not shown by a preponderance of the evidence that claims 2–7, 10, 11, and 13 are anticipated by SMIL 1.0. *See supra* Sections II.C.1, II.C.2.

4.   *Summary*

For the foregoing reasons, Petitioner has not shown by a preponderance of the evidence that claims 1–7 and 9–13 are anticipated by SMIL 1.0.

D.   *Obviousness of Claims 1–16 Over SMIL 1.0*

Petitioner argues that claims 1–16 would have been obvious over SMIL 1.0. Pet. 4. A claim is unpatentable as obvious 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 the 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,

any objective indicia of non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We have considered the parties' arguments and supporting evidence. We determine that Petitioner has shown by a preponderance of the evidence that claims 1–11 would have been obvious over SMIL 1.0, but Petitioner has not shown by a preponderance of the evidence that claims 12–16 would have been obvious over SMIL 1.0.

1.   *Overview of SMIL 1.0*

SMIL 1.0 is a specification for version 1 of the Synchronized Multimedia Integration Language ("SMIL"). Ex. 1003, 2. SMIL 1.0 explains that an SMIL file is an Extensible Markup Language ("XML") file. *Id.* at 3. SMIL 1.0 describes various elements that allow an author to, *inter alia*, describe the temporal behavior of a presentation as well as the layout of a presentation on a screen. *Id.* at 2.

For example, SMIL 1.0 describes a seq element that allows an author to specify that certain media objects are played in sequence. *Id.* at 13 ("The children of a 'seq' element form a temporal sequence."). The following is an example of a seq element:

```
<seq>
   <audio src= "audio1" />
   <audio begin="5s" src="audio2" />
</seq>
```

Id. at 10. The seq element shown above specifies a sequence in which the file "audio1" is played first, then there is a five-second delay, and then the file "audio2" is played. *Id.*; Ex. 1002 ¶ 75.

SMIL 1.0 also describes a switch element that allows an author to specify a set of alternative media objects from which one is chosen. Ex. 1003, 19. The following is an example of a switch element:

```
<switch>
    <audio src="joe-audio-better-quality" system-bitrate="16000" />
    <audio src="joe-audio" system-bitrate="8000" />
</switch>
```

Id. at 22. The switch element shown above specifies that a different audio file may be chosen based on the system's bitrate. *Id.*; Ex. 1002 ¶ 84.

2. *Claim 1*

Claim 1 recites "[a] method of, at a client device, forming a media presentation from multiple related files, including a control information file, stored on one or more server computers within a computer network." Ex. 1001, 5:45–48. SMIL 1.0 teaches a media player (i.e., a client device) that forms a media presentation from multiple related files, including an SMIL file (i.e., a control information file), stored on a server. Pet. 10–11, 21; Ex. 1002 ¶¶ 63–64, 66, 110–112; Ex. 1003, 3 ("SMIL documents are XML 1.0 documents."), 15 ("The media object elements allow the inclusion of media objects into a SMIL presentation. Media objects are included by reference (using a URI). . . . When playing back a media object . . ."), 22 ("The media player evaluates each of the 'choices' . . . one at a time, looking for an acceptable bitrate given the known characteristics of the link between the media player and media server.").

Claim 1 recites "downloading the control information file to the client device." Ex. 1001, 5:49–50. SMIL 1.0 teaches downloading an SMIL file (i.e., a control information file) from a server to a media player (i.e., a client device). Pet. 10–11, 21–22, Ex. 1002 ¶¶ 113–116; Ex. 1003, 22 ("The

media player evaluates each of the 'choices' . . . one at a time, looking for an acceptable bitrate given the known characteristics of the link between the media player and media server."). For example, SMIL 1.0 teaches downloading an SMIL file from "http://www.cwi.nl/somewhereelse.smi" to a media player. Pet. Reply 7; Ex. 1003, 25; Ex. 1012, 293:10–294:5.

Patent Owner responds that SMIL 1.0 does not teach downloading a control information file to a media player.[7] PO Resp. 41–44. Specifically, Patent Owner argues that Petitioner does not provide "a single citation to SMIL 1.0 to show the steps of downloading a control information file to a client device," but instead "relies entirely on Dr. Bulterman's declaration." *Id.* at 41–42 (citing Pet. 21–22). Further, according to Patent Owner, an SMIL file could have been downloaded from a CD-ROM or other local drive, rather than a server. PO Resp. 42–44 (citing Ex. 2001 ¶¶ 132–133). Patent Owner points out that a book authored by Petitioner's declarant, Dr. Dick Bulterman, states that an SMIL file can be stored locally. PO Resp. 43 (citing Ex. 2008, 9).

Patent Owner's argument is not persuasive. Petitioner identifies specific portions of SMIL 1.0 that teach downloading a control information file to a media player. For example, Petitioner's declarant, Dr. Bulterman, testifies that SMIL 1.0 describes a client-server architecture in which an SMIL file (i.e., a control information file) is downloaded from a server to a client. Pet. 21; Ex. 1002 ¶¶ 91–93, 113–116. To support that statement, Dr. Bulterman identifies a portion of SMIL 1.0 that describes a link between a media player and a media server. Ex. 1002 ¶¶ 91, 113; Ex. 1003, 22

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[7] Patent Owner does not dispute that an SMIL file is a control information file. *See* PO Resp. 41–44; Ex. 1012, 288:4–14.

("looking for an acceptable bitrate given the known characteristics of the link between the media player and media server"). In addition, Petitioner identifies a portion of SMIL 1.0 that describes downloading an SMIL file from "http://www.cwi.nl/somewhereelse.smi" to a media player. Pet. Reply 7; Ex. 1003, 25; Ex. 1012, 293:10–294:5. In fact, Patent Owner acknowledged at the oral hearing that SMIL 1.0 teaches downloading a control information file to a media player. Tr. 33:16–34:6, 35:3–14. Even if it also is possible to store an SMIL file locally (e.g., on a CD-ROM), that does not detract from SMIL 1.0's teaching of downloading an SMIL file from a server to a media player.

