Trials@uspto.gov
571-272-7822

Paper 28
Entered: September 27, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HULU, LLC and NETFLIX, INC.,
Petitioner,

v.

DIVX, LLC,
Patent Owner.

IPR2020-00647
Patent 9,270,720 B2

Before BART A. GERSTENBLITH, MONICA S. ULLAGADDI, and IFTIKHAR AHMED, *Administrative Patent Judges*.

GERSTENBLITH, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background

Hulu, LLC and Netflix, Inc. (collectively "Petitioner") filed a Petition (Paper 3, "Pet.") requesting institution of *inter partes* review of claims 1–5 and 12 ("the Challenged Claims") of U.S. Patent No. 9,270,720 B2 (Ex. 1001, "the '720 patent"). DivX, LLC ("Patent Owner") filed a Preliminary Response (Paper 7, "Prelim. Resp."). Applying the standard set forth in 35 U.S.C. § 314(a), we instituted an *inter partes* review of the Challenged Claims. Paper 9 ("Inst. Dec.").

After institution, Patent Owner filed a Patent Owner Response (Paper 14, "PO Resp."), Petitioner filed a Reply to Patent Owner's Response (Paper 17, "Pet. Reply"), and Patent Owner filed a Sur-reply (Paper 21, "PO Sur-reply"). An oral hearing was held on June 14, 2021, and a copy of the transcript was entered in the record. Paper 26 ("Tr.").[1]

We have jurisdiction pursuant to 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of the claims on which we instituted trial. Petitioner bears the burden of proving unpatentability of the Challenged Claims, and the burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2019). Having reviewed the arguments and the supporting evidence, we determine

[1] The oral hearings for this proceeding and IPR2020-00648 were held together because many of the issues presented by the parties overlap. Paper 22 (Order Granting the Parties' Requests for Oral Hearing), 1.

that Petitioner has not shown, by a preponderance of the evidence, that the Challenged Claims of the '720 patent are unpatentable.

B. Related Proceedings

Petitioner and Patent Owner identify the following related matters: *DivX, LLC v. Netflix, Inc.*, No. 2:19-cv-01602 (C.D. Cal.) and *DivX, LLC v. Hulu, LLC*, No. 2:19-cv-01606 (C.D. Cal.). Pet. 77; Paper 5 (Patent Owner's Mandatory Notices), 1.

C. Real Parties in Interest

Petitioner identifies Netflix, Inc. and Hulu, LLC as the real parties in interest. Pet. 77. Patent Owner identifies DivX, LLC and DivX CF Investors LLC as the real parties in interest. Paper 5, 1.

D. The Instituted Grounds of Unpatentability and Declaration Evidence

Petitioner challenges the patentability of claims 1–5 and 12 of the '720 patent on the following grounds:

Claim(s) Challenged	35 U.S.C. §[2]	Reference(s)/Basis
1–5, 12	103(a)	Pyle,[3] Marusi[4]
1–5, 12	103(a)	Lewis,[5] Marusi

Pet. 7. Petitioner supports its challenge with a Declaration by Clifford Reader, Ph.D. (Ex. 1003). Patent Owner supports its arguments with a Declaration by Kenneth A. Zeger, Ph.D. (Ex. 2010).

E. The '720 Patent

The '720 patent is directed to "streaming media and more specifically to the automatic generation of top level index files for use in adaptive bitrate streaming." Ex. 1001, 1:17–19. In its Background section, the '720 patent explains that "[a]daptive bit rate streaming or adaptive streaming involves detecting the present streaming conditions (e.g. the playback device's networking bandwidth and video decoding capacity) in real time and

[2] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Because the '720 patent has an effective filing date before March 16, 2013, we apply the pre-AIA version of § 103.
[3] U.S. Patent No. 8,782,268 B2 (Ex. 1004, "Pyle"). Pyle was filed November 3, 2010, published January 26, 2012, and claims priority to a provisional patent application that was filed July 20, 2010. Ex. 1004, codes (22), (60), (65).
[4] European Patent Application EP 2180664 A1, published April 28, 2010 (Ex. 1005, "Marusi").
[5] U.S. Patent Application Publication No. US 2012/0047542 A1, published February 23, 2012 (Ex. 1006, "Lewis").

adjusting the quality of the streamed media accordingly." *Id.* at 1:30–34. Further, "[i]n adaptive streaming systems, the source media is typically stored on a media server as a top level index file pointing to a number of alternate streams that contain the actual video and audio data. Each stream is typically stored in one or more container files." *Id.* at 1:57–61. The '720 patent describes a top level index as follows:

> A top level index is a file that describes the location and content of container files containing streams of media (e.g. audio, video, metadata, and sub-titles) that can be utilized by the playback device to stream and playback content. In adaptive bitrate streaming systems, the top level index file typically references the alternative streams that the playback device can switch between.

Id. at 6:39–45.

Figure 1 of the '720 patent is reproduced below:

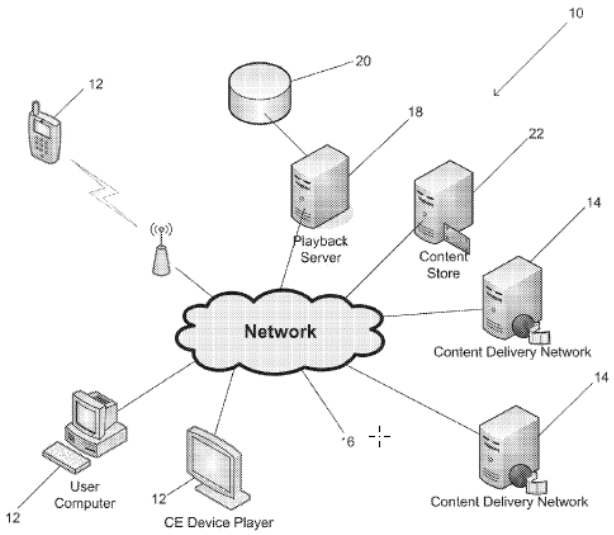

FIG. 1

Figure 1 "is a network diagram of a streaming system including a playback server." Ex. 1001, 6:3–5. The '720 patent explains:

> streaming system 10 includes a number of playback devices 12 configured to request streaming of content from remote servers

> within content delivery networks (CDNs) 14 via a network 16 such as the Internet. In order to stream content, the playback device obtains a top level index file that is automatically generated by the playback server 18 using a database 20 of available assets (i.e. container files containing streams of content associated with specific titles) and a set of predetermined filters or criteria.
>
> To perform adaptive bitrate streaming, the playback devices 12 select content from different alternative streams described in the top level index file. Alternative streams are streams that encode the same media content in different ways. In many instances, alternative streams encode media content (such as but not limited to video) at different maximum bitrates.

Id. at 7:20–35.

Figure 4 of the ’720 patent is reproduced below:

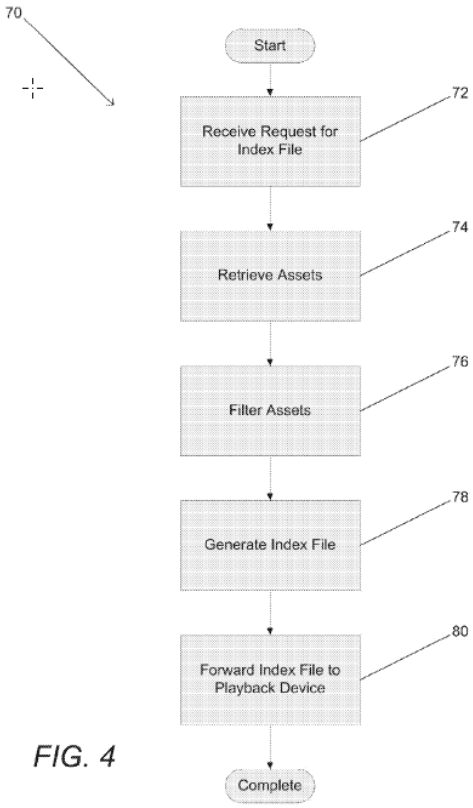

FIG. 4

Figure 4 “is a flow chart illustrating a process for automatically generating a top level index file.” Ex. 1001, 6:12–14. The ’720 patent explains that the

process shown in Figure 4 "commences when the playback server receives (72) a request for a top level index file with respect to a specific piece of content from a specific playback device." *Id.* at 11:43–46. The "capabilities of the playback device" may be "identified using a product ID, which is associated with specific playback capabilities in a database accessible to the playback server." *Id.* at 11:52–55.

The '720 patent describes the remaining steps of the process as follows:

> The playback server retrieves (74) assets associated with the requested piece of content. The playback server filters (76) the assets based upon one or more filters associated with the capabilities of the playback device, the preferences of the user, and the requirements of the content owner. Accordingly, different top level index files can be generated with respect to the same content dependent on factors including (but not limited to) differences in playback capabilities between devices, differences in geographic location, and/or differences in language preferences associated with the playback devices. Processes for retrieving and filtering assets associated with a specific piece of content in accordance with an embodiment of the invention are discussed further below. Following filtering, the remaining assets can be utilized to generate (78) the top level index file, which can be provided (80) to the playback device.

Ex. 1001, 11:56–12:4. The '720 patent states that "[i]n a number of embodiments, playback devices 12 provide information concerning their playback capabilities to the playback server 18 and the server automatically generates top level index files by filtering assets associated with a purchased piece of content based upon device capabilities." *Id.* at 7:55–59.

