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Paper No. 9
Filed: July 16, 2019

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNIFIED PATENTS, INC.,
Petitioner,

v.

MV3 PARTNERS LLC,
Patent Owner.

Case IPR2019-00474
Patent 8,863,223 B2

Before JEAN R. HOMERE, JUSTIN T. ARBES, and CHRISTOPHER M. KAISER, *Administrative Patent Judges.*

HOMERE, *Administrative Patent Judge.*

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Unified Patents, Inc. ("Petitioner" or "Unified") filed a Petition requesting *inter partes* review of claims 1–6, 8, 10–21, 23–38, 40, 42–53, and 55–61 ("the challenged claims") of U.S. Patent No. 8,863,223 B2 (Ex. 1001, "the '223 patent"). Paper 2 ("Pet."). Petitioner filed a Declaration of Anthony Wechselberger (Ex. 1003) with its Petition. MV3

Partners, LLC ("Patent Owner"), filed a Preliminary Response. Paper 6 ("Prelim. Resp."). Patent Owner filed a Declaration of Dan Schonfeld, Ph.D. (Ex. 2001) with its Preliminary response. Pursuant to 37 C.F.R. § 42.4(a), we have the authority to determine whether to institute review.

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the petition "shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." On April 24, 2018, the Supreme Court held that, under 35 U.S.C. § 314, we may not institute review of fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). For the reasons expressed below, we determine that, on this record, Petitioner has established a reasonable likelihood that it would prevail with respect to at least one of the challenged claims. Accordingly, we institute an *inter partes* review as to the challenged claims on all grounds of unpatentability presented.

A. Related Matters

The parties indicate that the '223 patent is involved in *MV3 Partners LLC v. Roku, Inc.*, Civil Action No. 6:18-cv-00308 (W.D. Tex. Oct. 16, 2018); *MV3 Partners LLC v. Kohl's Corp.*, Civil Action No. 6:18-cv-00373 (W.D. Tex. Dec. 21, 2018); and *MV3 Partners LLC v. Best Buy Co.*, Civil Action No. 6:18-cv-00374 (W.D. Tex. Dec. 21, 2018). Pet. 66; Paper 4, 2.

B. The ’223 Patent

The ’223 patent relates to a mobile set top box (“STB”) for forwarding and presenting on a large screen of an external display (e.g., HDTV monitor) multimedia content including packets using predefined protocols (e.g., MPEG, IP) transmitted from various networks (e.g., 3G, satellite) via unicast or multicast broadcasts to a small screen of an authenticated user’s mobile computing device. Ex. 1001, Abstract, 1:11–13, 2:58–61, 3:39–41, 4:5–8, 4:56–66, 5:15–17, 6:11–12. Figure 2 below is illustrative.

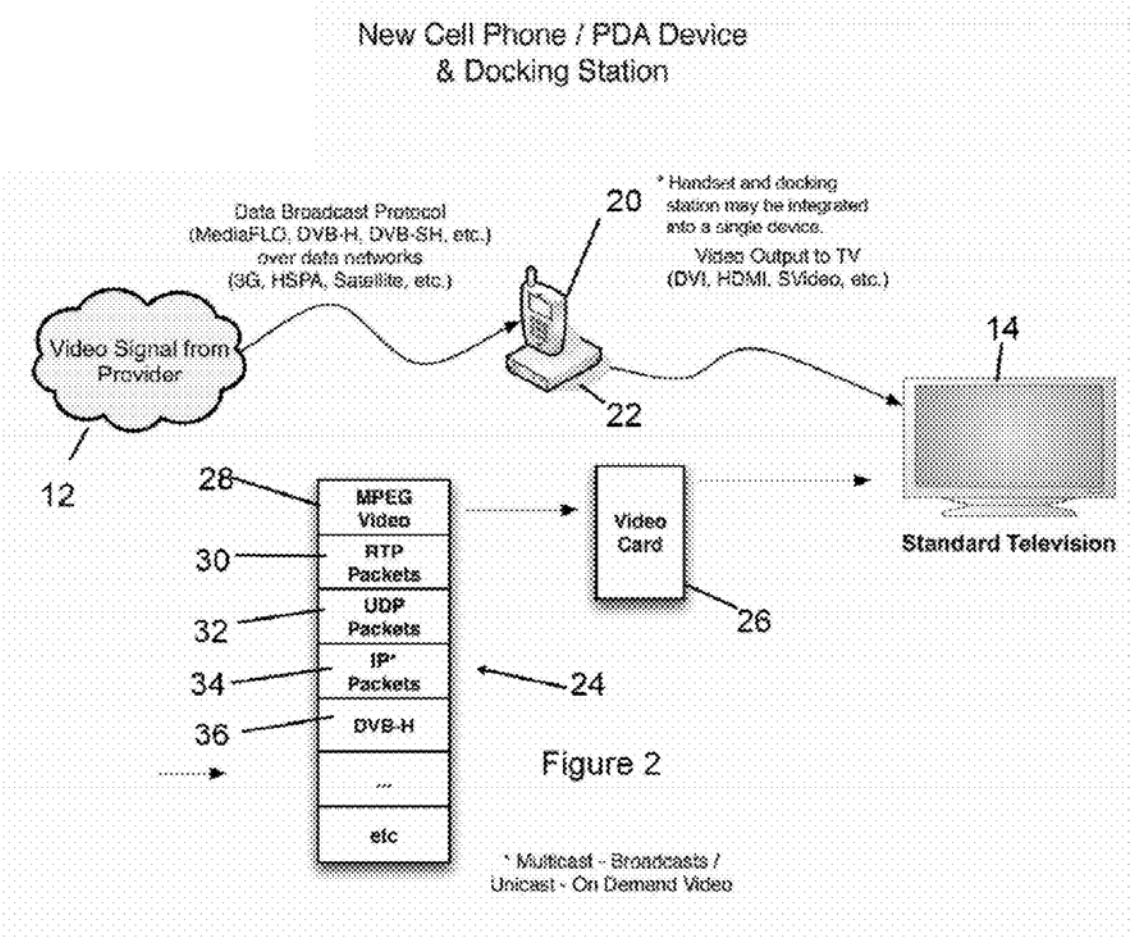

Figure 2

Figure 2, reproduced above, depicts mobile STB (10) facilitating the display in standard television (14) of data broadcast in unicast or multicast to mobile computing device (20). *Id.* at 4:47–51.

In particular, as shown in Figure 2 above, the ’223 patent describes that mobile device (20) provides received multimedia content to mobile STB (10) via a docking port of docking station (22). *Id*. at 4:47–60. Upon determining the native size format of the multimedia content received from mobile device (20), mobile STB (10) determines the size format capable of

being displayed by external display (14), and upconverts the multimedia content from a small size format to a larger size format for display on external display (14). *Id.* at 4:15–27, 33–39, 5:35–43.

C. Illustrative Claim

Of the challenged claims, claims 1, 30, and 32 are independent. Claim 1 is illustrative and is reproduced below with disputed limitations emphasized:

> 1. A mobile set top box comprising:
>
> a docking port configured to accept a mobile computing device that has a native resolution of a first size format and receives media content from at least two different types of communications networks;
>
> a mobile device input that receives media content from the mobile computing device accepted in the docking port;
>
> *a television signal input that receives at least one type of television signal*;
>
> a video processor configured to receive and process the media content from the mobile device input, the video processor including *adaptive circuitry to process the media content transmitted from unicast and multicast broadcasts*, and the video processor including circuitry and instructions operable to process a predefined protocol stack of video packets forming at least a portion of the media content;
>
> a processor coupled to an electronic storage, the electronic storage comprising instructions that, when executed, cause the processor to:
>
> execute an upconversion process by processing first media content from the mobile computing device, wherein the first media content includes digital video image information comprising a series of digital video frames, and is modified for display on a display device that is separate from the mobile set top box, the display device having a native display resolution of

a second size format that is larger than the first size format of the mobile computing device, the upconversion process further comprising:

receiving the first media content in the first size format from the mobile device input,

querying the mobile computing device to determine the first size format,

querying the display device,

determining the native display resolution of the second size format of the display device based on a response resulting from the query of the display device,

authenticating the validity of a user associated with the mobile computing device,

determining, based on the validity of the user, that the received first media content is permitted to be provided to the display device, and

upscaling the received first media content from the first size format to the second size format to generate upconverted first media content, wherein upscaling includes increasing a total number of horizontal and vertical pixels in each video frame of the series of digital video frames so that pixel dimensions in each video frame match the native display resolution of the second size format of the display device; and

render a television signal into second media content for display on the display device, comprising:

receiving the television signal from the television input;

decoding the television signal into second media content; and

rendering the second media content based on the native display resolution of the display device to generate rendered second media content; and

an output configured to deliver the upconverted first media content and the rendered second media content from the mobile set top box to the display device.