Claim 1 recites "the client device parsing the control information file." Ex. 1001, 5:51. SMIL 1.0 teaches that a media player parses the switch elements in an SMIL file in the order in which they occur. Pet. 14–15, 22; Ex. 1002 ¶¶ 65, 117; Ex. 1003, 19 ("An element is selected as follows: the player evaluates the elements in the order in which they occur in the switch element."). Patent Owner responds that Petitioner "fails to establish that SMIL 1.0 discloses downloading a control information file to a client device and parsing the same." PO Resp. 41 (emphasis omitted). However, other than the argument discussed above regarding downloading a control information file to a media player, Patent Owner does not present any specific argument regarding parsing the control information file. *See id.* at 41–44.

Claim 1 recites "based on parsing of the control information file, the client device: identifying multiple alternative flies [sic] corresponding to a given segment of the media presentation, determining which files of the multiple alternative files to retrieve based on system restraints; and

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retrieving the determined file of the multiple alternative files to begin a media presentation." Ex. 1001, 5:52–59. SMIL 1.0 teaches that based on a media player's parsing of the switch elements in an SMIL file, the media player identifies multiple alternative files for a given segment of a media presentation and determines which file to retrieve based on test attributes, such as a system's bitrate. Pet. 14–15, 22–24; Ex. 1002 ¶¶ 118–122; Ex. 1003, 19 ("The switch element allows an author to specify a set of alternative elements from which only one acceptable element should be chosen."), 20 ("[The] system-bitrate . . . attribute specifies the approximate bandwidth, in bits per second available to the system."), 22 ("*Choosing between audio resources with different bitrate*."). SMIL 1.0 also teaches that the media player then retrieves the selected file from a server. Pet. 24; Ex. 1002 ¶¶ 123–125; Ex. 1003, 19 ("The first acceptable element is selected."), 22 ("The media player evaluates each of the 'choices' (elements within the switch) one at a time, looking for an acceptable bitrate given the known characteristics of the link between the media player and media server."), 26 ("<video src='rtsp://foo.com/graph.imf'/>").

Patent Owner responds that SMIL 1.0 does not teach the identifying, determining, and retrieving steps of claim 1. PO Resp. 30–41. Specifically, Patent Owner argues that Petitioner "must identify a file within SMIL 1.0 that, when parsed, allows a client device to perform the identifying, determining, and retrieving steps." *Id.* at 31. According to Patent Owner, though, Petitioner instead "jumps from one snippet of code in SMIL 1.0 to another for different elements of a single claim." *Id.* (citing Ex. 2001 ¶¶ 115–117).

Patent Owner's argument is not persuasive. SMIL 1.0 is a specification for SMIL, and, thus, a person of ordinary skill in the art would have understood SMIL 1.0's various teachings as a single language, rather than separate embodiments. Ex. 1002 ¶ 64; Ex. 1003, 2 ("This documents specifies version 1 of the Synchronized Multimedia Integration Language."); Ex. 1012, 168:9–169:7, 170:21–171:7. Further, SMIL 1.0 teaches a body element that may contain various different child elements, including the seq and switch elements discussed above. Ex. 1002 ¶ 67; Ex. 1003, 9 ("The 'body' element can contain the following children."). This indicates that SMIL 1.0's various teachings were intended to be used together. Ex. 1002 ¶ 67; Ex. 1003, 9.

Nonetheless, even if we consider SMIL 1.0's examples individually, at least one of the examples cited by Petitioner teaches the identifying, determining, and retrieving steps of claim 1. SMIL 1.0 describes a switch element as follows:

> The switch element allows an author to specify a set of alternative elements from which only one acceptable element should be chosen. . . . An element is selected as follows: the player evaluates the elements in the order in which they occur in the switch element. The first acceptable element is selected at the exclusion of all other elements within the switch.

Ex. 1003, 19. SMIL 1.0 provides the following example of a switch element for "[c]hoosing between audio resources with different bitrate":

```
<switch>
    <audio src="joe-audio-better-quality" system-bitrate="16000" />
    <audio src="joe-audio" system-bitrate="8000" />
</switch>
```

Id. at 22 (emphasis omitted). This "joe audio" example identifies multiple alternative files for a given segment of a media presentation (i.e., "joe-audio-

better-quality" and "joe-audio"), determines which file to retrieve based on system restraints (i.e., a system bitrate of "16000" or "8000"), and then retrieves the determined file to the exclusion of the other alternative file. *Id.*; Ex. 1002 ¶¶ 119, 123.

Patent Owner responds that the "joe audio" example does not determine which file of the multiple alternative files to retrieve based on system restraints.[8] PO Resp. 34–35 (citing Ex. 2001 ¶¶ 119–121). According to Patent Owner, SMIL 1.0 teaches that "[a] user may control how the system-bitrate command is processed with 'a simple static setting.'" PO Resp. 34–35 (citing Ex. 1003, 20; Ex. 2009, 36:10–24, 37:23–38:4, 41:6–13, 95:13–23, 96:13–97:2). Thus, Patent Owner contends that "the determination of which audio source is used (if any) may be based on a user setting, as opposed to an actual system constraint." PO Resp. 35.

Patent Owner's argument is not persuasive. SMIL 1.0 describes the system-bitrate attribute as follows:

> This attribute specifies the approximate bandwidth, in bits per second available to the system. The measurement of bandwidth is application specific, meaning that applications may use sophisticated measurement of end-to-end connectivity, *or* a simple static setting controlled by the user.