F. Illustrative Claim

Claim 1, the sole independent claim challenged in this proceeding, is illustrative of the claimed subject matter and is reproduced below, with Petitioner's bracketing added for reference:

> 1. [a] A method of generating a top level index file, comprising:
>
> [b] receiving a request from a playback device at a playback server system, where the request (i) identifies a piece of content and (ii) includes a product identifier;
>
> [c] retrieving, using the playback server system, (i) a list of assets associated with the identified piece of content and (ii) at least one device capability based upon the product identifier, wherein each asset is a different stream associated with the piece of content;
>
> [d] filtering the list of assets using the at least one device capability using the playback server system, wherein the playback server system maintains a database of product identifiers and associated device capabilities;
>
> [e] generating a top level index file describing each asset in the filtered list of assets using the playback server system; and
>
> [f] sending the top level index file to the playback device using the playback server system, wherein the top level index file is used by the playback device to determine which assets to request for playback on the device.

Ex. 1001, 20:15–35.

G. Level of Ordinary Skill in the Art

Petitioner, supported by Dr. Reader's testimony, proposes that a person of ordinary skill in the art at the time of the invention would have had "a bachelor's degree in mechanical engineering, electrical engineering, computer science, or a similar field with at least two years of experience in adaptive streaming and content management" or "a master's degree in

mechanical engineering, electrical engineering, computer science, or a similar field with a specialization in adaptive streaming or content management." Pet. 18 (citing Ex. 1003 ¶ 72). Petitioner contends that "[a] person with less education but more relevant practical experience may also meet this standard." *Id.*

> Additionally, Petitioner asserts that one of ordinary skill in the art would have known and had the skills necessary to create architectures necessary for adaptive streaming and content management, including cataloging content, storing data in streaming container files and using manifest or index files to distribute streaming content to client devices. It was well-known to select amongst different encodings of content to optimize the delivery of content based upon various parameters, including device capabilities, network conditions, geographic location and content ratings. A [person of ordinary skill in the art] would also have been aware of standards, such as the 3GPP specification, that utilized manifests, such as the Media Presentation Description (MPD) manifest for adaptive streaming applications. A [person of ordinary skill in the art] would also have been familiar with techniques for adaptive streaming, including switching between different portions of a movie or show depending upon various factors, including network conditions.

Pet. 18–19 (citing Ex. 1003 ¶ 72).

Patent Owner does not address, expressly, the level of ordinary skill in the art in its Response. *See generally* PO Resp. Patent Owner's declarant, Dr. Zeger, however, adopts the same level of ordinary skill in the art proposed by Dr. Reader. *See* Ex. 2010 ¶ 18 ("For purposes of this proceeding, I will adopt Dr. Reader's definition of the level of ordinary skill in the art . . . ." (citing Ex. 1003 ¶ 71)).

In our Institution Decision, we found that Petitioner's proposal was consistent with the level of ordinary skill in the art reflected by the prior art

of record and we preliminarily adopted Petitioner's unopposed position. Inst. Dec. 8–9 (citing *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978)). As neither party challenges our preliminary finding regarding the level of ordinary skill in the art, we see no reason to disturb that finding. Accordingly, we maintain and reaffirm that one of ordinary skill in the art at the time of the invention would have had "a bachelor's degree in mechanical engineering, electrical engineering, computer science, or a similar field with at least two years of experience in adaptive streaming and content management" or "a master's degree in mechanical engineering, electrical engineering, computer science, or a similar field with a specialization in adaptive streaming or content management" and that "[a] person with less education but more relevant practical experience may also meet this standard." *See* Inst. Dec. 7–9 (setting forth and adopting Petitioner's unopposed position as to the level of ordinary skill in the art) (alteration in original).

II. CLAIM CONSTRUCTION

In this *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b). *See* 37 C.F.R. § 42.100(b) (2019). The claim construction standard includes construing claims in accordance with the ordinary and customary meaning of such claims as understood by one of ordinary skill in the art at the time of the invention. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc). In construing claims in accordance with their ordinary and customary meaning, we take

into account the specification and prosecution history. *Phillips*, 415 F.3d at 1315–17.

If the specification "reveal[s] a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess[,] . . . the inventor's lexicography governs." *Phillips*, 415 F.3d at 1316 (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)). Another exception to the general rule that claims are given their ordinary and customary meaning is "when the patentee disavows the full scope of a claim term either in the specification or during prosecution." *Uship Intellectual Props., LLC v. United States*, 714 F.3d 1311, 1313 (Fed. Cir. 2013) (quoting *Thorner v. Sony Computer Entm't Am., LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)).

Additionally, only terms that are in controversy need to be construed, and these need be construed only to the extent necessary to resolve the controversy. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that "only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy"); *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs.* in the context of an *inter partes* review).

A. "top level index file"

Petitioner proposes only a single claim term[6]—"top level index file"—for construction. Pet. 19–20. Patent Owner's Preliminary Response

[6] In its Reply, Petitioner asserts that "Dr. Zeger admitted that the plain meaning of 'retrieve' is to 'locate and read from storage,' (Ex. 1010, 124:7–11) and that 'maintaining' in the context of a database suggests retrieving,

did not contest Petitioner's proposed construction. Inst. Dec. 10 (citing Prelim. Resp.). In our Institution Decision, we construed "top level index file" as "a file that describes the location and content of container files containing streams of media (e.g. audio, video, metadata, and subtitles) that can be utilized by the playback device to stream and playback content." *Id.* at 11.

Neither party contests our construction in the briefing following institution. *See generally* PO Resp.; Pet. Reply; PO Sur-reply. Accordingly, for the same reasons explained in our Institution Decision (Inst. Dec. 10–11), we maintain and reaffirm our preliminary construction of "top level index file."

B. "a list of assets"; "the list of assets"; "the filtered list of assets"

Limitation 1[c] recites, *inter alia*, "retrieving . . . (i) *a list of assets* associated with the identified piece of content"; limitation 1[d] recites, *inter alia*, "filtering *the list of assets*"; and limitation 1[e] recites, *inter alia*, "generating a top level index file describing each asset in *the filtered list of assets*." Ex. 1001, 20:20–30 (emphasis added). Although neither party initially requested that we construe the phrases "a list of assets," "the list of

---

filtering, and other similar operations on a database (Ex. 1010, 157:17–158:17)." Pet. Reply 14. Patent Owner contests Petitioner's interpretation of Dr. Zeger's testimony. PO Sur-reply 12–13. Petitioner did not propose either "retrieve" or "maintaining" for construction and the Petition does not apply either alleged construction in its analysis of the grounds asserted therein. Accordingly, even if we were to find Petitioner's Reply arguments on these terms persuasive, the Petition fails to set forth how the meanings would apply to the specific issues before us. Thus, we decline to construe these terms.

assets," or "the filtered list of assets," several aspects of the parties' dispute involve the meaning of the terms "a" and "the" as recited in these limitations. Therefore, because the parties' dispute the meaning of these terms, we address them here.

Considering the phrase "a list of assets" first, the parties dispute the meaning of the term "a." Specifically, Petitioner contends "a" means "one or more" (*see* Pet. 31; Pet. Reply 15), whereas Patent Owner contends "a" means only one (*see* PO Resp. 13). This dispute is presented in the context of the parties' arguments regarding Petitioner's first ground, based on the combination of Pyle and Marusi. Specifically, Petitioner contends that (a) each of Pyle's manifests includes a list of assets and (b) it would have been obvious that all of the manifests associated with a piece of content form a list of assets. Pet. 31 (citing Ex. 1003 ¶ 166).

Patent Owner asserts that "the claims requir[e] 'retrieving **a** list of assets'" and that "[a]s is clear from the plain language of the claims, this requires a single 'list of assets.'" PO Resp. 13 (citing Ex. 2010 ¶ 35). Patent Owner contends that Petitioner's argument as to why *all* of the manifests associated with a piece of content form *a list* of assets is not supported sufficiently by Dr. Reader's testimony. *Id.* at 13–14. Patent Owner relies upon Dr. Zeger's testimony that "[e]ven if Pyle's single manifest file was a 'list' of representations, a [person of ordinary skill in the art] would not understand Pyle's multiple manifest files to form a single list." *Id.* at 15 (quoting Ex. 2010 ¶ 37).

In its Reply, Petitioner contends that Patent Owner's attempt to construe "a list of assets" to mean "a single 'list of assets'" as opposed to "one or more list of assets" should be rejected "because it goes against

decades of precedent finding that 'a' means 'one or more' except in limited circumstances that are not present here." Pet. Reply 15 (citing *KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1355 (Fed. Cir. 2000)).

In its Sur-reply, Patent Owner asserts that Petitioner's proposed construction is untimely because it was not raised in the Petition and that the plain language of the claim clearly indicates that only a *single* list is used to list *multiple* assets. PO Sur-reply 14–15 (citing, *inter alia*, *Harari v. Lee*, 656 F.3d 1331, 1341 (Fed. Cir. 2011); *TiVo, Inc. v. Echostar Commc'ns Corp.*, 516 F.3d 1290, 1303 (Fed. Cir. 2008); *In re Varma*, 816 F.3d 1352, 1362 (Fed. Cir. 2016); Ex. 1001, 2:23–34, 3:1–5, 4:21–23, 12:60–67, 17:59–66).