Ex. 1001, 8:9–9:3.

D. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–6, 8, 10–21, 23–38, 40, 42–53, and 55–61 are unpatentable under § 103(a)[1] as obvious over Wang.[2] Pet. 5.

Petitioner asserts that claims 1–6, 8, 10–21, 23–38, 40, 42–53, and 55–61 are unpatentable under § 103(a) as obvious over the combination of Wang, Balram,[3] and Bennett.[4] *Id.*

II. DISCUSSION

A. Claim Construction

Because this *inter partes* review is based on a petition filed after November 13, 2018,[5] we construe each claim "in accordance with the ordinary and customary meaning of such claim as understood by one of

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[1] Because the claims at issue have an effective filing date prior to March 16, 2013, the effective date of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), we apply the pre-AIA version of 35 U.S.C. § 103 in this Decision.

[2] Wang et al. (US 7,957,733 B2, filed May 22, 2007, iss. June 7, 2011) ("Wang") (Ex. 1004).

[3] Balram (US 2008/0198264 A1, filed Feb. 19, 2008, pub. Aug. 21, 2008) ("Balram") (Ex. 1006).

[4] Bennett et al. (US 2006/0031889 A1, filed Oct. 11, 2005, iss. Feb. 9, 2006) ("Bennett") (Ex. 1005).

[5] On October 11, 2018, the USPTO revised its rules to harmonize the Board's claim construction standard with that used in federal district court. CHANGES TO THE CLAIM CONSTRUCTION STANDARD FOR INTERPRETING CLAIMS IN TRIAL PROCEEDINGS BEFORE THE PATENT TRIAL AND APPEAL BOARD, 83 Fed. Reg. 51,340 (Oct. 11, 2018). This rule change applies to petitions filed on or after November 13, 2018.

ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R. § 42.100(b). Accordingly, our interpretation of the claims is similar to that of a district court. *See id*. Under the standard applied by district courts, claim terms are generally given their plain and ordinary meaning as would be understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (*en banc*). "There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution." *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012).

Neither Petitioner nor Patent Owner proposes any express construction for any of the terms in the challenged claims of the '223 patent. Pet. 5; Prelim. Resp. 9. We determine that no explicit construction of any term is necessary to resolve the issues before us at this stage of the proceeding. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("Because we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy,' . . . we need not construe [a particular claim limitation] . . . where the construction is not 'material to the . . . dispute.'" (citations omitted)).

B. Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (internal quotation and citation omitted). In that regard, Petitioner's Declarant, Anthony Wechselberger, testifies that a person with ordinary skill in the art at the time of the invention

> would have been a person having . . . : (i) at least an undergraduate degree in electrical engineering, computer science, computer engineering, or a similar technical field; and (ii) two years of experience in analysis, design, or development related to digital video processing systems, distribution networks and communications protocols, and signal formatting, with additional education substituting for less experience and vice versa.

Ex. 1003 ¶ 31. Patent Owner does not dispute Petitioner's suggested level for the ordinarily skilled artisan in its Preliminary Response. Prelim. Resp. 8.

On this record, we observe that Petitioner's proffered undisputed assessment of a person of ordinary skill in the art appears to be consistent with the level of ordinary skill in the art at the time of the invention as reflected in the prior art in the instant proceeding. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Therefore, for purposes of this Decision, we adopt Petitioner's assessment.

C. Obviousness over Wang

Petitioner asserts that claims 1–6, 8, 10–21, 23–38, 40, 42–53, and 55–61 are unpatentable under 35 U.S.C. § 103(a) as obvious over Wang. Pet. 11–63. Patent Owner opposes. Prelim. Resp. 27–35.

Based on the evidence in this record, we determine that Petitioner has established that there is a reasonable likelihood that Petitioner would prevail with respect to this ground of unpatentability. In our discussion below, we address the parties' contentions in turn.

1. *Principles of Law*

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *See 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 skill in the art; and (4) where in evidence, so-called secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We also recognize that prior art references must be "'considered together with the knowledge of one of ordinary skill in the pertinent art.'" *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (quoting *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)). We analyze Petitioner's obviousness grounds with the principles identified above in mind.

2. *Overview of Wang*

Wang describes a method and system for displaying on an external large screen display multimedia content originally destined for the smaller screen of a mobile terminal display. Ex. 1004, 3:21–32. In particular, Wang describes a set top box, upon receiving the multimedia content from the mobile computing device, converting the multimedia data to suit the format size of the larger external display. *Id.* at 14:43–49, 26:10–17. As shown in Figure 9 below, Wang discloses mobile terminal signal conversion module (MTSCM) 912, upon receiving multimedia content transmitted to mobile device (908) by service providers (902) through network (904), reformats the multimedia content to display it on external display system (914). *Id.* at 14:50–15:3, 15:19–31, 15:52–55, 15:65–16:2, 18:32–37. Wang discloses upconverting the signal from mobile device (908) for display to larger external device (914). *Id.* at 17:43–54, 17:63–18:6. Wang describes that multimedia data are broadcast to the mobile device via multicast and unicast. *Id.* at 8:45–48, 19:46–49. Figure 9 of Wang, reproduced below, is a depiction of a mobile terminal signal conversion system.

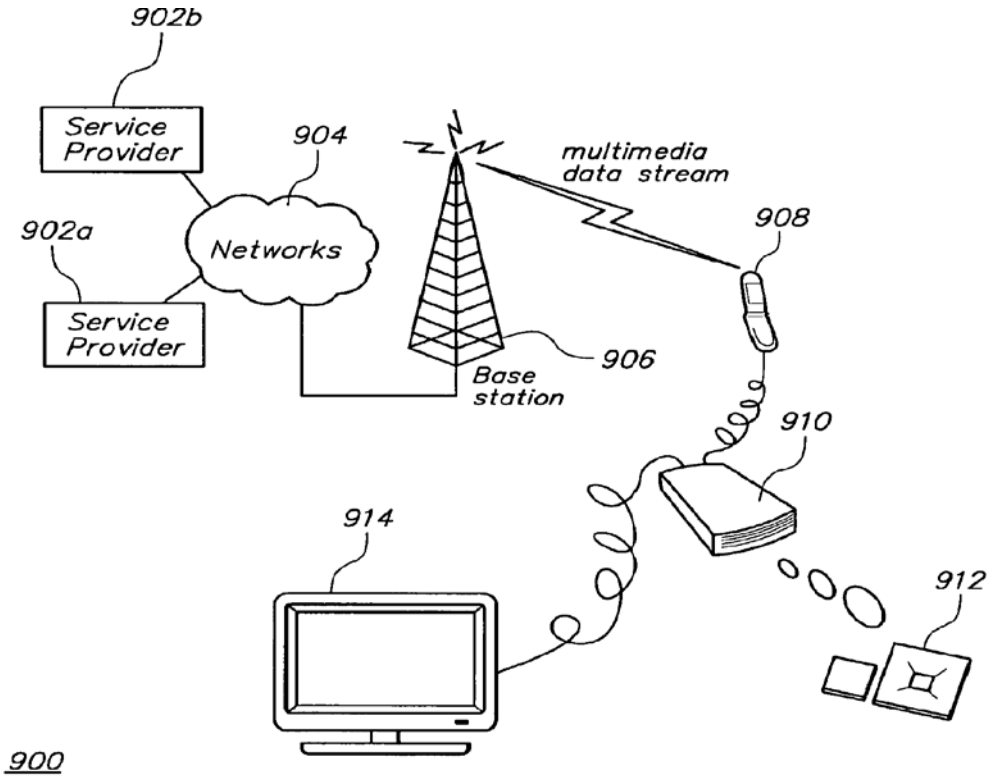

FIG. 9

Figure 9, reproduced above, depicts a system with mobile terminal signal conversion. Ex. 1004, 14:43–49.

3. *Obviousness Analysis*

Petitioner provides explanations to account for all of the claim limitations required by claims 1–6, 8, 10–21, 23–38, 40, 42–53, and 55–61, and reasons for modifying the teachings of Wang, citing Mr. Wechselberger's Declaration for support. Pet. 11–47; Ex. 1003.

a. Claim 1

Independent claim 1 recites, "[a] mobile set top box comprising." Ex. 1001, 8:9. Petitioner contends Wang's disclosure of MTSCM (912) contained within housing (910), collectively teaches the "mobile set top box." Pet. 11. According to Petitioner, because the disclosed set top box (MTSCM(912)/housing (910) unit) serves as an intermediate device to convert a signal received from mobile device (908) to a signal that can be displayed to external device (914), Wang's MTSCM contained in the housing teaches the claimed "mobile set top box." *Id.* at 11–12 (citing Ex. 1003

¶ 47; Ex. 1004 15:19–21, 15:39–41, 26:10–17).

