

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY INTERACTIVE ENTERTAINMENT LLC,
Petitioner,

v.

INTELLECTUAL PIXELS LIMITED,
Patent Owner.

IPR2021-00237
Patent 10,681,109 B2

Before JENNIFER MEYER CHAGNON, STACY B. MARGOLIES, and
IFTIKHAR AHMED, *Administrative Patent Judges*.

AHMED, *Administrative Patent Judge*.

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

I. INTRODUCTION

Sony Interactive Entertainment LLC (“Petitioner”) requested an *inter partes* review of claims 1–18 (the “challenged claims”) of U.S. Patent No. 10,681,109 B2 (Ex. 1001, “the ’109 patent”). Paper 3 (“Petition” or “Pet.”). Intellectual Pixels Limited (“Patent Owner”) filed a Preliminary Response. Paper 11 (“Prelim. Resp.”). Patent Owner informed us that it has disclaimed claims 13–18. *Id.* at 5 (citing Ex. 2001).

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless it is determined that there is a reasonable likelihood that the petitioner would prevail with respect to at least one of the claims challenged in the petition. Based on the information presented in the Petition and the supporting evidence, and having considered Patent Owner’s arguments in the Preliminary Response, we are persuaded that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the remaining challenged claims. Accordingly, we institute an *inter partes* review of all remaining challenged claims on the grounds set forth in the Petition.

Our factual findings and conclusions at this stage of the proceeding are based on the evidentiary record developed thus far. This is not a final decision as to patentability of the remaining challenged claims. Any final decision will be based on the full trial record, including any response to the Petition timely filed by Patent Owner.

II. BACKGROUND

A. *Real Parties in Interest*

Petitioner identifies itself, Sony Corporation, Sony Corporation of America, and Sony Interactive Entertainment Inc. as the real parties-in-

interest. Pet. 1. Patent Owner identifies itself as the real party-in-interest. Paper 5, 1.

B. Related Matters

According to the parties, the '109 patent has been asserted in *Intellectual Pixels Ltd. v. Sony Interactive Entertainment LLC*, No. 8:20-cv-01422-JVS-KES (C.D. Cal.). Pet. 1; Paper 5, 1. Also according to the parties, a parent patent of the '109 patent, U.S. Patent No. 8,667,093, has been asserted in *Intellectual Pixels Ltd. v. Sony Interactive Entertainment LLC*, No. 8:19-cv-01432-JVS-KES (C.D. Cal.), which has been stayed pending final resolution of IPR2020-01248 challenging claims from that patent. Pet. 1, 4 (citing Ex. 1010); Paper 5, 1.

C. The '109 Patent (Ex. 1001)

The '109 patent, titled “Image Display System with Visual Server,” was filed on June 29, 2017, and claims priority to a provisional application filed on January 24, 2001. Ex. 1001, codes (22), (54), (60), (63). The '109 patent issued on June 9, 2020. *Id.* at code (45). The '109 patent “relates to computer graphics and a graphical image display system that use a visual server to generate and transmit images to a client.” *Id.* at 1:30–33.

Figure 1 of the '109 patent is reproduced below.