First, although Petitioner did not propose an explicit construction for the phrase "a list of assets" in the Petition, it is clear from the arguments and analysis in the Petition that Petitioner applied the meaning of "one or more" to the term "a." As indicated above, Petitioner's second option as to how Pyle teaches "a list of assets," is based on the interpretation that all of the manifests associated with a piece of content form a list of assets. Pet. 31 (citing Ex. 1003 ¶ 166). In other words, that "a list of assets" can include *one or more* lists of assets.

Second, Patent Owner had an opportunity to respond, which it did in its Response and, even more particularly, in its Sur-reply, as discussed above. Accordingly, we do not find Petitioner's argument untimely.

Turning to the meaning the term "a" in the phrase "a list of assets," the case law makes clear that "an indefinite article 'a' or 'an' in patent parlance carries the meaning of 'one or more' in open-ended claims containing the transitional phrase 'comprising'" unless an "extremely

limited" exception applies. *See Convolve, Inc. v. Compaq Computer Corp.*, 812 F.3d 1313, 1321 (Fed. Cir. 2016) (quoting *KCJ Corp.*, 223 F.3d at 1356; *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008)). Here, claim 1 recites the transitional phrase "comprising," meaning it is open-ended, and, therefore, the usual meaning of "a" as "one or more" would have been expected absent an extremely limited exception. In considering whether an exception applies, our review of the '720 patent fails to indicate that the patentee intended the phrase to mean anything other than the usual meaning of "one or more." Patent Owner asserts that "'[t]he plain language of the claim clearly indicates only a single [list] is used' to list ***multiple*** assets" and quotes two portions of the Specification, which state "a list of assets that satisfies criteria" and "a list of assets to which a . . . device is granted access." PO Sur-reply 15 (quoting Ex. 1001, 12:60–67) (citing Ex. 1001, 2:23–34, 3:1–5, 4:21–23, 17:59–66). Although claim 1 of the '720 patent recites "assets" in the plural, we fail to see how that conveys that the term "a" would have been understood as limited to "one." Notably, neither party has identified *any* inconsistency, in the claims or other portions of the Specification (including the portions quoted and/or cited by Patent Owner), resulting from construing "a" as "one or more." And, we find that there is no reason why the claims could not be met under the construction of "a" as "one or more." Thus, we find that the '720 patent does not "evince [ ] a clear intent to limit a or an to one." *See Convolve*, 812 F.3d at 1321 (internal quotations omitted). Accordingly, we construe the term "a" in "a list of assets" as "one or more" such that the phrase "a list of assets" means "one or more list of assets."

Considering next the phrase "the list of assets" recited in limitation 1[d], the parties do not dispute that the use of the term "the" means that "the list of assets" refers back to the one or more list of assets retrieved in limitation 1[c] and discussed above. *See* PO Resp. 3–4; *see generally* Pet. Reply; PO Sur-reply 5. Similarly, the parties do not dispute that the phrase "the filtered list of assets," recited in limitation 1[e], refers back to the list of assets resulting from the filtering step of limitation 1[d]. *See* PO Resp. 3–4; *see generally* Pet. Reply; PO Sur-reply 5. We agree with the parties that each of these phrases refers back to the previous instance of the recited terms.

III. ANALYSIS

A. Legal Standards – Obviousness

The U.S. Supreme Court set forth the framework for applying the statutory language of 35 U.S.C. § 103 in *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966) (footnote added):

> Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.[7]

The Supreme Court explained in *KSR International Co. v. Teleflex Inc.* that

> [o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to

[7] Neither party presents evidence of objective considerations of nonobviousness.

> the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit.

550 U.S. 398, 418 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.")).

"Whether an ordinarily skilled artisan would have been motivated to modify the teachings of a reference is a question of fact." *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1327 (Fed. Cir. 2016) (citations omitted). "[W]here a party argues a skilled artisan would have been motivated to combine references, it must show the artisan 'would have had a reasonable expectation of success from doing so.'" *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1360–61 (Fed. Cir. 2017) (quoting *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1068–69 (Fed. Cir. 2012)).

B. Obviousness over Pyle and Marusi

Petitioner asserts that the combination of Pyle and Marusi would have rendered the subject matter of claims 1–5 and 12 obvious to one of ordinary skill in the art at the time of the invention. Pet. 20–54. Patent Owner raises several arguments in response, including that the Petition fails to show that the combination of Pyle and Marusi teaches limitation 1[e]—"generating a top level index describing each asset *in the filtered list* of assets using the playback server system." PO Resp. 19–28 (emphasis added). As explained

above, the phrase "the filtered list of assets" in limitation 1[e] indicates that "the filtered list of assets" is the list that results from the filtering step of limitation 1[d]. Petitioner's analysis of limitations 1[d] and 1[e], however, suffers from a deficiency in that the top level index file generated in Petitioner's analysis of limitation 1[e] does not describe each asset in the filtered list of assets as applied by Petitioner. Because this issue is dispositive, we focus our analysis and discussion there after describing Pyle and Marusi.

1. Level of Ordinary Skill in the Art

As discussed above, we adopt Petitioner's unopposed position as to the level of ordinary skill in the art. *See supra* § I.G.

2. Scope and Content of the Prior Art

a. Pyle

Pyle is directed to "dynamic composition of media for streaming to consuming devices." Ex. 1004, 1:14–15. Figure 2 of Pyle is reproduced below:

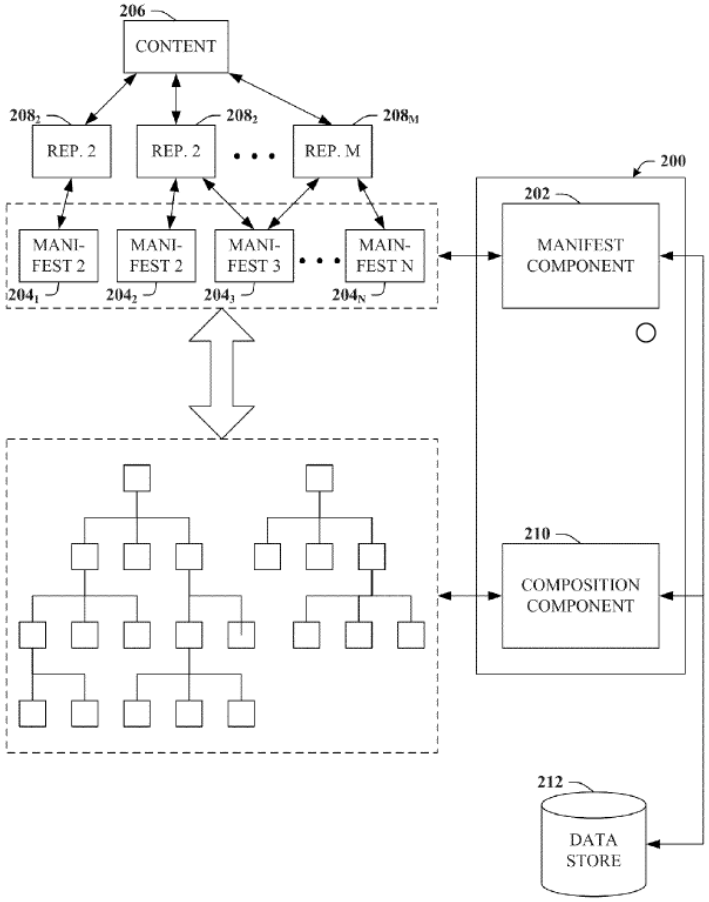

FIG. 2

Figure 2 "illustrates a block diagram of . . . system [200] that can facilitate hypertext transfer protocol (HTTP) delivery of streaming media." *Id.* at 3:21–23, 7:45–47.

Pyle explains:

> In general, system 200 can include manifest component 202 that can be configured to maintain multiple manifests 204_1-204_N

> for a single item of content 206. By way of example, content 206 can be substantially any type of content, such as a movie, song, or another media production, that is suitable for delivery to or presentation at endpoints of a streaming network. As illustrated, content 206 can be associated with various representations 208_1-208_M of that content 206, such as, e.g., different representations based upon different bitrates, resolutions, languages, or even an original theatrical version versus a PG-13 version, or substantially any other suitable attribute. Accordingly, it is to be understood that while only a single item of content 206 (e.g., a single movie or song) is depicted, other content 206 could exist, and each item of content 206 can have multiple representations 208_1-208_M as well as multiple manifests 204_1-204_N, where M and N can be any substantially positive integer. Moreover, it is to be understood that representations 208_1-208_M and manifests 204_1-204_N can be referred to herein, either collectively or individually as representation(s) 208 or manifest(s) 204, respectively, with appropriate subscripts employed generally only when instructive or convenient to highlight various distinctions or to better impart the disclosed concepts.

Ex. 1004, 7:47–8:2.

Pyle states that "[t]ypically, a given manifest 204 will be an extensible markup language (XML) document that describe[s] at least one location of one or more content segment associated with one or more representation 208 of content 206." Ex. 1004, 8:3–6. Additionally, Pyle explains that "manifest 204 can further include other data such as attributes associated with content 206 or various representations 208 thereof." *Id.* at 8:6–9. Pyle distinguishes itself from "conventional streaming systems" that "maintain only a single manifest, that typically only describes locations of stored files." *Id.* at 8:9–12. "As a result, conventional streaming systems are subject to the combinatorial complexity problem, and moreover do not provide for

individual track addressability, are generally more limited by the file system format, as well as a host of other shortcomings." *Id.* at 8:12–16. Additionally, Pyle explains that "manifest 204 can describe the locations of various content segments, which can appear to a presentation device as a large set of small-interval content files, say 5 seconds or so. Nevertheless, the actual storage of content 206 can be in much larger files that are cross-indexed into chunks . . . ." *Id.* at 8:17–23.