Ex. 1003, 20 (emphasis added). In other words, SMIL 1.0 teaches that the system-bitrate attribute specifies either 1) the actual bandwidth available to the system as determined using "sophisticated measurement of end-to-end

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[8] Patent Owner also presents arguments regarding the other examples cited by Petitioner. PO Resp. 36–41. However, because we determine that the "joe audio" example teaches the identifying, determining, and retrieving steps of claim 1, we do not address Patent Owner's arguments regarding the other examples.

connectivity"; *or* 2) a user setting. *Id.* As such, SMIL 1.0 teaches that the system-bitrate attribute can specify constraints on the system imposed by resources (*id.*; Ex. 2009, 93:3–10), which Patent Owner acknowledged at the oral hearing (Tr. 32:19–33:15). Even if it also is possible for the system-bitrate attribute to specify a user setting, that does not detract from SMIL 1.0's teaching that the system-bitrate attribute can specify the actual bandwidth available to the system.

Patent Owner also responds that the "joe audio" example "is only a portion of a SMIL file because it includes ellipses above and below the switch element, and the SMIL element (<smil>) is not shown." PO Resp. 35–36 (citing Ex. 2001 ¶¶ 43, 121). Patent Owner's argument is not persuasive. As discussed above, SMIL 1.0 is a specification for SMIL, and, thus, a person of ordinary skill in the art would have understood SMIL 1.0's various teachings as a single language, rather than separate embodiments. Ex. 1002 ¶ 64; Ex. 1003, 2 ("This documents specifies version 1 of the Synchronized Multimedia Integration Language."); Ex. 1012, 168:9–169:7, 170:21–171:7. As a result, even if the "joe audio" example alone is not a complete SMIL file, SMIL 1.0 teaches the other elements needed for a complete SMIL file. Ex. 1002 ¶ 67; Ex. 1003, 2 ("SMIL allows integrating a set of independent multimedia objects into a synchronized multimedia presentation.").

Claim 1 recites "wherein if the determined file is one of a plurality of files required for the media presentation, the method further comprises acts of: concurrent with the media presentation, retrieving a next file; and using content of the next file to continue the media presentation." Ex. 1001, 5:60–67. SMIL 1.0 teaches a seq element that allows several media files to be

played sequentially. Pet. 41–42; Ex. 1002 ¶¶ 199–201; Ex. 1003, 10 (Fig. 4.2), 13 ("The children of a 'seq' element form a temporal sequence."). Further, a technique referred to as "pipelining" would have been well-known to a person of ordinary skill in the art. Pet. 42–43; Ex. 1002 ¶ 202; Ex. 1006, 397 ("[W]e review the conventional pipelining scheme."). Pipelining involves dividing a media presentation into a sequence of segments such that the playback time for each segment is longer than the download time for the next segment. Pet. 42–43; Ex. 1002 ¶¶ 203–204; Ex. 1006, 397 ("A video file is logically divided into a sequence of data segment $(S_o, S_1, \ldots, S_{n-1}, S_n)$, where the playback duration of S_{i-1} must eclipse the time required to materialize (download) S_i."). As a result, pipelining allows playback for the first segment to begin while the next segment is being downloaded. Pet. 42–43; Ex. 1002 ¶¶ 203–204; Ex. 1006, 397 ("After the first data segment, S_o, has been downloaded, the playback can begin.").

Petitioner argues that it would have been obvious to use pipelining with SMIL 1.0. Pet. 42–45. We agree with and adopt Petitioner's reasoning. Specifically, it was well-known that users disfavored waiting a long time to receive media content over the Internet. Pet. 42–43; Ex. 1002 ¶ 202; Ex. 1006, 396 ("As the Web progresses to provide continuous media (e.g., audios and videos), the narrow bandwidth of the modem implicitly limits the access to these media to those home users who can tolerate either long wait time or highly jittering pictures."). It also was well-known that pipelining reduces the wait time to receive media content over the Internet. Pet. 42–43; Ex. 1002 ¶¶ 203–204; Ex. 1006, 398 ("[P]ipelining can reduce the service latency to the time required to download the first data segment."). Thus, a person of ordinary skill in the art would have been

motivated to reduce the wait time to receive media content over the Internet by using pipelining with SMIL 1.0. Pet. 43; Ex. 1002 ¶ 205.

Further, a person of ordinary skill in the art would have had a reasonable expectation of success in using pipelining with SMIL 1.0. Pet. 43–45; Ex. 1002 ¶¶ 205–206. In particular, a media presentation could have been divided into a sequence of segments and then played back in sequence using the seq element in SMIL 1.0. Pet. 41–44; Ex. 1002 ¶¶ 199– 201, 205; Ex. 1003, 10 (Fig. 4.2), 13 ("The children of a 'seq' element form a temporal sequence."). Further, during playback of one segment of the media presentation, another segment could have been downloaded simultaneously using well-known multithread software development tools, such as Java 2.0 or Microsoft SDK. Pet. 44–45; Ex. 1001, 3:25–30; Ex. 1002 ¶ 206.