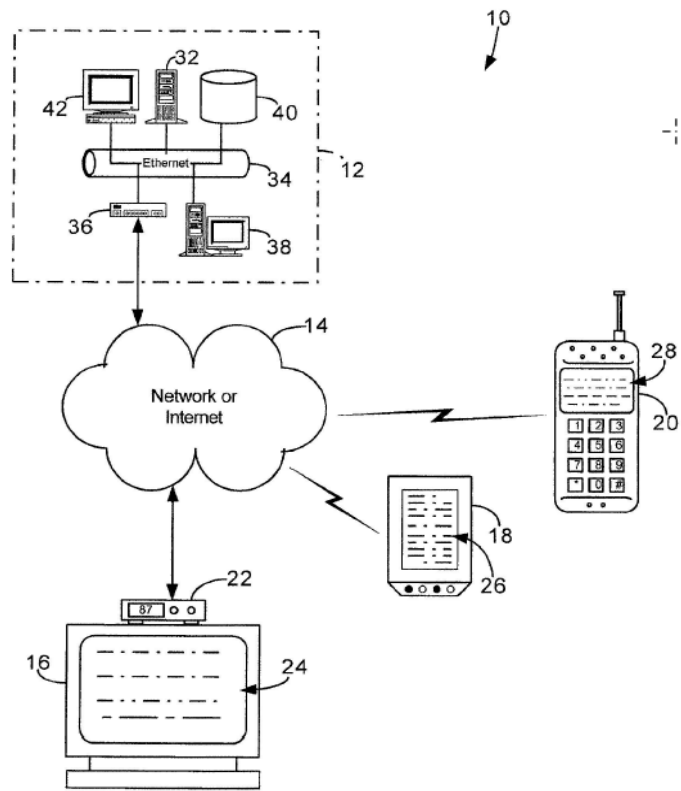


Figure 1 shows image display system 10 including visual server 12 and associated components in communication with a plurality of clients (i.e., set-top box 22, personal digital assistant (“PDA”) 18, and cellular telephone 20). Ex. 1001, 5:36–54. The '109 patent notes that “for reasons of cost, size, and power consumption, sophisticated three dimensional graphics are not available on common consumer client devices such as personal digital assistants (PDAs) mobile telephones and set-top boxes.” *Id.* at 3:26–30; *id.* at 5:51–52 (listing Palm Pilot and Handspring Visor as examples of PDAs).

The '109 patent describes displaying such graphics on these clients “through the use of the resources of a remote visual server.” *Id.* at 3:41–43. The server has image data processing capabilities, receives image-modifying data corresponding to a generated image from a client, generates a modified image based on that image-modifying data, and transmits the modified

image as compressed data back to the client. *Id.* at 3:51–57. “In generating the image-modifying data at the client and processing the image-modifying data at the visual server, the typical data processing segment is a frame,” and “compressed data comprising a frame” is transmitted to the client. *Id.* at 4:10–12, 4:48–55, 6:63–7:1. The ’109 patent teaches use of “a protocol such as MPEG4” for compressing and transmitting an image to a client. *Id.* at 9:26–28. According to the patent, “[t]he use of an industry standard image compression protocol such as MPEG allows . . . use of facilities that are already present in most clients.” *Id.* at 9:32–34. The clients include “processing ability to uncompress the compressed image data . . . and display the image defined by the decompressed data on the client image display.” *Id.* at 3:67–4:3.

Figure 3 of the ’109 patent is reproduced below.

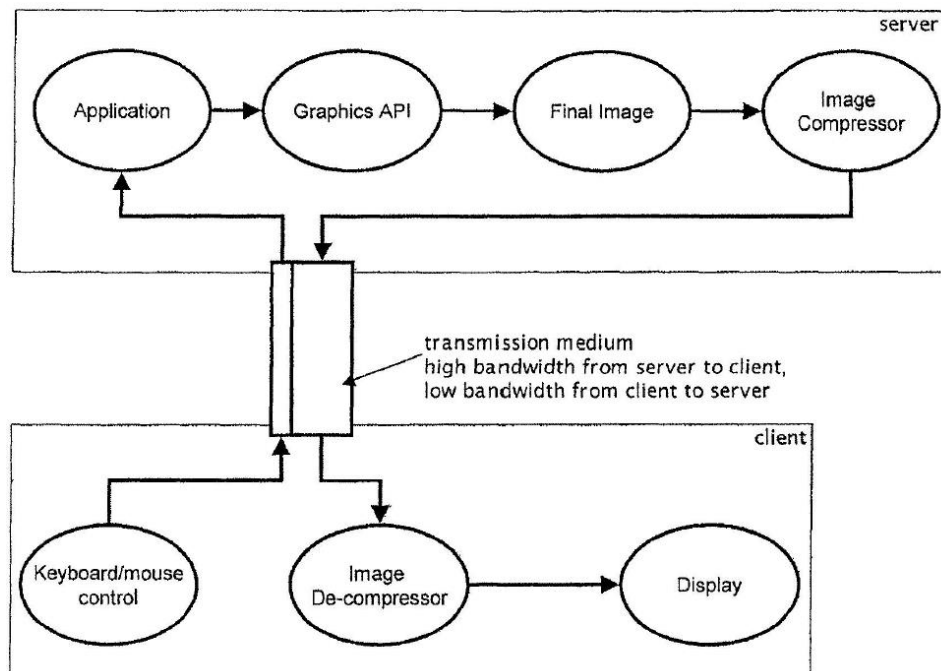


Figure 3 shows that image data is compressed at the server and transmitted to the client, where it is decompressed and displayed to the user. *See id.* at

8:1–22; *see also id.* at Figs. 2A–2D (a flowchart illustrating the processes executed on the server as well as the client to facilitate image generation).