Pyle further describes composition component 210, a component of system 200, explaining that "[c]omposition component 210 can be configured to organize the multiple manifests 204 in accordance with descriptions of the multiple manifests 204. For example, the multiple manifests 204 can be described based upon a set of attributes associated with one or more representation 208 and/or content 206." Ex. 1004, 8:28–35.

Pyle's Figure 4 is reproduced below:

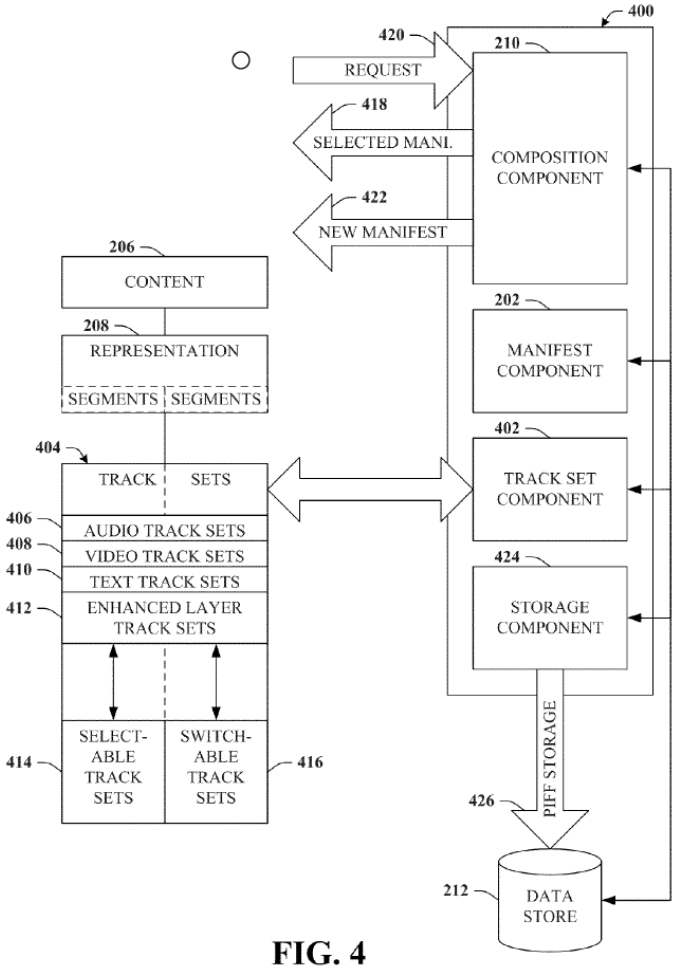

FIG. 4

Figure 4 is a "block diagram of . . . [a] system that illustrates additional features or aspect[s] in connection with HTTP delivery of streaming content." Ex. 1004, 3:26–28; *see id.* at 9:45–47 (same). Pyle explains that system 400 can include "track set component 402 that can be configured to identify track sets 404 available as alternative representations 208 of content 206 or content segments thereof." *Id.* at 9:54–57. Pyle teaches that a particular track set 404 "can relate to a single content type such as, e.g., audio, video, subtitles or other text, or an enhanced layer of video or audio." *Id.* at 9:59–61.

Pyle further describes that composition component 210, in system 400, can be "configured to select a particular selected manifest 418 from the set of available manifests 204 based upon data included in a request 420 for content 206." Ex. 1004, 10:23–25. Pyle distinguishes a request from an HD television from a request from a smart phone, explaining that "[a]lthough both requesting devices can request the very same movie (e.g., same content 206), it is readily apparent that these two distinct devices and/or configurations or preferences, will not demand the same representation 208 of that movie." *Id.* at 10:40–44. Because "manifests 204 can be optimized to comport with different classes of media consumers," Pyle teaches that "selected manifest 418 will also differ in the example scenario above when the HD television is the requesting device than when the smart phone is the requesting device." *Id.* at 10:48–53. Pyle explains that "composition component 210 can examine data included in request 420 and determine a suitable or optimal manifest, and select and transmit that manifest to the requesting device." *Id.* at 10:53–56.

Additionally, Pyle explains the following regarding composition component 210:

> Moreover, in one or more embodiment, composition component 210 can be further configured to facilitate composition of new manifest 422, which can be stored amongst other manifests 204. Such new manifests 422 can be composed, e.g., based upon a set of attributes that correspond to features of one or more track sets identified by track set component 402. For example, a content provider can compose new manifest 422 specifically tailored to, e.g., track sets that receive the most requests, deliveries, and/or presentations. Furthermore, new manifest 422 can be optimized in connection with delivery or presentation based upon at least one of (1) a particular device or particular devices or capabilities thereof

> (e.g., optimized for presentation on tablets versus televisions versus handhelds and so forth); (2) a particular form factor (e.g., display size or other user interface or I/O features); (3) a particular network or network conditions (e.g., bandwidth, latency, quality of service, etc.); or (4) a particular setting or preference or a particular set of settings or preferences (e.g., French-speaking, hearing impaired, ratings-based content block . . .).

Ex. 1004, 10:57–11:9.

b. Marusi

Marusi is directed to "a system for providing multi-media content and in particular to a system for accessing multi-media content, wherein the system is accessible by a mobile terminal through a radio network and provides a subset of the multi-media content which has a digital format supported by the mobile terminal." Ex. 1005 ¶ 1. Figure 1 of Marusi is reproduced below:

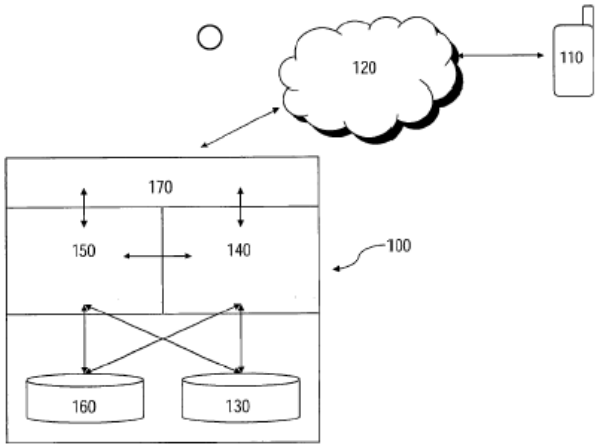

FIG. 1

Figure 1 shows "a simplified schematic diagram of the system." *Id.* ¶ 60. Marusi explains that "portal 100 comprises receiving and transmitting means 170 via which a mobile terminal 110, such as a cellular phone . . . etc., can access via a radio network 120 to the portal 100." *Id.* ¶ 83. Marusi

teaches that "mobile terminal characterizing unit 140 preferably provides mobile terminal capabilities information which indicates at least one capability of the mobile terminal 110." *Id.* ¶ 85. "Preferably, the information received from the mobile terminal 110 when connecting to system 100 comprises data by which the model and/or type of the mobile terminal can be identified." *Id.*

Marusi explains that "mobile terminal 110 may be provided with an identifier, which may be different for each communication standard so that each identifier corresponds with a different communication standard." Ex. 1005 ¶ 86. The identifier "may be sent from the mobile terminal 110 to the portal 100 when setting up a connection or/and during the connection with the portal 100." *Id.* ¶ 88. Marusi teaches that "mobile terminal characterizing unit 140 is additionally connected to database 160 which provides information regarding the capabilities of mobile terminals according to their type and/or model." *Id.* ¶ 89. "[M]obile terminal characterizing unit 140 can retrieve information from database 160 about the capabilities of the mobile terminal 110 based on the identifier or identification code received from the mobile terminal 110." *Id.*

Additionally, Marusi teaches that "mobile terminal characterizing unit 140 is functionally connected to matching unit 150." Ex. 1005 ¶ 90. Matching unit 150 can identify a subset of the multi-media content files having at least one specific digital format, wherein that specific digital format is supported by the capability of the mobile terminal. *Id.* Marusi explains the following regarding matching unit 150:

> In order to identify the subset of multi-media content files, the matching unit 150 is connected to storage means 130 which is preferably also a database. In this database, the multi-

> media content files are stored, preferably together with information about the digital format of each of the multi-media content files. This information can be retrieved by the matching unit 150 from storage means 130. The information from the storage means 130 regarding the digital format of the multi-media content files can be matched with the information regarding the capabilities of the mobile terminal 110. Thus, the matching unit 150 can identify a subset of the multi-media content file which is compatible with the capabilities of the mobile terminal 110 and which also corresponds to the request of the mobile terminal 110 for specific multi-media content.

Id. ¶ 91.

3. Differences Between the Prior Art and the Claims; Motivation to Modify

a. The Proposed Combination

Petitioner's discussion of this ground begins by addressing the general combination of Pyle and Marusi and motivation to combine their teachings before discussing the specific limitations of the claims. *See* Pet. 20–22 (addressing, in general, the combination of Pyle and Marusi). Specifically, Petitioner asserts that it would have been obvious to one of ordinary skill in the art to combine "Pyle's server system for dynamically composing manifest files with Marusi's teachings for storing multimedia content in a database, and Marusi's teachings of using a database to correlate device capabilities with device identification information." *Id.* at 20 (citing Ex. 1003 ¶ 144).