Patent Owner responds that it would not have been obvious to use pipelining with SMIL 1.0. PO Resp. 59–64. First, Patent Owner argues that SMIL 1.0 does not include "any language element" that would have allowed for pipelining. *Id.* at 60 (citing Ex. 2009, 185:4–14). According to Patent Owner, "downloading would be controlled on the player side," which "would be created with a completely different language." PO Resp. 60 (citing Ex. 2001 ¶¶ 50, 71, 162–168; Ex. 2009, 198:4–199:15). Patent Owner's argument is not persuasive. Petitioner does not assert that pipelining would have been performed solely by SMIL 1.0. Rather, as discussed above, Petitioner asserts that the sequential playback aspect of pipelining could have been implemented using the seq element in SMIL 1.0 (Pet. 41–44; Ex. 1002 ¶¶ 199–201, 205; Ex. 1003, 10 (Fig. 4.2), 13 ("The children of a 'seq' element form a temporal sequence.")), and the

simultaneous download aspect of pipelining could have been implemented using well-known multithread software development tools, such as Java 2.0 or Microsoft SDK (Pet. 44–45; Ex. 1001, 3:25–30; Ex. 1002 ¶ 206). Thus, Petitioner's obviousness analysis already takes into account Patent Owner's contention that the simultaneous download aspect of pipelining would have been performed using a language other than SMIL.

Second, Patent Owner argues that Petitioner only asserts that pipelining could have been used with SMIL 1.0, but does not provide a reason why a person of ordinary skill in the art would have used pipelining with SMIL 1.0. PO Resp. 61. Patent Owner's argument is not persuasive. As discussed above, a person of ordinary skill in the art would have been motivated to reduce the wait time to receive media content over the Internet by using pipelining with SMIL 1.0. Pet. 43; Ex. 1002 ¶ 205.

Third, Patent Owner argues that the examples in SMIL 1.0 cited by Petitioner could not have incorporated pipelining. PO Resp. 61–62. Specifically, Patent Owner contends that examples in SMIL 1.0 cited by Petitioner "either (i) do not have multiple segments . . . or (ii) explicitly require that the different files start at the same time (making starting one segment while retrieving the other untenable)." *Id.* at 61 (citing Ex. 2001 ¶¶ 159–161). Patent Owner's argument is not persuasive. As discussed above, SMIL 1.0 teaches a seq element that allows several media files to be played sequentially. Pet. 41–42; Ex. 1002 ¶¶ 199–201; Ex. 1003, 10 (Fig. 4.2), 13 ("The children of a 'seq' element form a temporal sequence."). Thus, even if the examples of switch elements cited by Petitioner (such as the "joe audio" example) do not involve a media presentation divided into multiple segments, a person of ordinary skill in the art would have recognized that a

media presentation could have been divided into a sequence of segments and then played back in sequence using the seq element in SMIL 1.0.[9] Pet. 41–44; Ex. 1002 ¶¶ 199–201, 205; Ex. 1003, 10 (Fig. 4.2), 13 ("The children of a 'seq' element form a temporal sequence.").

Fourth, Patent Owner argues that a person of ordinary skill in the art would not have had the ability to implement pipelining with SMIL 1.0. PO Resp. 62 (citing Ex. 2001 ¶¶ 162–168). Patent Owner points out that Petitioner's definition of the level of ordinary skill in the art focuses on experience developing multimedia presentations. PO Resp. 62 (citing Pet. 15). According to Patent Owner, implementing pipelining "is a much more technical endeavor" than developing multimedia presentations, and, thus, a person of ordinary skill in the art would not have known how to implement pipelining. PO Resp. 62 (citing Ex. 2001 ¶ 164; Ex. 2009, 183:22–184:6).

Patent Owner's argument is not persuasive. Petitioner's definition of the level of ordinary skill in the art, which we have adopted, includes experience developing software tools to automate the development of multimedia presentations, and, as such, is not limited to just experience developing multimedia presentations. Pet. 15; Ex. 1002 ¶ 23. Further, both Petitioner's declarant, Dr. Bulterman, and Patent Owner's declarant, Dr. Adam Porter, acknowledge that implementing pipelining would have been within the capabilities of a person of ordinary skill in the art. Pet. 44–45; Ex. 1001, 3:25–30; Ex. 1002 ¶ 206; Ex. 1012, 274:4–22.

Fifth, Patent Owner argues that "Hua describes a specific manner of determining how to divide video files based on information including the

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[9] This could have been accomplished, for example, by using a switch element containing seq elements. Pet. 50; Ex. 1002 ¶ 223.

size [of] the files and speed of download." PO Resp. 63 (citing Ex. 1006, 397). Patent Owner contends that this is problematic because the developer of a media player "would not have access to such information." PO Resp. 63 (citing Ex. 2001 ¶ 65). Patent Owner's argument is not persuasive. Patent Owner acknowledges that "a media player merely access files—it could not divide the files in Hua's manner, as the player does not control those files or the server on which they may be stored." PO Resp. 63. Thus, because a media player does not actually divide a media presentation into segments, the developer of a media player would not need access to the information needed to divide the media presentation. *Id.* Rather, as discussed above, a person of ordinary skill in the art would have recognized that a media presentation could have been divided into a sequence of segments and then played back in sequence using the seq element in SMIL 1.0. Pet. 41–44; Ex. 1002 ¶¶ 199–201, 205; Ex. 1003, 10 (Fig. 4.2), 13 ("The children of a 'seq' element form a temporal sequence."). Also, the simultaneous download aspect of pipelining could have been implemented using well-known multithread software development tools. Pet. 44–45; Ex. 1001, 3:25–30; Ex. 1002 ¶ 206.

Sixth, Patent Owner argues that Petitioner improperly relies on the background knowledge of a person of ordinary skill in the art to show that the challenged claims would have been obvious over SMIL 1.0. PO Resp. 65. Patent Owner's argument is not persuasive. Although background knowledge "cannot be used as a wholesale substitute for reasoned analysis and evidentiary support," *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1362 (Fed. Cir. 2016), background knowledge nonetheless "is part of the store of public knowledge that must be consulted when

considering whether a claimed invention would have been obvious," *Randall Manufacturing v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013). When relying on background knowledge, it is important for a party to provide "a factual foundation," with "perhaps the most reliable" factual foundation being "documentary evidence consisting of prior art in the area." *Id.* at 1362–1363. Here, Petitioner provides a sufficient factual foundation for its reliance on background knowledge. Specifically, as discussed above, Petitioner provides documentary evidence consisting of prior art, namely Hua, and testimony of its declarant, Dr. Bulterman, to show that pipelining would have been well-known to a person of ordinary skill in the art. Pet. 42–43; Ex. 1002 ¶¶ 202–204; Ex. 1006, 397 ("[W]e review the conventional pipelining scheme.").