Independent claim 1 further recites:

> a docking port configured to accept a mobile computing device that has a native resolution of a first size format and receives media content from at least two different types of communications networks.

Ex. 1001, 8:10–13.

Petitioner contends Wang explicitly discloses "the MTSCM may be provided in a 'set top box' and the mobile device may be accepted into a 'seat' (i.e., 'docking port') to directly connect . . . to the MTSCM box." Pet. 12 (citing Ex. 1004, 26:10–17, 15:44–46). Further, Petitioner contends that Wang's disclosure of a cellular phone (i.e., "mobile computing device") that receives media content from various providers including 3G or 4G cellular networks teaches the computing network receiving media content from at least two types of communication networks. *Id.* at 13 (citing Ex. 1004,

14:50–15:9; Ex. 1003 ¶ 49). Further, Petitioner contends that Wang's disclosure of the mobile device receiving multimedia content intended for display on a small screen teaches the mobile device's native resolution referenced as the mobile device's screen size in the '223 patent. *Id.* at 14 (citing Ex. 1004, 14:54–55, 15:15–18; Ex. 1001, 4:21–27). Therefore, Petitioner concludes that a PHOSITA[6] would have understood that, "consistent with the '223 Patent, *Wang's* cellular phone has a native resolution of a first size format based on the cellular phone's small screen size, and . . . this size format would have been smaller than the native resolution of the second size format of the larger external display device." *Id.* at 15 (citing Ex. 1003 ¶ 53).

Independent claim 1 further recites, "a mobile device input that receives media content from the mobile computing device accepted in the docking port." Ex. 1001, 8:14–15. Petitioner contends that Wang's disclosure of mobile terminal signal interface module (1002) using a conventional physical interface to connect the MTSCM and the mobile device teaches the "mobile device input" because module 1002 accommodates receiving a multimedia signal from the mobile device. Pet. 15 (citing Ex. 1004, 16:46–50; Ex. 1004 ¶ 61).

Independent claim 1 further recites, "a television signal input that receives at least one type of television signal." Ex. 1001, 8:16–17.

[6] A person having ordinary skill in the art.

Petitioner contends that Wang's disclosure of implementing the MTSCM in a set top box for a television teaches the television signal input. Pet. 16 (citing Ex. 1004, 26:10–17). According to Petitioner, "[a] PHOSITA would have understood that a television STB includes a television signal input that receives at least one type of television signal." *Id.* (citing Ex. 1003 ¶¶ 74–77). Further, Petitioner contends that, because a television signal input is a standard feature in common STBs, a PHOSITA would have understood Wang's STB to include, at a minimum, a television signal input to provide television content from a cable or satellite provider. *Id.* at 16–17 (citing Ex. 1001, 1:20–28). Furthermore, Petitioner contends that Wang's disclosure of using a button of the STB to select a predetermined "tunable channel" for routing media content teaches that the disclosed STB includes a television signal input for receiving standard television programming. *Id.* at 17–18 (citing Ex. 1003 ¶¶ 74–77).

Independent claim 1 further recites:

> a video processor configured to receive and process the media content from the mobile device input, the video processor including adaptive circuitry to process the media content transmitted from unicast and multicast broadcasts, and the video processor including circuitry and instructions operable to process a predefined protocol stack of video packets forming at least a portion of the media content.

Ex. 1001, 8:18–25.

Petitioner contends that Wang's disclosure of the MTSCM processing media content received from the mobile phone to provide a converted video signal to an external device teaches the claimed "video processor." Pet. 18–19

(citing Ex. 1004, 15:65–16:4). In particular, Petitioner contends that because the MTSCM utilizes video signal conversion module (1004) including Video Compress Decoder (1104a) that receives and decompresses the multimedia stream, the Video Compress Decoder teaches the "video processor." *Id.* at 19–20 (citing Ex. 1004, 17:43–46; Ex. 1003 ¶ 54). Further, Petitioner contends that Wang's disclosure of the MTSCM processing media content broadcast to multiple users including the mobile terminal with a shared IP address teaches receiving the media content transmitted to the mobile device via multicast. *Id.* at 20–21 (citing Ex. 1003 ¶¶ 40, 55, 56; Ex. 1004, 5:41–47, 8:45–48). Furthermore, Petitioner contends that Wang's disclosure of the MTSCM processing media content streamed on-demand to a single user (e.g., the mobile terminal with a unique IP address) teaches receiving the media content transmitted to the mobile device via unicast. *Id.* at 20–21 (citing Ex. 1003 ¶¶ 40, 55, 56; Ex. 1004, 1:51–54, 19:46–49, 28:48–62). Consequently, Petitioner submits that a PHOSITA would have understood that the multimedia content received by Wang's "MTSCM[] video processor via the user's cellular phone in *Wang* includes content transmitted via unicast and multicast broadcasts, and *Wang*'s video processor includes adaptive circuitry[7] to process this received content." *Id.* at 21 (citing Ex. 1003 ¶¶ 55–56). Additionally,

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[7] "The circuitry is adaptive in many respects, including its ability to process different compression formats (e.g., different MPEG formats) and a host of other variations in the received multimedia signal to which the video processor would adapt." Pet. 21–22 n.8 (citing Ex. 1003 ¶ 56).

Petitioner contends that Wang's disclosure of the mobile device receiving a multimedia data stream in "real time" from the Internet using 3G or 4G cellular technology via an interface/buffer and using MPEG video compression format (e.g., MPEG1, MPEG2, or MPEG4) teaches the video processor including circuitry and instructions to process a predefined protocol stack of video packets included in the media content. *Id.* at 22. According to Petitioner, "[b]ecause MPEG formatted data streams are packetized for transport, and also because Internet-sourced content uses IP packets to transport data, a PHOSITA would have understood that *Wang*'s real time 'multimedia data stream' (*see* Fig. 9) would have comprised video packets." *Id*. (citing Ex. 1003 ¶ 57). Further, Petitioner contends the '223 patent illustrates a "predefined protocol stack of video packets" as a mere grouping of "MPEG" and "IP" protocols. *Id.* at 22 (citing Ex. 1001, 5:9–13). Therefore, Petitioner submits the following:

> Because *Wang* similarly uses MPEG and IP for receiving packetized MPEG video streams, including those received from the Internet, a PHOSITA thus would have understood or at least found obvious that such packetized MPEG video streams were "a predefined protocol stack of video packets forming at least a portion of the media content," and the video processor would have instructions for processing it.

Id. at 23 (citing Ex. 1003 ¶ 58; Ex. 1004, 17:34–54).

Independent claim 1 further recites:

> a processor coupled to an electronic storage, the electronic storage comprising instructions that, when executed, cause the processor to:

> execute an upconversion process by processing first media content from the mobile computing device, wherein the first media content includes digital video image information comprising a series of digital video frames, and is modified for display on a display device that is separate from the mobile set top box, the display device having a native display resolution of a second size format that is larger than the first size format of the mobile computing device, the upconversion process further comprising.

Ex. 1001, 8:26–38.

Petitioner contends Wang's disclosure of a separate "video card" having embodied therein Digital/Analog Video Encoder (DAVE) or Digital/Digital Video Encoder (DDVE) functionality would need its own graphic processor in addition to the Video Compress Decoder (i.e., video processor) that decompresses a digital multimedia signal received by the mobile device, and thereby teaches the claimed "processor." Pet. 23–26 (citing Ex. 1004, 17:63–18:6). Further, Petitioner contends that Wang's disclosure of an external display that overcomes the limited size and capability of the screen on mobile devices to display high-resolution graphics and high quality real-time audio/video teaches the claimed upconversion process. *Id.* at 26–27 (citing Ex. 1004, 2:41–58, 14:54–63, 15:15–18). In particular, Petitioner contends that a PHOSITA would have understood Wang's description of a mobile terminal signal, which is forwarded to the larger external display to allow users to view video conferences, HDTV, games, GPS information, and video on demand, as teaching the upconversion. *Id.* at 27–28 (citing Ex. 1003 ¶¶ 65–68, Ex 1004, 15:10–13, 18:9–10, 19:46–49, 21:45–49, 26:52–

55). According to Petitioner, Wang's disclosure of the MTSCM that converts the display signal intended for reproduction by the mobile device to a display format and/or signal power level appropriate for display on the larger external screen teaches the upconversion. *Id.* at 28–29 (citing Ex. 1004, 15:29–31, 15:40–42, 15:55–58, 16:64–67, 17:63–18:17). Therefore, Petitioner submits the following:

> Because video content is received in a format intended for the cellular phone's smaller screen size (i.e., a first size format) and the MTSCM converts the video content to a different display format appropriate for an external display that is larger (i.e., a second size format), a PHOSITA would have understood that *Wang* teaches that the MTSCM performs an "upconversion process" in which the video content received from the mobile device is "modified for display on a display device that is separate from the mobile STB, the display device having a native display resolution of a second size format that is larger than the first size format of the mobile computing device."