Petitioner asserts that "Pyle teaches common multimedia streaming techniques that were widely known in the art, in particular using and creating manifest files that would provide a client device with the location and identification of different versions of a particular piece of stored content." Pet. 20. Petitioner contends that "Pyle teaches a server system

that filters asset data in order to provide a manifest file specific to a client device by using a variety of parameters, including based upon product type, form factor, network conditions, and language, to select specific assets to include in the manifest file." *Id.* (citing Ex. 1003 ¶ 145). Petitioner asserts that

> [b]ecause storing and tracking different representations of the same multimedia content using lists or a database was well-known, Pyle assumes that a [person of ordinary skill in the art] has such knowledge and does not explicitly describe these basic implementation details. For examples, Marusi describes such techniques. Marusi teaches storing a plurality of representations of multimedia content in a database along with a description of each representation's format. Ex. 1005, [0091]. Marusi also teaches identifying the capabilities of the requesting client device using the device's identification information, looking up the device's capabilities in a database that correlates device capabilities with the identifying information (such as a model number). *Id.*, [0085-0089]. Marusi then teaches using the capability information to identify a subset of the multimedia content that is appropriate for the requesting client device. *Id.*, [0091]. Ex. 1003 ¶146.

Pet. 21.

Petitioner argues that one of ordinary skill in the art would have been motivated to combine these teachings for several reasons. Pet. 21. First, Petitioner contends "the combination is the use of a known technique to improve similar devices because using the capabilities of a client device to choose appropriately formatted content was a well-known technique." *Id.* Petitioner asserts that "implementing Marusi's techniques for organizing multiple representations and choosing among them based upon a client device's capabilities would predictably function in Pyle's system, which similarly seeks to target video content based on particular client device types

and parameters." *Id.* at 21–22 (citing Ex. 1004, 10:57–11:10; Ex. 1003 ¶ 147).

Second, Petitioner argues that "detecting a client device's capabilities based upon client device identifiers was a common and known solution to the problem of supplying information in a format usable to the client device." Pet. 22. Petitioner contends that one of ordinary skill in the art "would have found it obvious to combine Marusi's teachings with Pyle because it is one solution, from a finite number of known, and predictable solutions." *Id.* Petitioner asserts that one of ordinary skill "would have a reasonable expectation of success because detecting device capabilities based upon client device identifiers was known for years in the computing field, and as such is a predictable solution." *Id.* (citing Ex. 1003 ¶ 148).

Third, with respect to Marusi's databases, Petitioner contends "[t]he combination of Marusi's databases to manage the data created by Pyle's system is nothing more than the use of a known technique to improve similar systems." Pet. 22. In particular, Petitioner asserts that one of ordinary skill "would have been motivated to combine Marusi's database teachings with Pyle because Pyle teaches storing the same content in multiple, different representations." *Id.* (citing Ex. 1004, 9:64–10:21). Further, Petitioner argues that "[u]sing a database to store and manage multiple representations of the same data, or even to simply store voluminous data for retrieval, was an extremely well-known and common application of database technology." *Id.* (citing Ex. 1003 ¶ 149).

Additionally, Dr. Reader opines that one of ordinary skill in the art "would have understood that the teachings of Pyle and Marusi were complementary, and therefore would have been motivated to combine Pyle

with Marusi to enhance the efficiency of generating, storing, and delivering multimedia content tailored to the capabilities of particular playback devices." Ex. 1003 ¶ 150.

In addition to Petitioner's general discussion of the combined teachings, reproduced above, Petitioner's discussion of each claim or claim limitation begins with a sentence that, in most instances, reflects whether Petitioner relies on Pyle, Marusi, or their combined teachings with respect to each claim or limitation. *See* Pet. 23–54. For example, for limitation 1[a] (which includes the preamble of the claim), Petitioner states, "[t]o the extent [Patent Owner] argues that the preamble is limiting, this limitation *is taught by Pyle's teaching* of a system for adaptive bitrate streaming that generates manifest files." *Id.* at 23 (emphasis added). For limitation 1[b], Petitioner states, "[t]he combination of Pyle and Marusi renders this limitation obvious *based on Pyle's teachings*." *Id.* at 24 (emphasis added) (citing Ex. 1003 ¶ 156). For limitations 1[c] and 1[d], Petitioner states, "[t]he *combination of Pyle and Marusi* renders this limitation obvious." *See id.* at 30 (emphasis added) (limitation 1[c]), 37 (emphasis added) (limitation 1[d]). And, for limitations 1[e] and 1[f], Petitioner states, "[t]his claim limitation *is rendered obvious by Pyle*." *See id.* at 42 (emphasis added) (limitation 1[e]), 44 (emphasis added) (limitation 1[f]). Each of the above sentences is followed by a discussion of the specific teachings of each reference, or modifications thereof, that are relied upon for each claim or claim limitation. With this understanding, we turn our attention to Petitioner's analysis of the specific claim limitations.

b. Claim 1 – Discussion

Limitation 1[c] recites, *inter alia*, "retrieving . . . (i) a list of assets associated with the identified piece of content." Ex. 1001, 20:20–21. Petitioner presents two theories as to how Pyle teaches or renders obvious "a list of assets"—(1) each manifest file "includes a list of assets for that piece of content" and (2) "that all of the manifests associated with an identified piece of content form a list of assets associated with the identified piece of content." Pet. 31.

Limitation 1[d] recites "filtering the list of assets using the at least one device capability using the playback server system, wherein the playback server system maintains a database of product identifiers and associated device capabilities." Ex. 1001, 20:25–29. Petitioner points to two aspects of Pyle in relationship to limitation 1[d]. First, Petitioner contends Pyle "teaches the use of new manifest files that can be created based upon particular device(s) or capabilities," and points to Pyle's disclosure that "[n]ew manifest 422 can be optimized in connection with delivery or presentation based upon at least one of (1) a particular device or particular devices or capabilities thereof (e.g., optimized for presentation on tablets versus televisions versus handhelds and so forth) . . . ." *Id.* at 38 (quoting Ex. 1004, 10:57–11:9) (citing Ex. 1003 ¶ 177).

Second, Petitioner asserts that Pyle keeps "sets of different manifests files where each manifest file corresponds to a different representation of a given piece of content." Pet. 38. Petitioner contends that one of ordinary skill in the art

> would have understood that each of these manifest files is a list of assets, that set of manifest files associated with a piece of content also forms a list of assets associated with the given

> piece of content, and Pyle further explains that the composition component 210 analyzes the playback device request and *filters lists of assets by selecting from the various manifests an appropriate manifest* to send to the requesting device based upon the capability or characteristic information of the requesting device.

Id. at 38–39 (emphasis added). Petitioner points to Pyle's disclosure that two distinct devices will usually request a different representation of the same content and that "composition component 210 can examine data included in request 420 and determine a suitable or optimal manifest, and select and transmit that manifest to the requesting device." *Id.* at 39 (quoting Ex. 1004, 10:40–56) (citing Ex. 1003 ¶ 178) (emphasis omitted).

Additionally, Petitioner contends Pyle "teaches the structure of the manifest files (that support filtering of content based on a variety of criteria)" and that one of ordinary skill in the art "would have found it obvious looking at the teachings of Pyle that the product identifiers and associated device capabilities be maintained by the server, such as in a database." Pet. 39. Petitioner points to Pyle's teaching that:

> Typically, a given manifest 204 will be an extensible markup language (XML) document that describe[s] at least one location of one or more content segment associated with one or more representation 208 of content 206 . . . . Furthermore, by employing multiple manifests 204, individual manifests 204 can be optimized for particular delivery formats, wire formats, endpoint profiles or configurations, client preferences, and so forth, which are further discussed herein.

Id. at 39–40 (quoting Ex. 1004, 8:3–27) (citing Ex. 1003 ¶ 179).

Alternatively, Petitioner contends "[t]o the extent [Patent Owner] argues that Pyle does not satisfy this limitation, it would have been obvious to combine the teachings of Pyle with Marusi." Pet. 40. Petitioner explains

that Marusi "filters from a database that associates terminal identification information with terminal capabilities information, i.e., a database of product identifiers and associated device capabilities that is used to select the appropriate stream to transmit." *Id.* at 40–41 (citing Ex. 1005 ¶¶ 18, 22, 84–85, 89–90, 113–114, 119–121, 123). Petitioner asserts that one of ordinary skill in the art "would have been motivated to employ a known component (Marusi's database of identifiers and associated assets) in a predictable way (for Pyle to filter the assets to obtain a subset in a format compatible with the requesting device)." *Id.* at 41 (citing Ex. 1003 ¶ 181).

Limitation 1[e] recites "generating a top level index file describing each asset in the filtered list of assets using the playback server system." Ex. 1001, 20:29–31. Petitioner contends that one of ordinary skill in the art

> would have found it obvious to generate a top level index file (e.g. manifest file), describing each asset in the filter [sic] list of assets because . . . Pyle teaches both creating new manifest files, as well as the use of a manifest component 202 that includes a set of manifest files, each of which describes the assets that are "selected" or "tailored to", (filtered) for, specific requesting playback devices.

Pet. 42–43 (citing Ex. 1004, 9:45–53, Fig. 4; Ex. 1003 ¶ 183).

Petitioner asserts that Pyle teaches "generating manifest files that are optimized based upon various parameters and characteristics, including different classes of devices such as televisions and smart phones, and using the composition component 210 to create new manifests." *Id.* at 43 (citing Ex. 1004, 9:54–11:10; Ex. 1003 ¶ 184). Petitioner contends that one of ordinary skill in the art "reading these portions of Pyle would understand that Pyle is teaching the generating of new manifest files by filtering the available list of assets to include only a subset of assets based upon the

product identifier information, including for example the capabilities of the device." *Id.* at 44 (citing Ex. 1003 ¶ 185).