3. *Claim 2*

Claim 2 depends from claim 1, and recites "wherein partitioning of media presentation information between the multiple related files is determined by information about the client." Ex. 1001, 6:1–3. As discussed above, a person of ordinary skill in the art would have recognized that a media presentation could have been divided into a sequence of segments and then played back in sequence using the seq element in SMIL 1.0. Pet. 41–44, 47; Ex. 1002 ¶¶ 199–201, 205, 210; Ex. 1003, 10 (Fig. 4.2), 13 ("The children of a 'seq' element form a temporal sequence."). It also would have been obvious to a person of ordinary skill in the art to divide the media presentation into a sequence of segments based on information about the client, such as the client's screen size or the bandwidth available to the client. Pet. 14–15, 22–24, 47–49; Ex. 1002 ¶¶ 118–122, 211–217; Ex. 1003, 20 ("[The] system-bitrate . . . attribute specifies the approximate bandwidth,

in bits per second available to the system."), 22 ("[T]he presentation contains alternative parts designed for screens with different resolutions and bit-depths."). Other than the arguments discussed above for claim 1, Patent Owner does not present any specific arguments regarding claim 2. *See* PO Resp. 56.

4.   *Claim 3*

Claim 3 depends from claim 1, and recites "wherein partitioning of media presentation information between the multiple related files is determined by information about the computer network." Ex. 1001, 6:4–6. As discussed above, a person of ordinary skill in the art would have recognized that a media presentation could have been divided into a sequence of segments and then played back in sequence using the seq element in SMIL 1.0. Pet. 41–44, 49–50; Ex. 1002 ¶¶ 199–201, 205, 210; Ex. 1003, 10 (Fig. 4.2), 13 ("The children of a 'seq' element form a temporal sequence."). It also would have been obvious to a person of ordinary skill in the art to divide the media presentation into a sequence of segments based on information about the computer network, such as the bandwidth available on the computer network. Pet. 14–15, 22–24, 49–50; Ex. 1002 ¶¶ 118–122, 219–225; Ex. 1003, 20 ("[The] system-bitrate . . . attribute specifies the approximate bandwidth, in bits per second available to the system."). Other than the arguments discussed above for claim 1, Patent Owner does not present any specific arguments regarding claim 3. *See* PO Resp. 56.

5.   *Claim 4*

Claim 4 depends from claim 1, and recites "wherein the media presentation comprises an audio presentation." Ex. 1001, 6:7–8. SMIL 1.0 teaches that a media presentation comprises an audio presentation. Pet. 32;

Ex. 1002 ¶¶ 138–141; Ex. 1003, 10 ("<audio src='audio1' />"), 22 ("*Choosing between audio resources with different bitrate.*"). Other than the arguments discussed above for claim 1, Patent Owner does not present any specific arguments regarding claim 4. *See* PO Resp. 56.

6. *Claim 5*

Claim 5 depends from claim 1, and recites "wherein the media presentation comprises a video presentation." Ex. 1001, 6:9–10. SMIL 1.0 teaches that a media presentation comprises a video presentation. Pet. 32–33; Ex. 1002 ¶¶ 142–145; Ex. 1003, 26 ("<video src='rtsp://foo.com/graph.imf'/>"), 27 ("[T]he duration of a video clip is split into two subintervals.").

Patent Owner responds that the example in SMIL 1.0 cited by Petitioner "fails to disclose: (i) identifying multiple alternative files corresponding to a given segment of the media presentation, or (ii) determining which files of the multiple alternative files to retrieve based on system restraints, as recited in claim 1, from which claim 5 depends." PO Resp. 54 (citing Ex. 2001 ¶¶ 140–146). Patent Owner's argument is not persuasive. For the reasons discussed above, Petitioner has shown by a preponderance of the evidence that the identified limitations of claim 1 would have been obvious over SMIL 1.0. *See supra* Section II.D.2. Patent Owner does not dispute specifically that SMIL 1.0 teaches that a media presentation comprises a video presentation. *See* PO Resp. 53–56. Further, SMIL 1.0 is a specification for SMIL, and, thus, a person of ordinary skill in the art would have understood SMIL 1.0's various teachings as a single language, rather than separate embodiments. Ex. 1002 ¶ 64; Ex. 1003, 2

("This documents specifies version 1 of the Synchronized Multimedia Integration Language."); Ex. 1012, 168:9–169:7, 170:21–171:7.

> 7.   *Claim 6*

Claim 6 depends from claim 1, and recites "wherein partitioning of media presentation information between the multiple related files is described within the control information file using tags corresponding to respective files." Ex. 1001, 6:11–14. SMIL 1.0 teaches that the elements in an SMIL file are represented using markup tags. Pet. 11, 51; Ex. 1002 ¶¶ 27, 66, 111, 229; Ex. 1003, 10 (example of using a <seq> tag for a seq element and an <audio> tag for an audio element). It would have been obvious to a person of ordinary skill in the art to divide a media presentation into a sequence of segments using SMIL 1.0's markup tags for the seq, audio, and/or video elements. Pet. 41–44, 51–52; Ex. 1002 ¶¶ 199–201, 205, 228–231; Ex. 1003, 10 (Fig. 4.2), 13 ("The children of a 'seq' element form a temporal sequence.").