D. Challenged Claims

Petitioner challenges claims 1–18, of which independent claims 1 and 8, and dependent claims 2–7 and 9–12 remain at issue. *See infra* Section I.E (addressing statutory disclaimer of claims 13–18). Claim 1 is reproduced below.

1. A method of hosting an interactive software application comprising:
 - running at a server the interactive software application;
 - receiving at the server user input signals from a client device, wherein the user input signals are used to control updating of the state of the interactive software application;
 - generating at least one updated image at the server in response to updating the state of the interactive software application; and
 - compressing the at least one updated image and transmitting the compressed updated image to the client device, wherein the server transmits the updated image as a compressed frame that can be decompressed and displayed as an updated image at the client device.

Id. at 9:55–10:2.

E. Disclaimer of Claims 13–18

Patent Owner states “because Patent Owner disclaimed claims 13–18, those claims challenged in Grounds I and II are no longer subject to IPR.” Prelim. Resp. 5. Patent Owner refers to its Notice of Filing a Statutory Disclaimer of Claims in a Patent under 37 C.F.R. § 1.321(a). Ex. 2001.

A “patent owner may file a statutory disclaimer under 35 U.S.C. § 253(a) in compliance with § 1.321(a) of this chapter, disclaiming one or more claims in the patent. No *inter partes* review will be

instituted based on disclaimed claims.” 37 C.F.R. § 42.107(e) (2019); 35 U.S.C. § 253(a) (2018) (providing that a patentee may “make disclaimer of any complete claim” in writing with the Patent and Trademark Office, and such disclaimer “shall thereafter be considered as part of the original patent”); *Guinn v. Kopf*, 96 F.3d 1419, 1422 (Fed. Cir. 1996) (“A statutory disclaimer under 35 U.S.C. § 253 has the effect of canceling the claims from the patent and the patent is viewed as though the disclaimed claims had never existed in the patent.”).

Here, Patent Owner filed a statutory disclaimer of claims 13–18 of the ’109 patent. Ex. 2001. Because those claims have been disclaimed under 35 U.S.C. § 253(a) in compliance with 37 C.F.R. § 1.321(a), no *inter partes* review shall be instituted as to those claims. See 37 C.F.R. § 42.107(e); *General Elec. Co. v. United Techs. Corp.*, IPR2017-00491, Paper 9 at 2–3 (PTAB July 6, 2017) (precedential) (declining to institute *inter partes* review when all challenged claims were disclaimed under 35 U.S.C. § 253(a)).

F. Timeliness of the Petition

As an initial matter, we consider whether the Petition complies with 35 U.S.C. § 311(c)(1) and 37 C.F.R. § 42.102 based on the June 29, 2017 filing date and June 9, 2020 issue date of the ’109 patent, and the December 4, 2020 filing date of the Petition. Paper 4, 1; Ex. 1001, codes (22), (45). Under 37 C.F.R. § 42.102, a petition may not be filed less than nine months from the grant of the challenged patent if it “is a patent described in section 3(n)(1) of the Leahy-Smith America Invents Act.” Section 3(n)(1) of the AIA states that such patents include those with a claim with an effective

filing date on or after March 16, 2013.¹ The challenged claims’ effective filing date in this case, however, depends on application of 35 U.S.C. § 100(i)(1)(B), which provides that the effective filing date means “the filing date of the earliest application for which the patent or application is entitled, as to such invention, . . . to the benefit of an earlier filing date under section 120.” In relevant part, 35 U.S.C. § 120 provides that

[a]n application for patent for an invention disclosed in the manner provided by section 112(a) . . . in an application previously filed in the United States . . . shall have the same effect, as to such invention, as though filed on the date of the prior application . . . if it contains or is amended to contain a specific reference to the earlier filed application.

The ’109 patent states that it is a

[c]ontinuation of application No. 14/ 192,789, filed on Feb. 27, 2014, now Pat. No. 9,699,238, which is a continuation of application No. 13/296,776, filed on Nov. 15, 2011, now Pat. No. 8,667,093, which is a continuation of application No. 12/538,347, filed on Aug. 10, 2009, now Pat. No. 8,131,826, which is a continuation of application No. 10/037,688, filed on Jan. 4, 2002, now Pat. No. 7,587,520.

Ex. 1001, code (63).