Id. at 29 (citing Ex. 1003 ¶¶ 62–64).

> A PHOSITA would have understood that the multimedia data stream received by the MTSCM from the cellular phone would have included "digital video image information comprising a series of digital video frames," at least because *Wang* teaches that the content may be MPEG video, which would be understood to comprise digital video frames.

Id. at 30 (citing Ex. 1003 ¶ 61; Ex. 1004, 17:34–54).

Independent claim 1 further recites, "receiving the first media content in the first size format from the mobile device input." Ex. 1001, 8:39–40. Petitioner contends that Wang's disclosure of the MTSCM receiving multimedia content from the mobile device having a screen with a native

resolution of a first format teaches the cited claim limitation. Pet. 33 (citing Ex. 1004, 15:29–31).

Independent claim 1 further recites, "querying the mobile computing device to determine the first size format." Ex. 1001, 8:41–42. Petitioner contends that the '223 patent does not describe any specific query, but merely determines the size format of the content received by the set top box from the mobile device. Pet. 34 (citing Ex. 1001, 4:15–17, 5:35–36). Petitioner submits that Wang's MTSCM similarly determines the size format of the media content received from the cellular phone in a format configured for the cellular phone's screen. *Id.* (citing Ex. 1004, 15:29–31, 15:40–42, 16:53–58). Accordingly, Petitioner submits:

> Because *Wang* recognizes the received multimedia signal format, and that received format is in the first size format of the cellular phone screen, *Wang* teaches that the STB can determine the first size format (i.e., of the cellular phone screen) from the received signal itself—just like the '232 Patent. *Wang*, therefore, teaches or at least renders obvious "querying" the mobile device to the same extent taught by the '232 [patent] specification.

Id. at 34–35 (citation omitted).

> A PHOSITA would have recognized that the first size format must be determined to upconvert to the second size format, and the particular way of determining the first size format would have simply been a mere design choice from a finite number of options: the size format could be determined from the received signal itself or an initial message could be sent to the device. Thus, at a minimum, it would have been "obvious to try" a "query" in which an initial message is sent.

Id. at 35 (citation omitted).

Therefore, Petitioner submits, to the extent the "querying" requires the STB sending an initial message to the mobile device, Wang alone teaches, or at least suggests, the claim limitation. *Id.*

Independent claim 1 further recites, "querying the display device" and "determining the native display resolution of the second size format of the display device based on a response resulting from the query of the display device." Ex. 1001, 8:43–46. Petitioner contends that Wang's disclosure of the MTSCM outputting a converted signal to an external display via HDMI teaches that the MTSCM queried the HDMI display to determine its required resolution through a response provided to the MTSCM. Pet. 38 (citing Ex. 1003 ¶¶ 69–70; Ex. 1004, 18:9–10, 21:45–49, 26:52–55). According to Petitioner,

> A PHOSITA would have understood that to perform the upconversion process described for *Wang*'s MTSCM, it would need to determine the size format of the external device. It would have been obvious to a PHOSITA this format determination would typically be made through known querying processes. Such a known querying process was already included in the HDMI standard.

Id. at 37 (citations omitted).

Independent claim 1 further recites "authenticating the validity of a user associated with the mobile computing device" and "determining, based on the validity of the user, that the received first media content is permitted to be provided to the display device." Ex. 1001, 8:47–51. Petitioner contends that the '223 patent indicates that the mobile STB is capable of "authenticating a user so that the user can receive media service." Pet. 39

(citing Ex. 1001, 3:11–13, 6:11–12). Likewise, Petitioner contends that Wang's disclosure of authenticating a user during a purchase request (e.g., using a mobile device to download media content from the Internet) based upon a mobile device Tag ID and password associated with the user to validate the user teaches or suggests the cited claim limitation. *Id.* at 39–40 (citing 10:31–11:27, 27:48–28:10). According to Petitioner, although Wang's disclosed authentication serves to authenticate the user, and does not address the access rights of the individual, Wang, nonetheless, teaches using the authentication information "to access an online account." *Id.* at 39–40 (citing Ex. 1004, 11:4–27, 27:49–51). Further, Petitioner contends that Wang teaches that its authentication server may reside within a wireless hub (WHUB), which may be integrated into the MTSCM STB. *Id.* at 40 (citing Ex. 1004, 9:36–38). Therefore, Petitioner submits that a PHOSITA would have been motivated to perform the multimedia purchase authentication by using Wang's MTSCM STB having a WHUB integrated therein to verify the user's authenticity before converting the mobile device's multimedia content for display on the external display device. *Id.* at 40–41 (citing Ex. 1003 ¶ 73).

Independent claim 1 further recites:

> upscaling the received first media content from the first size format to the second size format to generate upconverted first media content, wherein upscaling includes increasing a total number of horizontal and vertical pixels in each video frame of the series of digital video frames so that pixel dimensions in each video frame match the native display resolution of the second size format of the display device.

Ex. 1001, 8:52–59.

Petitioner contends that the '223 patent's claim language makes it clear that upscaling media content results in upconverted media content, and uses the terms "upscaling" and "upconverting" interchangeably to refer to the concept of converting media content formatted for a smaller screen size to a size format for a larger screen. Pet. 41–42 (citing Ex. 1001, 2:58–61, 3:14–20, 3:34–40, 4:14–20, 4:33–39, 5:21–25, 5:40–43, 6:13–18). Therefore, Petitioner submits that Wang's disclosure of upscaling the media content received from the mobile device formatted for the device's small screen size to the larger size format of the external display teaches the upscaling limitation. *Id.* Petitioner concludes that a PHOSITA would have understood or "at least found it obvious that the total number of horizontal and vertical pixels would be increased in this process to increase the resolution, because display resolution is the measure of pixel density/dimensions on a display." *Id.* at 42 (citing Ex. 1003 ¶¶ 65–68).

Independent claim 1 further recites "render[ing] a television signal into second media content for display on the display device, comprising: receiving the television signal from the television input." Ex. 1001, 8:60–62. Petitioner contends that Wang's disclosure of "a television signal input that receives at least one type of television signal" as part of Wang's STB process of rendering television content for display on an external device teaches the STB receiving media content for subsequent display in a television set. Pet. 44 (citing Ex. 1003 ¶ 77).

Independent claim 1 further recites, "decoding the television signal into second media content; and rendering the second media content based on the native display resolution of the display device to generate rendered second media content." Ex. 1001, 8:63–67. Petitioner contends that because decoding and rendering television signals are well-known functions of STBs, a PHOSITA would have understood that Wang's MTSCM decodes media content received from cable lines or a satellite dish (e.g., television signals), and formats the media content in the suitable size format before rendering it on a television set. Pet. 45–46 (citing Ex. 1003 ¶¶ 74–77, 1004, 26:41–55, 3:21–22, 20:10–19, 20:42–46, 26:10–17, 23:3–9).

Independent claim 1 further recites, "an output configured to deliver the upconverted first media content and the rendered second media content from the mobile set top box to the display device." Ex. 1001, 9:1–3. Petitioner contends that Wang's disclosure of the MTSCM processing a video signal obtained from a mobile device to provide a converted upscaled signal with a power level appropriate for an external display terminal teaches providing an output to deliver the upconverted signal. Pet. 46–47 (citing Ex. 1004, 15:52–55, 15:65–67, 17:4–7, 18:18–20). According to Petitioner, "[a] [PHOSITA] would understand that the rendered television signal (i.e., rendered second media content) would also be delivered through this same output." *Id.* at 47 (citing Ex. 1003 ¶ 77).