Patent Owner responds that SMIL 1.0 does not teach the limitations of claim 6.[10] PO Resp. 48–53. First, Patent Owner argues that the example in SMIL 1.0 cited by Petitioner for claim 6 describes playing four files in parallel, and, thus, "the example cannot describe or suggest the conditional limitation – that a next file is retrieved concurrent with the media presentation begun with the prior file." PO Resp. 48–49, 51–53 (citing Pet. 51; Ex. 1002 ¶ 229; Ex. 1003, 23; Ex. 2001 ¶¶ 159–161; Ex. 2009,

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[10] Patent Owner argues that the language of claim 6 requires a media presentation with multiple segments. PO Resp. 44–48. As discussed above, for purposes of this Decision, we adopt Patent Owner's proposed construction that requires a media presentation with multiple segments. *See supra* Sections II.B.1, II.B.4.

65:2–15, 66:3–13, 73:7–74:24). Patent Owner's argument is not persuasive. Although Petitioner cites one example of markup tags in which the media files are played in parallel, Petitioner cites other examples of markup tags in which the media files are played in sequence. Pet. 11 (citing Ex. 1003, 10 (example of using a <seq> tag for a seq element and an <audio> tag for an audio element); Pet. 51 (citing Pet. 8–11).

Second, Patent Owner argues that SMIL 1.0's teachings "only relate to when media objects are played relative to each other" and "do not dictate when the objects are retrieved." PO Resp. 50 (citing Ex. 2001 ¶¶ 50, 153–158; Ex. 2009, 169:9–17, 172:11–24). Patent Owner's argument is not persuasive. As discussed above, Petitioner does not assert that SMIL 1.0 dictates when media files are retrieved. Rather, as discussed above, Petitioner asserts that the sequential playback aspect of pipelining could have been implemented using the seq element in SMIL 1.0 (Pet. 41–44; Ex. 1002 ¶¶ 199–201, 205; Ex. 1003, 10 (Fig. 4.2) 13 ("The children of a 'seq' element form a temporal sequence.")), and the simultaneous download aspect of pipelining could have been implemented using well-known multithread software development tools, such as Java 2.0 or Microsoft SDK (Pet. 44–45; Ex. 1001, 3:25–30; Ex. 1002 ¶ 206). Thus, Petitioner's obviousness analysis already takes into account Patent Owner's contention that a language other than SMIL dictates when media files are retrieved.

Third, Patent Owner argues that pipelining is "inapplicable" to the examples in SMIL 1.0 cited by Petitioner. PO Resp. 50–51. Specifically, Patent Owner points out that the "joe audio" example "shows only two alternative files" and "requires that either one or none of those files is retrieved." *Id.* at 51 (citing Ex. 1002 ¶ 79; Ex. 2001 ¶ 161; Ex. 2009, 98:12–

100:14). Thus, according to Patent Owner, "there would be no possible way to combine pipelining with the relied upon example to achieve the claimed invention." PO Resp. 51. Patent Owner's argument is not persuasive. As discussed above, SMIL 1.0 teaches a seq element that allows several media files to be played sequentially. Pet. 41–42; Ex. 1002 ¶¶ 199–201; Ex. 1003, 10 (Fig. 4.2), 13 ("The children of a 'seq' element form a temporal sequence."). Thus, even if the "joe audio" example does not involve a media presentation divided into multiple segments, a person of ordinary skill in the art would have recognized that a media presentation could have been divided into a sequence of segments and then played back in sequence using the seq element in SMIL 1.0.[11] Pet. 41–44; Ex. 1002 ¶¶ 199–201, 205; Ex. 1003, 10 (Fig. 4.2), 13 ("The children of a 'seq' element form a temporal sequence.").

        8.   *Claim 7*

    Claim 7 depends from claim 1, and recites "wherein the control information file is an XML file." Ex. 1001, 6:15–16. SMIL 1.0 teaches that an SMIL file is an XML file. Pet. 33; Ex. 1002 ¶ 152; Ex. 1003, 3 ("SMIL documents are XML 1.0 documents."). Other than the arguments discussed above for claim 1, Patent Owner does not present any specific arguments regarding claim 7. *See* PO Resp. 56.

        9.   *Claim 8*

    Claim 8 depends from claim 7, and recites "wherein the XML file identifies the multiple alternative files corresponding to the given segment of the media presentation, further comprising an act of partitioning the media

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[11] This could have been accomplished, for example, by using a switch element containing seq elements. Pet. 50; Ex. 1002 ¶ 223.

presentation into multiple MP3 files corresponding to a portion of the multiple alternative files." Ex. 1001, 6:18–22. As discussed above, SMIL 1.0 teaches that based on a media player's parsing of the switch elements in an SMIL file (i.e., an XML file), the media player identifies multiple alternative files for a given segment of a media presentation. Pet. 14–15, 22–24; Ex. 1002 ¶¶ 118–122; Ex. 1003, 19 ("The switch element allows an author to specify a set of alternative elements from which only one acceptable element should be chosen."), 20 ("[The] system-bitrate . . . attribute specifies the approximate bandwidth, in bits per second available to the system."), 22 ("*Choosing between audio resources with different bitrate*."). SMIL 1.0 also teaches that a media presentation comprises audio files, and a person of ordinary skill in the art would have recognized that MP3 was a well-known format for audio files. Pet. 55–56; Ex. 1002 ¶¶ 234–235; Ex. 1003, 10 ("<audio src='audio1' />"), 22 ("*Choosing between audio resources with different bitrate.*"). Other than the arguments discussed above for claim 1, Patent Owner does not present any specific arguments regarding claim 8.