Patent Owner raises several arguments in response to Petitioner's challenge based on Pyle and Marusi, including that Petitioner fails to connect limitations 1[d] and 1[e] such that the assets resulting from the filtering step of limitation 1[d] are described in the top level index file generated in limitation 1[e]. *See* PO Resp. 19–28. We address Patent Owner's argument in the context of discussing Petitioner's analysis.

First, in addressing limitation 1[d] as discussed above, Petitioner states that Pyle teaches "a new manifest file can be created based upon particular device(s) or capabilities." Pet. 38. Petitioner points to Pyle's teaching that "new manifest 422 can be optimized in connection with delivery or presentation." *Id.* (citing Ex. 1004, 10:57–11:9; Ex. 1003 ¶ 177). In this single-paragraph discussion, Petitioner does not (a) expressly assert that Pyle's *creation* of a new manifest involves "filtering" or (b) explain how Pyle's new optimized manifest teaches filtering. *See id.* Rather, it is not until Petitioner points to a different aspect of Pyle—Pyle's *selection* of a manifest—that Petitioner asserts Pyle teaches filtering. *Id.* ("A [person of ordinary skill in the art] would have understood that each of these manifest files is a list of assets, that [a] set of manifest files associated with a piece of content associated with a piece of content also forms a list of assets associated with the given piece of content, and Pyle further explains that the composition component 210 analyzes the playback device request and *filters lists of assets by selecting from the various manifests an appropriate manifest* to send to the requesting device based upon the capability or characteristic information of the requesting device . . . ." (emphasis added)).

Second, Petitioner proposes an alternative theory that it would have been obvious to combine the teachings of Pyle and Marusi to meet limitation 1[d]. Pet. 40–41. This theory, although mentioning that Marusi filters from a database (*id.* at 40 (citing Ex. 1005 ¶¶ 18, 22, 84, 85)),[8] ultimately maintains reliance upon Pyle for filtering. *Id.* at 41 ("A [person of ordinary skill in the art] would have been motivated to employ a known component (Marusi's database of identifiers and associated assets) in a predictable way (*for Pyle to filter the assets* to obtain a subset in a format compatible with the requesting device)." (emphasis added)). Thus, despite proposing an alternative theory for this limitation based on the combination of Pyle and Marusi, Petitioner maintains the assertion that Pyle teaches filtering and the only teaching from Pyle clearly mapped by Petitioner to filtering is Pyle's *selection* of a manifest from existing manifests.

Third, turning to limitation 1[e], Petitioner asserts that this limitation "is rendered obvious by Pyle." Pet. 42 (citing Ex. 1003 ¶ 182). Petitioner contends limitation 1[e] would have been obvious because "Pyle teaches both creating new manifest files, as well as the use of a manifest component 202 that includes a set of manifest files, each of which describes the assets that are 'selected' or 'tailored to', (filtered) for, specific requesting (playback) devices." *Id.* (citing Ex. 1004, 9:45–53, Fig. 4). Petitioner then points specifically to Pyle's teaching of creating new, optimized, manifest 422. *Id.* at 43 (citing Ex. 1004, 9:54–11:10; Ex. 1003 ¶ 184). Petitioner follows by asserting that a person of ordinary skill in the art

[8] Petitioner's citations to, and quotations of, Marusi relate to "a database that associates terminal identification information with terminal capabilities information." Pet. 40.

"would understand that Pyle is teaching the generating of *new* manifest files by filtering the available list of assets to include only a subset of assets based upon the product identifier information, including for example the capabilities of the device." *Id.* at 44 (emphasis added) (citing Ex. 1003 ¶ 185).

In this discussion of limitation 1[e], the only teaching of Pyle that directly supports Petitioner's argument that Pyle generates a top level index file is Pyle's teaching of creating new manifest 422. Petitioner has not provided any explanation as to why one of ordinary skill in the art would have understood Pyle's *selection* of an *existing* manifest to teach or suggest the *generation* of a manifest (i.e., a top level index file) or provided any specific reason as to why the *selection* of an existing manifest would have rendered the *generation* of a manifest obvious to one of ordinary skill in the art.

As the above discussion reflects, Petitioner relies upon the selection of a manifest from amongst all manifests associated with particular content to meet the filtering aspect of limitation 1[d], which is based on Petitioner's theory that all manifests teach or render obvious a list of assets. But, Petitioner relies on the creation of a new manifest for the generating requirement of limitation 1[e]. This dichotomy creates a deficiency in Petitioner's analysis of the claim because the new manifest that is generated would not describe each asset in the filtered list of assets as required by limitation 1[e]. Thus, even if we were to accept Petitioner's analysis of limitation 1[d], Petitioner has not explained how the new manifest generated

describes each asset in the selected manifest (i.e., the filtered list of assets), and, hence, does not satisfy limitation 1[e].[9]

c. Dependent Claims 2–5 and 12

Petitioner contends that the combination of Pyle and Marusi would have rendered the subject matter of claims 2–5 and 12 obvious to one of ordinary skill in the art. Pet. 45–54. Claims 2–5 and 12 depend from claim 1 and, therefore, include limitations 1[d] and 1[e] as discussed above. Accordingly, for the same reasons discussed with respect to claim 1, Petitioner's analysis of these claims suffers from the same deficiency.

d. Weighing the Graham *Factors*

"Once all relevant facts are found, the ultimate legal determination [of obviousness] involves the weighing of the fact findings to conclude whether the claimed combination would have been obvious to an ordinary artisan." *Arctic Cat*, 876 F.3d at 1361. On balance, considering the record before us, Petitioner has not shown, by a preponderance of the evidence, that the combined teachings of Pyle and Marusi would have rendered the subject matter of claims 1–5 and 12 obvious to one of ordinary skill in the art at the time of the invention.

[9] Petitioner's Reply sets forth several arguments in response to arguments raised in Patent Owner's Response. Perhaps Petitioner's most significant argument is that Patent Owner does not address the combination as a whole. *See* Pet. Reply 11–14 (arguing that Patent Owner attacks the references individually). In our discussion above, we walk through, in detail, how Petitioner addresses *the specific limitations of claim 1*. The other arguments raised by Petitioner in the Reply do not appear to address directly the deficiency, noted by Patent Owner (PO Resp. 19–28; *see* Tr. 86:15–87:13 (addressing the deficiency we discuss above), that forms the basis for our discussion and findings above.

C. Obviousness over Lewis and Marusi

Petitioner contends that the combined teachings of Lewis and Marusi would have rendered the subject matter of claims 1–5 and 12 obvious to one of ordinary skill in the art at the time of the invention. Pet. 54–76. Patent Owner raises several arguments in response, including that Petitioner asserts limitation 1[c] would have been obvious without providing a reason why one of ordinary skill in the art would have modified Lewis to meet the language of the claims. PO Resp. 34–36. For the reasons explained below, we agree with Patent Owner. Further, because this issue is dispositive, we focus our analysis there after discussing Lewis.

1. Level of Ordinary Skill in the Art

As discussed above, we adopt Petitioner's unopposed position as to the level of ordinary skill in the art. *See supra* § I.G.

2. Scope and Content of the Prior Art

a. Lewis

Lewis is directed to "media playback using dynamic manifest files." Ex. 1006 ¶ 2. Figure 3 is reproduced below:

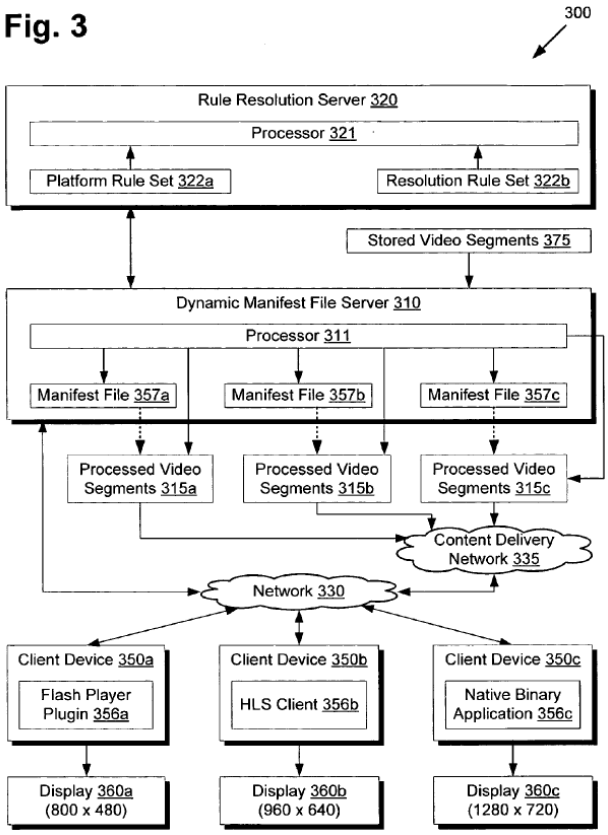

Figure 3 shows "a diagram of a system for using rule-based dynamic server-side streaming manifest files to implement stream targeting for client devices." *Id.* ¶ 12; *see also id.* ¶ 25. Lewis explains that the system shown in Figure 3 includes "rule resolution server 320, stored video segments 375, dynamic manifest file server 310, processed video segments 315*a* through 315*c*, content delivery network 335, network 330, client devices 350*a* through 350*c*, and displays 360*a* through 360*c*." *Id.* ¶ 25. Lewis teaches that "[d]ynamic manifest file server 310 includes processor 311 and manifest files 357*a* through 357*c*." *Id.*

Lewis explains:

> dynamic manifest file server 310 provides manifest files for a diverse range of client device platforms, including Flash Player plugin 356*a* at client device 350*a*, HTTP Live Streaming client 356*b* at client device 350*b*, and native binary application 356*c* at client device 356*c*. Platform rule set 322*a* may include various rules as how to customize video content based on the target device platform to be supported. Additionally, displays 360*a*, 360*b*, and 360*c* each utilize different screen resolutions to display video content, and resolution rule set 322*b* may include various rules as how to resize video content based on the target display resolution.