Unicast and Multicast Multimedia Content

Patent Owner argues that Wang fails to teach or suggest the element "**adaptive circuitry to process the [first] media content transmitted from unicast and multicast broadcasts**." Prelim. Resp. 27. In particular, Patent Owner argues that Wang's disclosure focuses on unicast applications (e.g., video on demand), but does not discuss the MTSCM ever receiving multicast data. *Id.* at 28 (citing Ex. 2001 ¶¶ 52–53). According to Patent Owner, "[a PHOSITA] would not understand Wang as teaching that the local servers can be loaded with information for 'broadcast and/or multicast'" to base stations, which transmit the multicast data to each cell phone as needed. *Id.* (citing Ex. 1004, 5:45–52, 8:45–48; Ex. 2001 ¶¶ 52–53). Patent Owner asserts that although Wang discloses receiving a request by multiple users for a particular content item, Wang does not teach concurrently delivering the requested item to each of the users. *Id.* at 28–29. Instead, Wang discloses the users accessing the content item at a server logically proximate to the users in a particular location. *Id.* (citing Ex. 1004, 28:48–66; Ex. 2001 ¶¶ 52–53). Additionally, Patent Owner submits, "Petitioner has failed to articulate reasoning with a rational underpinning to support obviousness of the claimed element." *Id.* at 29.

Based on the current record, we disagree with Patent Owner's contentions. At the outset, we note Patent Owner does not dispute Petitioner's contention that unicasting refers to a one-one broadcast, and multicasting refers to a one-to-many broadcast. Pet. 20. As correctly noted by Petitioner, Wang explicitly discloses servers that are loaded with information that can be multicast/broadcast to cellular users in a particular

service area and/or that can be accessed by those users. *Id.* 20–21 (citing Ex. 1004, 8:37–48). Therefore, in addition to teaching that multimedia content can be delivered to users via unicast (on demand), on the present record, we agree with Petitioner that Wang also teaches delivering media content to users via multicasting.

Authenticating the Validity of a User

Patent Owner argues that Wang does not teach, **"authenticating the validity of a user associated with the mobile computing device"** and "**determining, based on the validity of the user, that the received first media content is permitted to be provided to the display device."** Prelim. Resp. 30. In particular, Patent Owner asserts that Wang's disclosure of authenticating a user during a purchase request including purchasing a download of Internet content made available immediately to a cellular phone is not a transaction performed by the mobile STB. *Id.* According to Patent Owner, while Wang discloses that the WHUB may be integrated in the MTSCM STB, Petitioner fails to explain why locating the authentication server within the STB would result in the disputed claim limitation, rather than merely performing the same purchase authentication without reaching out to a separate authentication server. *Id.* (citing Ex. 2001 ¶¶ 54–58). Further, Patent Owner argues that Petitioner's contention that "a [PHOSITA] would have been motivated to combine Wang's purchase authentication with Wang's MTSCM STB because 'it was a common feature of STBs to perform authentication prior to allowing media content to be displayed'" is conclusory. *Id.* at 31. Additionally, Patent Owner argues that

Wang's disclosure that its authentication does not address the access rights of the individual teaches away from determining that the received first media content is permitted to be provided to the display device. *Id.* at 31–32 (citing Ex. 1004, 10:66–11:1; Ex. 2001 ¶¶ 57–60). These arguments are not persuasive based on the current record.

Petitioner provides evidence that authenticating a user before providing the user access to media content was a well-known feature of STBs to restrict access or delivery of multimedia content to authorized users only. *See* Pet. 40–41 (citing Exs. 1003, 1005, 1023, 1024). Therefore, on the present record, we agree with Petitioner that a PHOSITA, being apprised of Wang's teaching to integrate the authentication feature into the STB, would have understood that the resulting STB would only provide access or broadcast multimedia content to authenticated mobile users. Accordingly, the proposed modification of Wang's system would predictably result in the STB limiting transmission of multimedia content to cell phones of authorized users for subsequent display of the media content on an external display. Pet. 40–41. Further, we do not agree with Patent Owner that Petitioner's proposed modification of Wang is conclusory because it is corroborated by Petitioner's Declarant, as well as other prior art (e.g., Romano, Herrington and Bennett) that such feature is indeed widely used to enhance the security of STBs. *Id.* (citing Ex. 1003 ¶¶ 41, 42, 73, 1005; Exs. 1005, 1023, 1024).

Furthermore, Patent Owner's teaching away argument is unavailing based on the current record. "A reference may be said to teach away when a

person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). Thus, the "mere disclosure of alternative designs does not teach away." *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Furthermore, just because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes. *Gurley*, 27 F.3d at 553. Patent Owner does not point to anything in Wang that would have discouraged an ordinarily skilled artisan from the MTSCM determining whether a mobile user is authorized to receive multimedia content. While Wang's statement that the disclosed authentication does not address access rights indicates a deficiency in Wang with respect to the disputed limitation, we are not persuaded on this record that it teaches away from the proposed integration because it neither criticizes nor discourages a PHOSITA from enhancing such authentication to include access rights as proposed by Petitioner with widely-available knowledge in the art. Ex. 1003, 4:20–32, 7:42–50. On this record, we agree with Petitioner that the proposed modification of Wang's STB with the well-known feature of providing access to or delivering multimedia content to authorized users teaches the limitation of the STB authenticating a mobile user before unicasting/broadcasting multimedia content thereto.

Television Signal Input

Patent Owner argues that Wang does not teach **"a television signal input that receives at least one type of television signal."** Prelim. Resp.

32. In particular, Patent Owner argues that although Wang teaches that the "MTSCM may be implemented in a 'set top box' for a television," Wang does not explicitly indicate implementing the MTSCM as an input to the television. *Id.* (citing Ex. 1004, 26:10–17; Ex. 1003 ¶¶ 74–77; Ex. 2001 ¶¶ 61–63). According to Patent Owner, Wang instead teaches such implementation as an intermediary *output* to a television. *Id.* at 32–33. Patent Owner recognizes that "some prior art set top boxes were used to receive television content from a cable or satellite provider." *Id.* at 33. However, Patent Owner disagrees with Petitioner's conclusion that "Wang's teachings would have, at a minimum, expressly suggested to a [PHOSITA] to include a television signal input to the STB, as it was standard for television STBs at the time to provide television content received from a cable or satellite provider." *Id.* at 32 (internal quotation and citation omitted). Nonetheless, Patent Owner argues, "neither Petitioner, nor Petitioner's expert provide any articulation for why a [PHOSITA] would understand Wang to teach or suggest combining the MTSCM set top box embodiment with such a prior art set top box." *Id.* at 32–33 (citing Ex. 2001 ¶¶ 61–63). Further, Patent Owner argues that Wang's disclosure of "directing the television to display the video content at a predetermined tunable channel" teaches an unused channel on the television for receiving a signal from the set top box, and not a television channel on the set top box. *Id.* at 33 (citing Ex. 1004, 3:23–30). Therefore, Patent Owner submits, "[r]ather than suggest a television *input* to the set top box, the disclosure suggests a television *output* from the set top box and an input to the

television using the predetermined tunable channel." *Id.* Additionally, Patent Owner disagrees with Petitioner that Wang's disclosure of integrating various communications including Internet, Cable, DSL, satellite, and TV communications, and a Management Center (MC) System as part of the same communications network to enable communications between disparate users' terminals teaches or suggests that the MTSCM STB includes a television signal input. *Id.* at 34 (citing Ex. 1004, 20:1–14, 16–19, 29–33, 23:3–9, 26:15–21). According to Patent Owner, in relying on the cited portions of Wang, Petitioner is cobbling together multiple disclosures of Wang and thereby mischaracterizes the reference because a "[PHOSITA] would not be motivated to combine the MC System with the MTSCM STB to add a television signal input." *Id.* at 34–35. Therefore, Patent Owner submits, "Petitioner has failed to articulate reasoning with a rational underpinning to support [the alleged] obviousness of the claimed element." *Id.* at 35.

On the present record, these arguments are not persuasive. Notwithstanding Wang's disclosure of the various communications devices that are part of the disclosed communications network, we agree with Petitioner that Wang's disclosure of the MTSCM STB serving as an intermediary device between a cable or satellite provider and a television would have, at a minimum, taught or suggested to a PHOSITA to include a television signal input to the STB, as it was standard for television STBs at the time to provide television content received from a cable or satellite provider, as acknowledged by Patent Owner. Pet. 16–17; *see* Prelim. Resp.

33. Because the proposed use of the MTSCM STB as the intermediary device comports with the ordinary use of similarly known devices in the art to perform the known functions of providing television signals to television sets of authorized users, we agree with Petitioner on this record that a PHOSITA would have readily appreciated that the MTSCM STB would include a television input to receive the television signal from the cable or satellite provider. Therefore, on this record, we agree with Petitioner that Wang's teaching taken in combination with the knowledge in the art teaches the television input to the STB.