> 10. *Claim 9*

Claim 9 recites limitations similar to the limitations discussed above for claim 1. Ex. 1001, 6:23–34. Petitioner relies on arguments and evidence similar to the arguments and evidence discussed above for claim 1. Pet. 33–35, 40–45.

Patent Owner responds that SMIL 1.0 does not teach "storing on a server computer a control information file of a format to be parsed by a client device." PO Resp. 58. Specifically, Patent Owner argues that "Petitioner cites to paragraphs 159–160 of Dr. Bulterman's declaration," but

neither Petitioner nor Dr. Bulterman provide a citation to SMIL 1.0. *Id.*
(citing Pet. 34; Ex. 1002 ¶¶ 159–160). Further, according to Patent Owner,
the evidence of record indicates that a control information file may be stored
locally. PO Resp. 58 (citing Ex. 2008, 9).

Patent Owner's argument is not persuasive for the same reasons
discussed above for claim 1. *See supra* Section II.D.2. Namely, Petitioner's
declarant, Dr. Bulterman, testifies that SMIL 1.0 describes a client-server
architecture in which an SMIL file (i.e., a control information file) is
downloaded from a server to a client. Pet. 21, 34; Ex. 1002 ¶¶ 91–93, 113–
116, 159–160. To support that statement, Dr. Bulterman identifies a portion
of SMIL 1.0 that describes a link between a media player and a media
server. Ex. 1002 ¶¶ 91, 113; Ex. 1003, 22 ("looking for an acceptable bitrate
given the known characteristics of the link between the media player and
media server"). In addition, Petitioner identifies a portion of SMIL 1.0 that
describes downloading an SMIL file from "http://www.cwi.nl/
somewhereelse.smi" to a media player. Pet. Reply 7; Ex. 1003, 25. In fact,
Patent Owner acknowledged at the oral hearing that SMIL 1.0 teaches
downloading a control information file to a media player. Tr. 33:16–34:6,
35:3–14. Even if it also is possible to store an SMIL file locally (e.g., on a
CD-ROM), that does not detract from SMIL 1.0's teaching of downloading
an SMIL file from a server to a media player.

Patent Owner also argues that the "joe audio" example in SMIL 1.0
cited by Petitioner does not determine which file of the multiple alternative
files to retrieve based on system constraints. PO Resp. 57. According to
Patent Owner, "SMIL 1.0 establishes that the SMIL player may include a
user preferences dialog box, in which a static setting defining the bandwidth

of a connection between the SMIL player and the network may be set." *Id.*
(citing Ex. 1003, 20; Ex. 2001 ¶ 150.). Thus, Patent Owner contends that
"[n]othing in Example 2 of SMIL 1.0 clearly establishes that a system
constraint dictates the determination." PO Resp. 57.

Patent Owner's argument is not persuasive for the same reasons
discussed above for claim 1. *See supra* Section II.D.2. Specifically, SMIL
1.0 describes the system-bitrate attribute as follows:

> This attribute specifies the approximate bandwidth, in bits per
> second available to the system. The measurement of bandwidth
> is application specific, meaning that applications may use
> sophisticated measurement of end-to-end connectivity, *or* a
> simple static setting controlled by the user.

Ex. 1003, 20 (emphasis added). In other words, SMIL 1.0 teaches that the
system-bitrate attribute specifies either 1) the actual bandwidth available to
the system as determined using "sophisticated measurement of end-to-end
connectivity"; *or* 2) a user setting. *Id.* As such, SMIL 1.0 teaches that the
system-bitrate attribute can specify constraints on the system imposed by
resources (*id.*; Ex. 2009, 93:3–10), which Patent Owner acknowledged at the
oral hearing (Tr. 32:19–33:15). Even if it also is possible for the system-
bitrate attribute to specify a user setting, that does not detract from SMIL
1.0's teaching that the system-bitrate attribute can specify the actual
bandwidth available to the system.

11. *Claim 10*

Claim 10 depends from claim 9, and recites "wherein the control
information files is an XML file." Ex. 1001, 6:35–36. SMIL 1.0 teaches
that an SMIL file is an XML file. Pet. 33, 36; Ex. 1002 ¶ 171; Ex. 1003, 3
("SMIL documents are XML 1.0 documents."). Other than the arguments

discussed above for claim 9, Patent Owner does not present any specific arguments regarding claim 10.

12. *Claim 11*

Claim 11 depends from claim 10, and recites "wherein the XML file identifies the multiple alternative files corresponding to the given segment of the media presentation." Ex. 1001, 6:38–40. As discussed above, SMIL 1.0 teaches that based on a media player's parsing of the switch elements in an SMIL file (i.e., an XML file), the media player identifies multiple alternative files for a given segment of a media presentation. Pet. 14–15, 22–24, 36; Ex. 1002 ¶¶ 118–122; Ex. 1003, 19 ("The switch element allows an author to specify a set of alternative elements from which only one acceptable element should be chosen."), 20 ("[The] system-bitrate . . . attribute specifies the approximate bandwidth, in bits per second available to the system."), 22 ("*Choosing between audio resources with different bitrate*."). Other than the arguments discussed above for claim 9, Patent Owner does not present any specific arguments regarding claim 11.