Patent Owner asserts that “[t]he application for the ’109 Patent was filed on June 29, 2017 claiming priority through various intermediate applications to U.S. Provisional Application No. 60/263,854, filed on January 24, 2001.” Prelim. Resp. 6. Petitioner asserts that “the ’109 patent issued from a patent application filed before the America Invents Act,” and

¹ Section 3(n)(1) of the AIA applies an “effective date” defined as “upon the expiration of the 18-month period beginning on the date of the enactment of this Act.” Because the AIA was enacted in law on September 16, 2011 (Pub. L. No. 112-29, 125 Stat. 284), the effective date of Section 3 is March 16, 2013.

“certifies pursuant to Rule 42.104(a) that the ’109 patent is available for *inter partes* review.” Pet. 2, 3 n.3. Based on our review of the present record, and absent evidence to the contrary, we consider the ’109 patent to have an effective filing of at least November 15, 2011, which is the filing date of application No. 13/296,776. Ex. 1001, code (63). We therefore consider the ’109 patent eligible for *inter partes* review on December 4, 2020, the filing date of the Petition. Paper 4, 1.

G. The Asserted Grounds

As against the claims remaining after Patent Owner’s disclaimer, Petitioner asserts the following grounds of unpatentability, relying on the declaration testimony of Dr. Henry Fuchs (Ex. 1002). Pet. 3–4, 19–73.

Claim(s) Challenged	35 U.S.C. §²	References
1, 3–12	103(a)	Wiltshire ³ , Saha ⁴
2	103(a)	Wiltshire, Saha, Chen ⁵
6, 11, 12	103(a)	Wiltshire, Saha, PC Magazine ⁶

III. ANALYSIS

A. Principles of Law

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is

² Because the challenged claims of the ’109 patent have an effective filing before March 16, 2013 (*see supra* § I.F), patentability is governed by the pre-AIA version of 35 U.S.C. § 103.

³ U.S. Patent No. 6,409,602 B1, issued June 25, 2002 (Ex. 1004, “Wiltshire”).

⁴ U.S. Patent No. 6,404,817 B1, issued June 11, 2002 (Ex. 1005, “Saha”).

⁵ Walter Y. Chen, The Development and Standardization of Asymmetrical Digital Subscriber Line, IEEE COMMUNICATIONS MAGAZINE, Vol. 37, No. 5, 68–72 (May 1999) (Ex. 1006, “Chen”).

⁶ PC MAGAZINE, Vol. 18:16, Sept. 21, 1999 (Ex. 1007, “PC Magazine”).

unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. See *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

As set forth in 35 U.S.C. § 103(a),

[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented 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.

The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.⁷ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). An obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). However, Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Instead, Petitioner must articulate a reason why a person of ordinary skill in

⁷ Neither party presents evidence of objective considerations of non-obviousness at this stage of the proceeding.

the art would have combined the prior art references. *In re NuVasive*, 842 F.3d 1376, 1382 (Fed. Cir. 2016).

We analyze Petitioner’s asserted grounds of unpatentability in accordance with these principles to determine whether Petitioner has met its burden to establish a reasonable likelihood of prevailing in establishing unpatentability of the remaining challenged claims at trial.

B. Level of Ordinary Skill in the Art

We review Petitioner’s asserted obviousness grounds in view of the understanding of a person of ordinary skill in the art at the time of the invention. *Graham*, 383 U.S. at 17. Petitioner contends that a person of ordinary skill in the art “would have had at least (1) an undergraduate degree in computer science, electrical engineering, or an equivalent subject, together with two years of post-graduate experience in computer graphics; or (2) a master’s degree in computer science, electrical engineering, or equivalent subject, together with one year of postgraduate experience in computer graphics.” Pet. 14 (citing Ex. 1003 ¶ 23). Patent Owner does not propose any particular skill level in its Preliminary Response. *See generally* Prelim. Resp.

We determine, on the current record, that Petitioner’s proposed level of ordinary skill is consistent with the ’109 patent and the asserted prior art. *See 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). We adopt that level in deciding whether to institute trial. We will make a final determination as to the level of ordinary skill in the art, however, based on the full trial record.

C. 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) (2020). 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.

“Petitioner does not believe the claim terms need to be construed to resolve the issues presented in this Petition.” Pet. 18–19. Patent Owner proposes two claim terms for construction. Prelim. Resp. 10–14.