In light of the foregoing, we are persuaded that Petitioner has shown adequately for the purposes of this Decision that the cited teachings of Wang at least suggest the aforementioned disputed limitations of claim 1. Petitioner has established a reasonable likelihood that it would prevail in showing that the subject matter of claim 1 would have been obvious over Wang.

b. Claims 2–6, 8, 10–21, 23–38, 40, 42–53, and 55–61

We have reviewed Petitioner's explanations and supporting evidence regarding claims 2–6, 8, 10–21, 23–38, 40, 42–53, and 55–61 and find them persuasive. Pet. 48–63. Petitioner builds upon its analysis for claim 1, and further relies upon Wang to explain why the additional claims also would have been obvious over Wang. *Id.* Patent Owner relies on the same arguments discussed above for claim 1 (as also applied to similar limitations in independent claims 30 and 32). Prelim. Resp. 35. Based on the present record, Petitioner has established a reasonable likelihood that it would

prevail on its assertion that claims 2–6, 8, 10–21, 23–38, 40, 42–53, and 55–61 would have been obvious over Wang.

c. Conclusion

In view of the foregoing, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on its assertion that claims 1–6, 8, 10–21, 23–38, 40, 42–53, and 55–61 are unpatentable as obvious under § 103(a) over Wang.

D. Obviousness over Wang, Balram, and Bennett

Petitioner asserts that claims 1–6, 8, 10–21, 23–38, 40, 42–53, and 55–61 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Wang, Balram, and Bennett. Pet. 11–63. Patent Owner opposes. Prelim. Resp. 27–35.

Based on the evidence in this record, we determine that Petitioner has established that there is a reasonable likelihood that Petitioner would prevail with respect to this ground of unpatentability. In our discussion below, we address the parties' contentions in turn.

1. Overview of Balram

Balram relates to a video format converter for improving the visual quality of a low resolution and low frame rate video signal from a portable device by converting the quality and size format of the signal content for display in a higher resolution device. Ex. 1006 ¶¶ 11, 12, 61. Figure 4 of Balram, reproduced below, illustrates the video format converter system.

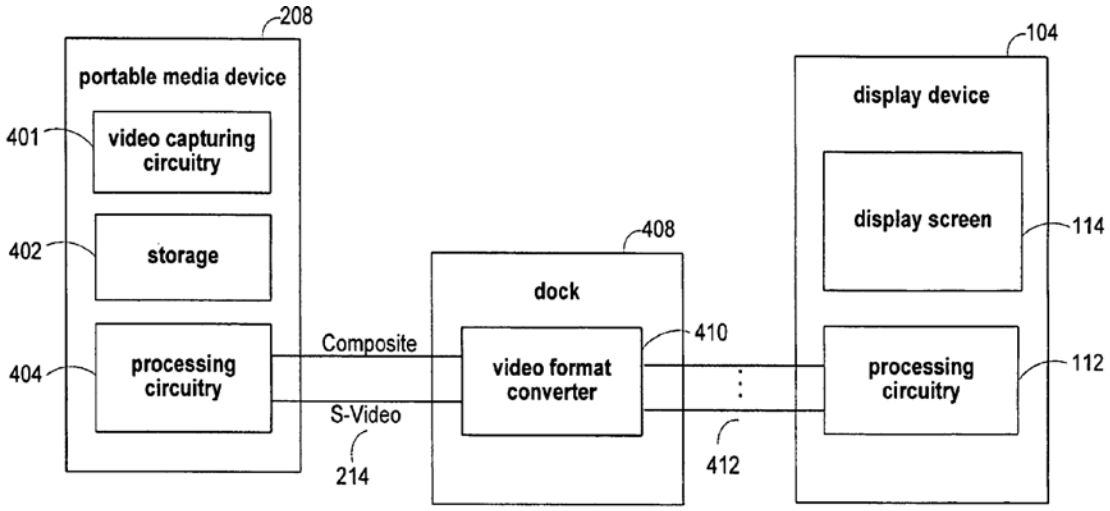

Fig. 4

Figure 4, reproduced above, depicts video format converter (410) facilitating the display in standard television (104) of data broadcast to mobile computing device (208). Ex. 1006 ¶ 61.

As depicted in Figure 4 above, Balram discloses placing portable media device (208) into docking station (408) including video format converter (4010) which, upon receiving low-resolution media content from mobile device (208), increases the horizontal and vertical pixels thereof for upscaling the signal from low resolution to high resolution. *Id.* ¶¶ 46, 58, 84. Further, Balram discloses an upconversion process to reformat the smaller size format of multimedia content received from mobile device (208) into a corresponding larger size format for display on display device (104). *Id.* ¶¶ 84–88.

2. Overview of Bennett

Bennett relates to a video processing system (VPS) in a set top box that receives an input video signal and produces a plurality of video output

video signals having video with characteristics in formats suitable for each of a plurality of video devices. Ex. 1005 ¶ 14. Figure 1 of Bennett, reproduced below, illustrates the VPS.

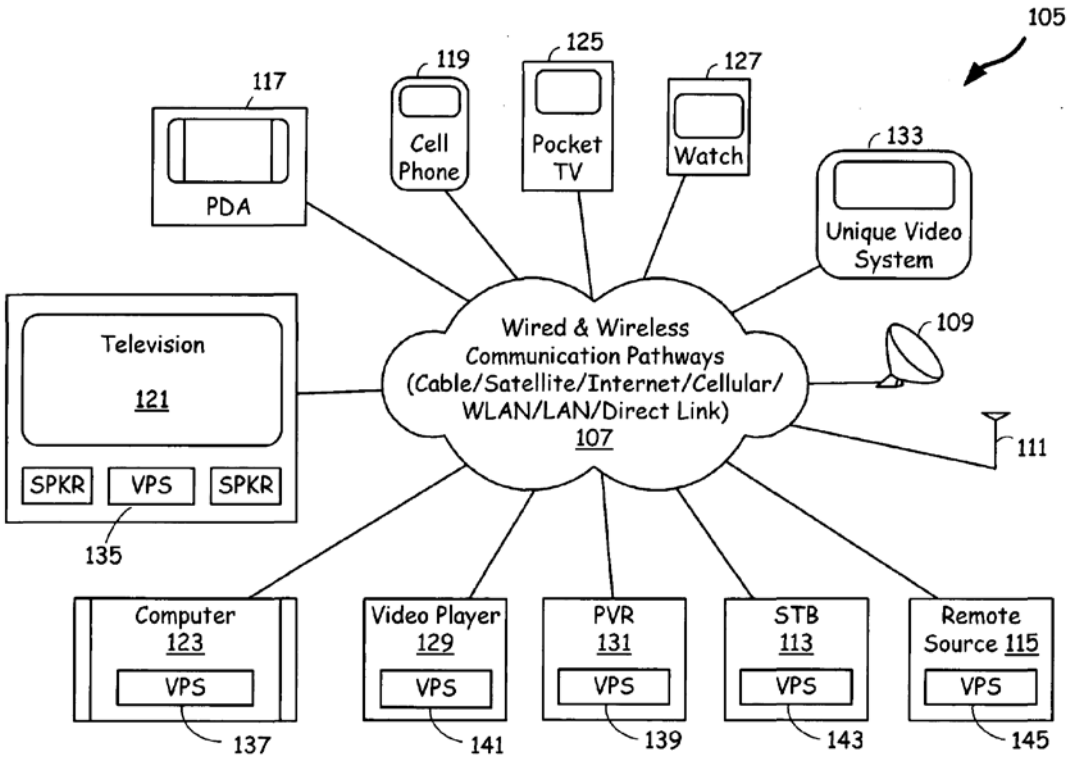

FIG. 1

Figure 1, reproduced above, illustrates VPS (143) facilitating the display of broadcast data in the unique video formats suitable for various user devices via communications network (107). Ex. 1005 ¶ 27.

As depicted in Figure 1 above, Bennett discloses that VPS (143) incorporated in set top box (113) converts a received video input signal (e.g., TV program/broadcast) in formats suitable for display in various user devices (109, 117, 119, 125, 127) including television (121). *Id.* In

particular, upon receiving the video input signal, VPS (143) queries the user devices and obtains their audio/video format requirements to determine how to reformat the video input signal, which it converts and broadcasts in formats suitable to each of the user devices. *Id.* ¶¶ 14, 51–53. Bennett also discloses an authentication process during which an Internet based vendor or cable/satellite verifies the authenticity of a user's credentials before being allowed to view a TV program on a pay-per view basis. *Id.* ¶ 42.