13. *Claim 12*

Claim 12 recites, *inter alia*, "means for parsing, based on parsing of the control information file: identifying multiple alternative files corresponding to a give segment of the media presentation; determining which file of the multiple alternative files to retrieve based on system constraints; [and] retrieving the determined file of the multiple alternative files to begin a media presentation." Ex. 1001, 6:46–54. As discussed above, Petitioner does not meet its burden to show that SMIL 1.0 discloses the above means-plus-function limitation of claim 12. *See supra* Section II.C.2. Petitioner's obviousness arguments and evidence do not compensate

for the deficiencies in Petitioner's anticipation analysis discussed above.
Pet. 45–46; IPR2017-01754, Paper 1, 45–46. Namely, Petitioner's
obviousness analysis also does not compare SMIL 1.0's teachings with the
corresponding algorithm allegedly described in the '806 patent (at 2:53–
3:61, 4:20–26, and Figure 1), or otherwise explain how SMIL 1.0 teaches
the corresponding algorithm allegedly described in the '806 patent (at 2:53–
3:61, 4:20–26, and Figure 1) or an equivalent. Pet. 19–20, 37–39, 45–46;
Pet. Supp. Reply 4–5; IPR2017-01754, Paper 1, 17–20, 36–38, 45–46.
Thus, Petitioner has not shown by a preponderance of the evidence that
claim 12 would have been obvious over SMIL 1.0.

14. *Claims 13–16*

Claims 13–16 depend from claim 12. Ex. 1001, 6:63–8:3. Because
Petitioner has not shown by a preponderance of the evidence that claim 12
would have been obvious over SMIL 1.0, Petitioner also has not shown by a
preponderance of the evidence that claims 13–16 would have been obvious
over SMIL 1.0. *See supra* Section II.D.13.

15. *Summary*

For the foregoing reasons, Petitioner has shown by a preponderance of
the evidence that claims 1–11 would have been obvious over SMIL 1.0, but
Petitioner has not shown by a preponderance of the evidence that claims 12–
16 would have been obvious over SMIL 1.0.

E. *Obviousness of Claims 1–16 Over SMIL 1.0 and Hua*

Petitioner does not identify Hua specifically in the asserted grounds of
unpatentability presented in the Petition. *See* Pet. 4. Rather, as discussed
above, Petitioner properly relies on Hua as evidence that pipelining would
have been well-known to a person of ordinary skill in the art. *See supra*

Section II.D.2.; *Randall*, 733 F.3d at 1362–63; *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1365–66 (Fed. Cir. 2015). Nonetheless, for clarity, we exercised our discretion in the Decision on Institution and instituted an *inter partes* review on the additional ground that claims 1–11 would have been obvious over SMIL 1.0 and Hua based on the arguments and evidence presented in the Petition. Dec. on Inst. 18. Also, after *SAS*, we modified our Decision on Institution to include the additional ground that claims 12–16 would have been obvious over SMIL 1.0 and Hua. Paper 25, 2; Ex. 3001, 2.

For the same reasons that Petitioner has shown by a preponderance of the evidence that claims 1–11 would have been obvious over SMIL 1.0, Petitioner has shown by a preponderance of the evidence that claims 1–11 would have been obvious over SMIL 1.0 and Hua. *See supra* Section II.D. Also, for the same reasons that Petitioner has not shown by a preponderance of the evidence that claims 12–16 would have been obvious over SMIL 1.0, Petitioner has not shown by a preponderance of the evidence that claims 12–16 would have been obvious over SMIL 1.0 and Hua. *See id.*

Patent Owner argues that instituting an *inter partes* review on the additional ground that claims 1–16 would have been obvious over SMIL 1.0 and Hua was improper because "the law precludes such advocacy on the part of a Petitioner." PO Resp. 65–66. Patent Owner's argument is not persuasive. As discussed above, Petitioner relies on Hua as evidence that pipelining was a well-known technique, and Petitioner demonstrates why it would have been obvious to use the well-known pipelining technique taught by Hua with SMIL 1.0. *See supra* Section II.D. The additional ground set forth in our Decision on Institution relies on the same arguments and

evidence, but simply identifies Hua as part of the ground of unpatentability. Dec. on Inst. 18.

Patent Owner argues that "[b]ecause no combination with Hua was offered, there is no evidence indicating how Hua would be combined." PO Resp. 66. Patent Owner's argument is not persuasive. As discussed above, Petitioner explains why it would have been obvious to use the well-known pipelining technique taught by Hua with SMIL 1.0, and demonstrates how the combination of pipelining with SMIL 1.0 would have rendered claims 1–11 obvious. *See supra* Section II.D.

Lastly, Patent Owner argues that Hua is not a prior art printed publication. PO Resp. 66–67. Specifically, Patent Owner contends that "[w]hile the front cover of Hua mentions 'September', the title page of that document only suggest[s] a publication date of '1999.'" *Id.* at 66 (citing Ex. 1006, 1, 3). Patent Owner's argument is not persuasive. Patent Owner does not contend that the '806 patent is entitled to an earlier priority date than its filing date of November 4, 1999. Ex. 1001, [22]. Hua indicates that it is an article that was publicly accessible in Volume 7, Number 5 of the Multimedia Systems periodical in September 1999, and, thus, was publicly accessible before the priority date of the '806 patent. Ex. 1006, 1 ("September 1999"), 2 ("Multimedia Systems publishes original research articles."). Therefore, Petitioner has shown sufficiently that Hua is a prior art printed publication.

III. CONCLUSION

Petitioner has shown by a preponderance of the evidence that claims 1–11 of the '806 patent are unpatentable, but Petitioner has not shown by a

preponderance of the evidence that claims 12–16 of the '806 patent are unpatentable.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–11 of the '806 patent are shown unpatentable as obvious over SMIL 1.0, and as obvious over SMIL 1.0 and Hua;

FURTHER ORDERED that claims 12–16 of the '806 patent are not shown unpatentable as obvious over SMIL 1.0, or as obvious over SMIL 1.0 and Hua;

FURTHER ORDERED that claims 1–7 and 9–13 of the '806 patent are not shown unpatentable as anticipated by SMIL 1.0; 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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