Ex. 1006 ¶ 26. Lewis teaches that for each of client devices 350*a* through 350*c*, platform rule set 322*a* may dictate that, if a request originates from a particular client device, dynamic manifest file server 310 should preferably generate a particular manifest file, 357*a* through 357*c*. *See id.* ¶¶ 27–29 (describing three exemplary client devices and the manifest file generated for each). Lewis explains that each manifest file references processed video segments 315*a*, 315*b*, or 315*c*. *Id.* Lewis states that "rule resolution server 320 may also implement a wide variety of other rules to enhance, target, and customize the video streaming experience for the end user," including a rule that may "rewrite the URLs within a manifest file to point to the content delivery network in closest proximity to the client device, providing improved network performance and responsiveness." *Id.* ¶ 32.

Figure 4 of Lewis is reproduced below:

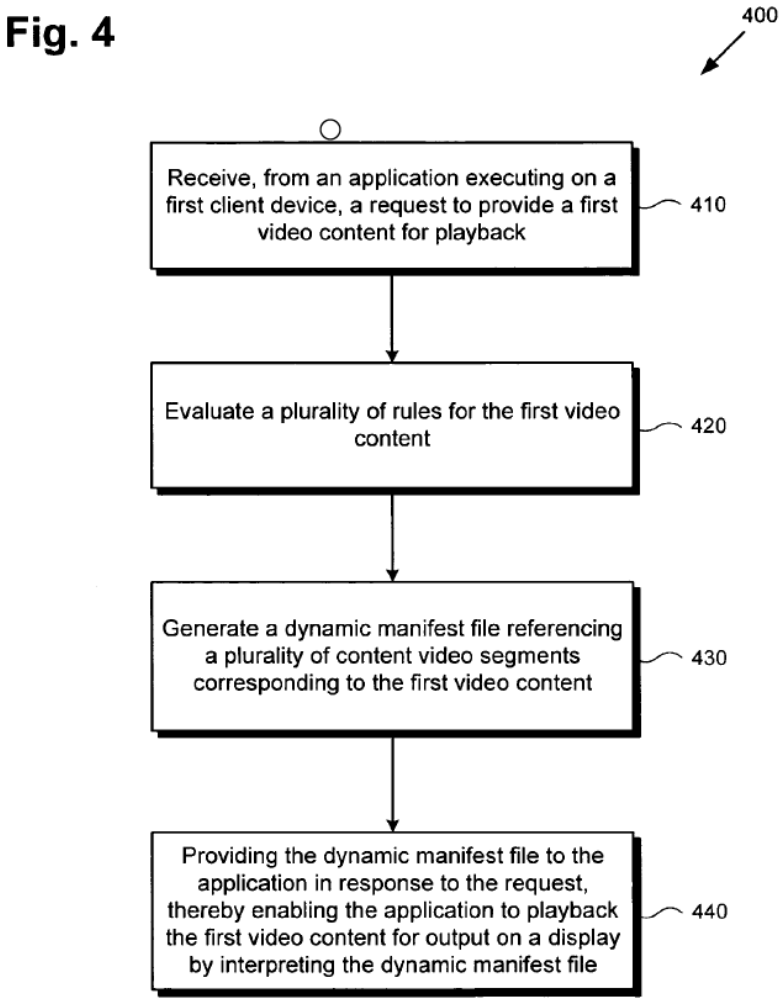

Figure 4 "shows a flowchart describing the steps . . . by which rule-based dynamic server-side streaming manifest files may be provided." Ex. 1006 ¶ 13; *see also id.* ¶ 35 (same). Lewis teaches that "step 410 . . . comprises processor 111 of dynamic manifest file server 110 receiving, from media player application 156 executing on processor 151 of client device 150, a request to provide a first video content for playback." *Id.* ¶ 36. Step 420 "comprises processor 111 of dynamic manifest file server 110 passing parameters from the request received in step 410 to rule resolution server 120, which may then evaluate a plurality of rules for the live event

requested in step 410." *Id.* ¶ 37. The parameters may include "device identifiers." *Id.* Further, Lewis states that "[a]dditional rules may further customize the final manifest file, as for example platform rule set 322*a* and resolution rule set 322*b* shown in FIG. 3, which may be used to optimize video delivery for specific devices and display configurations." *Id.*

Lewis teaches that step 430 "comprises processor 111 of dynamic manifest file server 110 generating manifest file 157 referencing live video segments 175 corresponding to the live event stream requested in step 410." Ex. 1006 ¶ 39. In step 440, processor 111 provides, in response to the request received in step 410, "manifest file 157 to media player application 156 executing on processor 151 of client device 150, thereby enabling media player application 156 to playback the live event . . . by interpreting manifest file 157." *Id.* ¶ 40.

3. Differences Between the Prior Art and the Claims; Motivation to Modify

a. The Proposed Combination

Petitioner's discussion of this ground begins by addressing the general combination of Lewis and Marusi and motivation to combine their teachings before discussing the specific limitations of the claim. *See* Pet. 54–57 (addressing, in general, the combination of Lewis and Marusi). The arguments are nearly identical to Petitioner's arguments directed to the general combination of Pyle and Marusi, presented in the first ground. *Compare id. with id.* at 20–22. In particular, Petitioner contends that one of ordinary skill in the art would have found the subject matter of claims 1–5 and 12 obvious over "the combination of Lewis' server system for dynamically generating manifest files with Marusi's teachings for storing multimedia content in a database, and Marusi's teachings of using a database

to correlate device capabilities with device identification information." *Id.* at 54–55 (citing Ex. 1003 ¶ 209). As with Petitioner's first ground, in addition to Petitioner's general discussion of the combined teachings, Petitioner's analysis of each claim or claim limitation explains the basis for Petitioner's challenge to that specific limitation or claim. *See, e.g.*, *id.* at 75 (contending, for claim 12, that "[t]his additional limitation is rendered obvious by Lewis"). With this understanding, we turn our attention to Petitioner's analysis of the specific claim limitations.

b. Claim 1 – Limitation 1[c]

Limitation 1[c] recites "retrieving, using the playback server system, (i) a list of assets associated with the identified piece of content and (ii) at least one device capability based upon the product identifier, wherein each asset is a different stream associated with the piece of content." Ex. 1001, 20:20–24. Although Petitioner contends "[t]he combination of Lewis and Marusi renders this limitation obvious," Petitioner's analysis of this limitation relies entirely on Lewis. Pet. 61–63.

Petitioner asserts that Lewis "teaches maintaining assets associated with the identified piece of content, wherein each asset is a different stream associated with the piece of content." Pet. 61. Specifically, Petitioner points to Lewis's Figure 3, contending that "Lewis teaches that stored video segments 375 are associated with processed video segments 315a-c that are each in different formats of the stored video segments 375," and provides the following chart:

Processed Video Segments	Format
315a	"F4F Flash video files" (*id.*, [0027])
315b	"MPEG transport stream video files" (*id.*, [0028])
315c	"MPEG transport stream video files" (*id.*, [0029])

Id. at 61–62 (citing Ex. 1003 ¶ 230).

Petitioner asserts, "Lewis explains that when each of the different client devices 'requests video content represented by stored video segments 375,' the dynamic manifest file server (with input from the rule resolution server) includes references to the appropriate processed video segments (i.e., 315a, 315b, or 315c)." Pet. 62 (citing Ex. 1006 ¶¶ 27–29). Petitioner contends that one of ordinary skill in the art "would have understood that manifest file server and rule resolution server associate the different processed video segments with the original content requested." *Id.* (citing Ex. 1003 ¶ 231). Notably, Petitioner asserts that one of ordinary skill in the art "would have understood that *Lewis' processed video segments are each an 'asset'* because the '720 patent describes assets as 'container files containing streams of content associated with specific titles' (Ex. 1001, 7[:]22–28), and MPEG transport stream video and F4F flash video files were known types of container files." *Id.* (emphasis added) (citing Ex. 1003 ¶ 232).

With respect to retrieving a list of assets, Petitioner contends that one of ordinary skill in the art

> would have found it obvious to retrieve a list of assets using the playback server system because Lewis teaches that the manifest file server and rule resolution server generates a dynamic file manifest, and Lewis teaches that a dynamic manifest file contains a list of URLs to container files containing content.

> For example, Lewis teaches that the rule resolution server may include a rule that "may rewrite the URLs within a manifest file to point to the content delivery network in closest proximity to the client device, providing improved network performance and responsiveness." Ex. 1006, [0032]. In other words, because a manifest file is a file that contains a list of URLs that point to container files, a [person of ordinary skill in the art] would have found it obvious that the manifest file server and rule resolution server retrieve a list of assets because the manifest file server and rule resolution server ultimately produce a list of assets to the client device in the form of a manifest file. Ex. 1003 ¶233.