3. Obviousness Analysis

Petitioner provides explanations to account for all of the claim limitations required by claims 1–6, 8, 10–21, 23–38, 40, 42–53, and 55–61, and reasons for modifying the teachings of Wang based on Balram and Bennett, citing Mr. Wechselberger's Declaration for support. Pet. 11–47; Ex. 1003.

a. Claim 1

Petitioner argues that Wang teaches the limitations of claim 1 as set forth in our discussion of claim 1 in section II.C above. In addition, Petitioner asserts the following:

> [T]o the extent *Wang* is argued to not expressly teach upconverting the resolution, it would have nonetheless been obvious to combine *Balram*'s express teaching of upconverting the resolution of video content received from a mobile device to a higher resolution for a larger external display to perform *Wang*'s format conversion of video content intended for display on the small screen of a mobile device to a format for display on a larger external display.

Pet. 30 (citing Ex. 1003 ¶¶ 89–92).

Petitioner contends that Balram discloses a video converter included in a docking station into which a portable device is inserted to communicate low resolution multimedia content intended to be displayed on the small screen of the portable device. *Id.* at 31 (citing Ex. 1006 ¶¶ 12, 45, 50, 54, 61–63, 78, 79, 84). Upon receiving the multimedia content from the portable device, the video converter upscales the low-resolution content of the mobile device to the higher resolution of the larger external display. *Id.* Therefore, Petitioner submits that, "*Balram* expressly teaches an upconversion process in which a video signal in a first format intended for a small display is converted to a second format for a larger display by increasing the resolution of the video content." *Id.* Consequently, Petitioner concludes that a PHOSITA would have been motivated to incorporate Balram's upconversion and upscaling process into Wang's MTSCM STB to convert video content intended for a small screen of Wang's mobile device to a larger screen format of Wang's external display. *Id.* at 32 (citing Ex. 1003 ¶¶ 89–92). According to Petitioner, the motivation for the proposed combination of Wang and Bennett emanates from the facts that (1) the two references pertain to similar systems with similar architecture that may be implemented in STBs seeking to address similar problems; (2) Balram's upscaling of resolution would have furthered Wang's goal of achieving user enjoyment by enhancing the resolution of multimedia content in the larger display; and (3) a person of ordinary skill in the art would have had a reasonable expectation of success in making the combination because the hardware and software for processing video content to upscale its resolution

was already well-known. *Id.* at 32–33.

Further, to the extent that Wang does not expressly teach "querying the mobile computing device to determine the first size format," Petitioner relies on Bennett's disclosure of a VPS for reformatting a video signal received from a video source (e.g., mobile computer) to be displayed on one or more display devices in disparate display formats (e.g., TV). *Id.* at 35–36 (citing Ex. 1005 ¶¶ 41, 52, 63). In particular, Petitioner contends that Bennett's format conversion involves "querying all the video devices within the operational range and eliciting video format information [including screen resolution information] regarding the video devices." *Id.* (citing Ex. 1005 ¶¶ 14, 15, 39, 53). In support of the proposed combination of Wang and Bennett, Petitioner asserts the following:

> A PHOSITA would have been motivated to modify the system of *Wang* in view of *Bennett* so that *Wang*'s mobile STB sends a message to *Wang*'s cellular phone to learn the size format of its screen (i.e., the first size format), as an alternative to or besides *Wang*'s teaching of recognizing this format from the cellular phone's multimedia signal itself. A PHOSITA would have recognized that the first size format must be determined to upconvert to the second size format, and the particular way of determining the first size format would have simply been a mere design choice from a finite number of options: the size format could be determined from the received signal itself or a message could be sent to the device in a "query." Thus, at minimum, it would have been "obvious to try" a "query" similar to that taught by *Bennett.*
>
> A PHOSITA would have been motivated to make such a modification to enable the system to function with a wide variety of video sources of varying size formats and to reduce the

> potential for introduction of any latency caused by having to recognize the signal format from the signal itself after receipt, rather than already knowing it in advance because of a query. While *Bennett* does not specifically teach a mobile phone as a video signal source, a PHOSITA would have recognized that the querying process taught by *Bennett* would not change in querying a mobile phone rather than querying the devices in *Bennett*, such as *Bennett*'s personal computer. Thus, the modification of *Wang* to use such a querying process would have been simply the use of a known querying technique in a known video conversion system to modify a similar video conversion system, yielding predictable results. And because the architecture of *Wang* and *Bennett* are similar, such implementation would be easily implemented.

Id. at 36–37 (citations omitted).

As discussed in section II.C above, Petitioner asserts Wang teaches or suggests the claim limitation of "querying the display device." Alternatively, Petitioner contends Bennett's disclosure of querying video display devices to elicit therefrom screen resolution information to perform upconversions and enhanced resolution teaches the querying of display devices. *Id.* at 38 (citing Ex. 1003 ¶¶ 52, 53, 14, 15, 64, 72). In support of this combination, Petitioner contends:

> A PHOSITA would have been motivated to perform this query to achieve *Wang*'s goal of outputting a video signal with the increased size format of the larger external display to "allow[] true realization and enjoyment" of the multimedia content rather than requiring the user to use the small screen size of the mobile device. A PHOSITA would have also been motivated to perform this querying to allow *Wang*'s MTSCM to automatically output to many display devices. Such a modification also would have constituted a simple design choice from a finite number of

> options, i.e., hard-coding the destination device resolution, requiring user input of that resolution, or querying the destination device for its resolution, and would have also, at minimum, been "obvious to try."

Id. at 38–39 (citations omitted).

Furthermore, Petitioner contends, to the extent Wang does not teach or suggest "upscaling the received first media content from the first size format to the second size format to generate upconverted first media content, wherein upscaling includes increasing a total number of horizontal," Balram teaches the limitation. *Id.* at 42. In particular, Petitioner contends that Balram "expressly teaches 'scaling' a low-resolution video signal formatted for a mobile device having a small screen size to a higher-resolution video signal for a larger external display." *Id.* According to Petitioner, Balram also teaches a video converter that may upscale the video resolution of a display screen from 640x480 to 1280x720 or 1920x1080. *Id.* (citing Ex. 1006 ¶¶ 84, 86). In support of the proposed combination of references, Petitioner submits the following motivation statement:

> A PHOSITA would have understood that 640x480 refers to 640 horizontal pixels and 480 vertical pixels, while 1280x720 refers to 1280 horizontal pixels and 720 vertical pixels, and the total is increased. Further, as discussed, a PHOSITA would have understood *Balram*'s upscaling is applied to each of digital video frames. Further, the result is that the pixel dimensions match the native display resolution of the second size format of the display device, because *Balram* teaches that the lower resolution is scaled "to the resolution of display screen 114."

Pet. 43 (citations omitted).

Patent Owner reiterates the same arguments discussed above in

section II.C regarding alleged deficiencies in Wang. Prelim. Resp. 35–37. As discussed above, these arguments are not persuasive based on the current record. In light of the foregoing, we are persuaded that Petitioner has shown adequately for the purposes of this Decision that the cited teachings of Wang, Balram, and Bennett at least suggest the aforementioned disputed limitations of claim 1 and that a person of ordinary skill in the art would have been motivated to combine the references' teachings in the manner asserted by Petitioner. Therefore, based on the present record, Petitioner has established a reasonable likelihood that it would prevail in showing that the subject matter of claim 1 would have been obvious over the combination of Wang, Balram, and Bennett.

b. Claims 2–6, 8, 10–21, 23–38, 40, 42–53, and 55–61

We have reviewed Petitioner's explanations and supporting evidence regarding claims 2–6, 8, 10–21, 23–38, 40, 42–53, and 55–61 and find them persuasive. Pet. 48–63. Petitioner builds upon its analysis for claim 1, and further relies upon the combination of Wang, Balram, and Bennett to explain why the additional limitations also would have been obvious over the three references. *Id.* Patent Owner relies on the same arguments discussed above for claim 1 (as also applied to similar limitations in independent claims 30 and 32). Prelim. Resp. 35–37. Based on the present record, Petitioner has established a reasonable likelihood that it would prevail on its assertion that claims 2–6, 8, 10–21, 23–38, 40, 42–53, and 55–61 would have been obvious over the combination of Wang, Balram, and Bennett.

c. Conclusion

In view of the foregoing, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on its assertion that claims 1–6, 8, 10–21, 23–38, 40, 42–53, and 55–61 are unpatentable as obvious under § 103(a) over the combination of Wang, Balram, and Bennett.

E. Real Parties In Interest

A petition must identify all real parties in interest ("RPIs"). 35 U.S.C. § 312(a)(2). The petitioner bears the burden of persuasion to show that it accurately names all RPIs. *Applications in Internet Time, LLC v. RPX Corp.*, 897 F.3d 1336, 1343, 1356 (Fed. Cir. 2018) ("*AIT*") (citing *Zerto, Inc. v. EMC Corp.*, Case IPR2014-01295, slip op. at 6–7 (PTAB Mar. 3, 2015) (Paper 34)). We generally accept a petitioner's initial identification of its RPIs unless the patent owner presents some evidence to support its argument that an unnamed party should be included as an RPI. *Worlds Inc. v. Bungie, Inc.*, 903 F.3d 1237, 1242 (Fed. Cir. 2018).

Whether a particular entity is an RPI is a "highly fact-dependent question" that is assessed "on a case-by-case basis." OFFICE PATENT TRIAL PRACTICE GUIDE, 77 Fed. Reg. 48,756, 48,759 (Aug. 14, 2012) ("TPG"). We consider multiple factors, including the following: whether a non-party is funding, directing, or controlling the IPR; whether the non-party had the ability to exercise control; the non-party's relationship with the petitioner and with the petition, including any involvement in the filing; and the nature of the entity filing the petition. *Id.* at 48,759–60.

The Petition identifies Unified Patents, Inc. ("Unified"), as the sole RPI in this proceeding. Pet. 66. Unified asserts that "[n]o other party exercised control or could exercise control over Unified's participation in this proceeding, the filing of this petition, or the conduct of any ensuing trial," and provides voluntary interrogatory responses in support of that certification. *Id.* (citing Ex. 1010). Patent Owner, relying primarily on the Federal Circuit's decision in *AIT*, contends that Petitioner should have named Roku, Inc. ("Roku") as an RPI and that, therefore, we should dismiss the Petition. Prelim. Resp. 14–15. Patent Owner contends because Roku was a paid member of Unified prior to Patent Owner filing a suit against Roku asserting infringement of the '223 patent, and remains a member, Roku has a preexisting, established relationship with Unified. *Id.* In addition, Patent Owner asserts that Roku is the beneficiary of the Petition because "Roku lodged the same defense of invalidity, and stands to gain in its litigation against [Patent Owner] if Petitioner is successful here." *Id.* at 17.

On this record, we are persuaded that the facts of this case are distinguishable from *AIT* where Salesforce—the alleged unnamed RPI—made a payment to petitioner RPX shortly before RPX filed its petition, discussed the patent and related litigation with RPX, and shared a board member with RPX; and RPX negotiated a license on behalf of Salesforce. *See AIT*, 897 F.3d at 1340–42. Further, unlike here, the alleged unnamed RPI in *AIT* would have been barred from filing a petition because of the time bar under 35 U.S.C. § 315(b). *Id*. at 1338–39. In this case, Patent Owner

does not allege that Roku would have been time barred, so this proceeding does not implicate § 315(b). *Cf. Ventex Co., Ltd. v. Columbia Sportswear N. Am., Inc.*, Case IPR2017-00651 (Jan. 24, 2019) (Paper 152) (precedential). The record also contains no evidence of client-specific or pre-filing communications between Unified and Roku regarding this proceeding or the preparation of the Petition filed in this proceeding.

There is also no specific evidence that the Petition was filed at Roku's behest. In particular, we are not persuaded that the mere fact that Roku asserted invalidity based on Wang in the district court litigation (after the filing of the Petition in this proceeding) is enough, without more, to show that Roku is an unnamed RPI as Patent Owner contends. *See* Prelim. Resp. 16–17 (citing Ex. 2005).

Consequently, the evidence and arguments advanced by Patent Owner do not lead us to determine that Roku is an unnamed RPI to this proceeding.

F. Discretionary Denial Under 35 U.S.C. § 325(d)

In determining whether to institute an *inter partes* review, "the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office." 35 U.S.C. § 325(d). The panel has considered the factors set forth in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, Case IPR2017-01586, slip op. at 17−18 (PTAB Dec. 15, 2017) (Paper 8) (informative), and determined the factors do not weigh in favor of exercising discretion under § 325(d).

Patent Owner argues that the Board should exercise its discretion under § 325(d) to deny the Petition because Balram was considered during prosecution; Bennett is cumulative to another reference, Bennett II,[8] that was relied upon by the Examiner during prosecution, because they share a specification; and Wang is substantially similar to another reference, Tee,[9] which also was considered by the Examiner. Prelim. Resp. 19. These arguments are not persuasive.

As correctly noted by Petitioner, the Examiner's statement of reasons for allowance of August 11, 2014 indicated that none of Balram, Tee, Bennett II, and Herrington,[10] or any combination thereof, teaches or suggests

[8] Ex. 1009.

[9] Ex. 1016.

[10] Ex. 1024.

the claim limitations of transmitting multimedia content from unicast and multicast broadcasts, and using a predefined protocol stack of video packets. *See* Pet. 3–4, 64. Thus, although Balram and Bennett II were relied upon as teaching, respectively, the upscaling and querying limitations, neither reference was relied upon for the claim limitations resulting in the allowance of the '223 patent. *Id.* at 64. That is, during prosecution of the '223 patent, the Examiner relied on Balram and Bennett II for limitations that did not result in allowance. Further, we do not agree with Patent Owner's assessment that Wang is substantially similar to Tee. While both Wang and Tee generally relate to transmitting to an external display device multimedia content intended for display in the smaller screen of a mobile computing device, "Tee does not disclose a mobile set top box that includes a docking port configured to accept a mobile computing device that has a native resolution of a first size format." *See* Ex. 1002, 557 (Patent Owner's Office Action response of February 6, 2012 during prosecution of the '223 patent); *see also* Tee ¶ 7.[11] As detailed in our discussion of claim 1 above, Petitioner has made a sufficient showing on this record that Wang teaches the cited claim limitations missing in Tee. Because Wang was not previously

[11] In light of Patent Owner's arguments, the Examiner withdrew the obviousness rejection of the claims over the combination of Tee and Kung (US 2002/0190920 A1; pub. Dec. 19, 2002) previously entered in the Non-Final Office Action of October 4, 2011, and entered a new rejection in the Final Office Action of May 10, 2012 over the combination of Balram, Bennett II, and Herrington (US 6,922,843 B1, iss. July 26, 2005). *See* Ex. 1002, 569–590.

considered during original prosecution, and Petitioner has made a sufficient showing that Wang teaches or suggests the claim limitations that led to allowance of the '223 patent, we agree with Petitioner that Wang is properly relied upon in the present challenge grounds. Pet. 64. We decline to exercise our discretion under § 325(d) to deny the Petition.

G. Discretionary Denial for Vertically Redundant Grounds

Patent Owner argues that Petitioner's two challenge grounds are "vertically redundant" because Petitioner has not explained the relative weakness and strength of the two grounds. Prelim. Resp. 20–22. In particular, Patent Owner argues that Petitioner's second ground adds Balram and Bennett to Wang of the first ground without providing the required explanations as to the strengths and weaknesses of the two grounds. *Id.* at 22. According to Patent Owner, Petitioner's proffered rationale to combine the references cannot replace the required explanation regarding the relative strength and weakness of each ground to avoid vertical redundancy. *Id.* Accordingly, Patent Owner requests denial of institution of the Petition. *Id.* at 23. These arguments are not persuasive.

As detailed in section II.C above, because Petitioner has satisfied the threshold for institution as to at least one claim, we institute *inter partes* review on all challenged claims and all grounds raised in the Petition.[12] *See*

[12] We have considered Patent Owner's remaining arguments, but we are not convinced that denial of institution is warranted.

SAS, 138 S. Ct. at 1359–60 (holding that a decision to institute under § 314 may not institute on fewer than all claims challenged in the petition); *see also* GUIDANCE ON THE IMPACT OF SAS ON AIA TRIAL PROCEEDINGS (Apr. 26, 2018), *available at* https://www.uspto.gov/patents-application-process/patent-trial-and-appeal-board/trials/guidance-impact-sas-aia-trial) (noting that "if the PTAB institutes a trial, the PTAB will institute on all challenges raised in the petition").

III. CONCLUSION

For the foregoing reasons, we conclude that the information presented in the Petition and evidence in this record establish that there is a reasonable likelihood that Petitioner would prevail in challenging claims 1–6, 8, 10–21, 23–38, 40, 42–53, and 55–61 of the '223 patent based on the grounds discussed above.

At this juncture, we have not made a final determination with respect to the patentability of the challenged claims, nor with respect to claim construction.

IV. ORDER

For the foregoing reasons, it is

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted with respect to all grounds of unpatentability set forth in the Petition:

Claims	Basis	References
1–6, 8, 10–21, 23–38, 40, 42–53, and 55–61	§ 103	Wang
1–6, 8, 10–21, 23–38, 40, 42–53, and 55–61	§ 103	Wang in view of Balram and Bennett

and FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this Decision.

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