Pet. 62–63. Petitioner additionally asserts that one of ordinary skill in the art "would have found it obvious to retrieve, using the playback server system, at least one device capability based upon the product identifier." *Id.* at 63.

Patent Owner contends that this obviousness analysis "contravenes obviousness law because it fails to identify a reason to modify Lewis to arrive at the claimed invention." PO Resp. 34. Patent Owner correctly notes that Petitioner does not rely expressly on any specific teaching from Marusi to modify Lewis; rather, Petitioner's analysis is based upon Lewis alone. *See id.* ("Importantly, Petitioner does not argue that 'retrieving a list of assets' would have been obvious over Lewis in view of Marusi. Instead, Petitioner propounds a single-reference obviousness theory, arguing the missing limitation would have been obvious in view of Lewis alone."). Patent Owner asserts that "[t]he Petition fails to provide evidence or argument concerning that crucial '*if*,' for it provides no rationale to modify Lewis to retrieve a list of assets."[10] *Id.*

[10] Although Petitioner does not argue in the Petition that Lewis *teaches* retrieving a list of assets, Patent Owner asserts that "no list of . . . processed video segments 315a-c is taught to be retrieved in Lewis or reasonably would be expected to be retrieved for Lewis to work as intended." PO

In its Reply, Petitioner contends that "[c]ontrary to [Patent Owner's] claim that Lewis does not teach a list and that there was no reason to modify Lewis' system ([PO Resp.] 30–32), the Petition and Dr. Reader clearly explain why lists and database operations would have been obvious to a [person of ordinary skill in the art]." Pet. Reply 19 (citing Pet. 62–63; Ex. 1003 ¶¶ 237–239). Petitioner reiterates the position asserted in the Petition—that it would have been obvious to retrieve a *list* of assets because Lewis teaches that a dynamic manifest file contains a list of URLs to container files containing content. *Id.* Petitioner also contends that "Lewis itself explains that it was well-known that manifest files contain a list of media assets to be played." *Id.* (citing Ex. 1006 ¶ 20 (noting that "Manifest

---

Resp. 37–38 (citing Ex. 2010 ¶ 79). In its Reply, Petitioner responds to Patent Owner's assertion by pointing to stored video segments 375 as assets, not just processed video segments 315a–c. Pet. Reply 19 (citing Ex. 1003 ¶¶ 230–231). In the Petition, Petitioner did not assert or rely upon stored video segments 375 as teaching the recited "assets" or "list of assets"; rather, Petitioner relied upon processed video segments 315a–c. *See* Pet. 62. Petitioner's attempt to assert, for the first time, in its Reply that processed video segments 375 also teach the recited "assets" is an improper reply argument. *See, e.g.*, Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019), 74, *available at* https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf ("Generally, a reply . . . may only respond to arguments raised in the preceding brief. . . . 'Respond,' in the context of 37 C.F.R. § 42.23(b), does not mean proceed in a new direction with a new approach as compared to the positions taken in a prior filing. . . . Examples of indications that a new issue has been raised in a reply include new evidence necessary to make out a *prima facie* case for the patentability . . . of an original . . . claim . . . ."); *see* PO Sur-reply 16–18 (discussing Petitioner's new argument). Petitioner's attempt to (1) rely upon stored video segments 375 to teach the recited assets and (2) assert that Lewis *teaches*, as opposed to rendering obvious, retrieving a list of assets are both new arguments that are inappropriately raised for the first time in Petitioner's Reply and, therefore, we disregard them.

file 257 includes entries 258a through 258f"), Fig. 2 (noting that Figure 2 shows entries pointing to video segments)).

Fundamentally, Petitioner fails to provide *any reason* in the Petition as to why one of ordinary skill in the art would have found it obvious to retrieve a list of assets based on Lewis. Instead of providing a reason as to why retrieving a list of assets would have been obvious, Petitioner points to a result achieved by Lewis—generating a dynamic manifest file that contains a list of URLs to container files containing content. In the context before us, pointing to a result to allege that a step in a process leading to the result would have been obvious is insufficient without also providing a reason with rational underpinning. *See KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.")). Here, Petitioner relies upon the result of Lewis's process—generating a dynamic manifest file containing a list of URLs—as the *only* basis as to why a previous step in the claim would have been obvious *without* providing any reason why the achieved result means the previous step would have been obvious. Further, although Petitioner cites to Dr. Reader's declaration (Ex. 1003 ¶ 233), Dr. Reader's testimony does not provide any further explanation or reason as to why this aspect of limitation 1[c] would have been obvious.[11] Rather, the Petition's

[11] To the extent Petitioner relies upon its discussion of the combined teachings of Lewis and Marusi as set forth at the beginning of Petitioner's discussion of this ground (*see* Pet. 54–57), that portion of the Petition does not provide an additional reason why retrieving a list of assets as recited in

discussion appears to be exactly the same as Dr. Reader's testimony on this point. Thus, Petitioner's argument that it would have been obvious to retrieve a list of assets in light of Lewis is not supported sufficiently on the record before us.

c. Dependent Claims 2–5 and 12

Petitioner contends that the combination of Lewis and Marusi would have rendered the subject matter of claims 2–5 and 12 obvious to one of ordinary skill in the art. Pet. 72–76. Claims 2–5 and 12 depend from claim 1 and, therefore, include limitation 1[c], discussed above. Accordingly, for the same reasons discussed with respect to claim 1, Petitioner's analysis of these claims suffers from the same deficiency

d. Weighing the Graham *Factors*

"Once all relevant facts are found, the ultimate legal determination [of obviousness] involves the weighing of the fact findings to conclude whether

---

limitation 1[c] would have been obvious simply because Lewis generates a list of assets. In that discussion, Petitioner argues that

> [b]ecause storing and tracking different representations of the same multimedia content using lists or a database was well-known, Lewis assumes that a [person of ordinary skill in the art] has such knowledge and does not explicitly describe these basic implementation details. Marusi provides examples of such techniques and teaches storing a plurality of representations of multimedia content in a database along with a description of each representation's format.

Id. at 55 (citing Ex. 1006 ¶ 14). As stated there, Petitioner acknowledges that Lewis does not describe these details. Yet, despite seemingly turning to Marusi for "such techniques" in that general discussion, Petitioner neither expressly states how Marusi teaches using lists nor argues or explains how Marusi's alleged use of lists impacts the analysis of limitation 1[c] (especially when Petitioner's discussion of limitation 1[c] fails to rely upon or cite Marusi).

the claimed combination would have been obvious to an ordinary artisan." *Arctic Cat*, 876 F.3d at 1361. On balance, considering the record before us, Petitioner has not shown, by a preponderance of the evidence, that the combined teachings of Lewis and Marusi would have rendered the subject matter of claims 1–5 and 12 obvious to one of ordinary skill in the art at the time of the invention.

IV. SECRET PRIOR ART AND CONSTITUTIONALITY

Patent Owner raises several additional issues. First, Patent Owner contends that neither Pyle nor Lewis was patented or published prior to the '720 patent's effective filing date and therefore neither reference should not be considered "prior art consisting of patents or printed publications" pursuant to 35 U.S.C. § 311(b). PO Resp. 59–61. This argument is akin to arguing that Pyle and Lewis are secret prior art. The Board has recognized that, under current precedent of the U.S. Court of Appeals for the Federal Circuit, these references are considered prior art and we decline to address the issue further. *See, e.g.*, *Lenovo Holding Co. v. DoDots Licensing Sols. LLC*, IPR2019-01279, Paper 37 at 33 (PTAB Jan. 5, 2021) (declining to address patent owner's argument on secret prior art).

Second, Patent Owner raises two Constitutional arguments relating to the Board's ability to render a decision in this proceeding including: (1) that the Board's organization, including its incentive and fee structure, violates due process and the right to an impartial, disinterested tribunal; and (2) that the Board was unconstitutionally appointed. *Id.* at 61–62. We also decline to address Patent Owner's constitutional challenge except to note that the constitutionality of the appointments of the Administrative Patent Judges

was addressed by the U.S. Supreme Court in *United States v. Arthrex, Inc.*, 141 S. Ct. 1970, 1986–87, 1997 (2021).

V. SUMMARY

For the reasons discussed above, Petitioner has not demonstrated, by a preponderance of the evidence, that claims 1–5 and 12 are unpatentable.

Our conclusions regarding the Challenged Claims are summarized below:

Claims Challenged	35 U.S.C. §	Reference(s) /Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–5, 12	103(a)	Pyle, Marusi		1–5, 12
1–5, 12	103(a)	Lewis, Marusi		1–5, 12
Overall Outcome				1–5, 12

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–5 and 12 of U.S. Patent No. 9,270,720 B2 are not determined to be unpatentable; and

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

For PETITIONER:

Harper Batts
Jeffrey Liang
Chris Ponder
SHEPPARD, MULLIN, RICHTER & HAMPTON LLP
HBatts@sheppardmullin.com
CPonder@sheppardmullin.com
JLiang@sheppardmullin.com

For PATENT OWNER:

Kenneth J. Weatherwax
Bridget Smith
Flavio Rose
Edward Hsieh
Parham Hendifar
Patrick Maloney
LOWENSTEIN & WEATHERWAX LLP
weatherwax@lowensteinweatherwax.com
smith@lowensteinweatherwax.com
rose@lowensteinweatherwax.com
hsieh@lowensteinweatherwax.com
hendifar@lowensteinweatherwax.com
maloney@lowensteinweatherwax.com