1. “*frame*”

Patent Owner contends that term “frame” recited in claims 1 and 8 means “a single instance of the display.” Prelim. Resp. 11 (citing Ex. 2002, 3; Ex. 2003, 3). Patent Owner asserts that Petitioner apparently construes “frame” to mean “picture” or “image” because Petitioner relies on Saha’s disclosure of MPEG standards that “describe an encoder to generate compressed ‘frames’ (also called ‘pictures’).” *Id.* at 10 (citing Pet. 29). Patent Owner asserts that construing “frame” to mean “picture” or “image” renders the claim limitation “wherein the server transmits the updated image as a compressed frame” illogical. *Id.* Patent Owner relies on dictionary definitions in support of its proposed construction. *Id.* at 11 (citing Exs. 2002, 2003). Patent Owner also contends that the ’109 patent specification

supports Patent Owner’s proposed construction. *Id.* (citing Ex. 1001, code (57), 4:10–12, 4:48–55). Patent Owner asserts that during prosecution of the ’109 patent, the applicant distinguished a prior art reference, U.S. Patent 6,929,549 B1 (“Yamada”), by characterizing this claim limitation “as requiring the generation of a frame followed by subsequent compression of the frame[, thus] show[ing] that a frame is a single instance of the display as a person of ordinary skill would have understood the term.” *Id.* at 11–12 (citing Ex. 2004, 273, 289; Ex. 2005, 19:33–49).

At this stage of the proceeding, we are not persuaded that the term “frame” should be narrowly construed in the manner proposed by Patent Owner. The portions of the specification that Patent Owner relies on do not characterize a frame in terms of the display. *See* Ex. 1001, 4:48–55 (describing “transmitting the modified image . . . as a compressed data comprising a frame”), 4:10–12 (“the typical data processing segment is a frame”). The mention of a “display” in the Abstract of the ’109 patent also does not support Patent Owner’s proposed construction because it refers to the manner in which “animation with complex 3-dimensional graphics” is handled. *See id.* at code (57) (“the visual server and client can provide a sequential display of modified frames on [a] client to support animation with complex 3-dimensional graphics”). Patent Owner’s attempt to seemingly exclude MPEG frames from the scope of the claimed “frame” (*see* Prelim. Resp. 10, 19–23) is not persuasive on the current record given the minimal disclosure of a compressed frame in the ’109 patent and given that the ’109 patent expressly discloses using “an industry standard image compression protocol such as MPEG” for compression and decompression. *See* Ex. 1001, 9:26–38.

We are also not persuaded on this record that the statements made by the applicant during prosecution of the '109 patent characterize the term “frame” in the manner proposed by Patent Owner. *See, e.g.*, Ex. 2004, 273 (arguing that “there is nothing to suggest that Yamada first generates a frame of image data and then compresses that frame prior to transmitting it to a remote client device”). Nor are we persuaded that the Examiner, in allowing the claim, necessarily understood applicant’s argument as limiting the term “frame” to a single instance of the display as Patent Owner contends. *See id.* (in distinguishing Yamada during prosecution, arguing also that Yamada’s “local execution of the game fails to meet the limitations of claim 21 which further includes the limitation that the server runs the interactive software application”). Patent Owner also does not explain why the specific dictionary definitions that it relies on provide the ordinary meaning of the term “frame” in the context of the challenged '109 patent claims. Prelim. Resp. 11.

For these reasons, we decline to adopt Patent Owner’s proposed construction of the term “frame.”

2. “*mobile device*”

Patent Owner contends that the term “mobile device” recited in challenged claims 6, 11, and 12 means “handheld computing device.” Prelim. Resp. 13. Patent Owner asserts that the specification provides two examples of such devices, PDAs and mobile telephones, which are both “handheld computing devices.” *Id.* (citing Ex. 1001, 3:26–30, 5:51–59). Patent Owner further asserts that “handheld computing device” is the ordinary meaning of the term “mobile device.” *Id.* at 13–14 (distinguishing a “mobile device” from a “portable device” such as a laptop computer)

(citing *U.S. Auto. Ass’n v. Wells Fargo Bank, N.A.*, No. 2:18-cv-366-JRG, 2019 WL 3423652, at *11 (E.D. Tex. July 29, 2019)).

At this stage of the proceeding, we are not persuaded that term “mobile device” should be narrowly construed in the manner proposed by Patent Owner. The term “mobile device” is not used in the specification. Although we agree with Patent Owner that the specification provides examples of client devices that may have been handheld devices, the ’109 patent also generally discloses addressing the problem that “consumer client devices” do not support three dimensional graphics “for reasons of cost, size, and power consumption.” Ex. 1001, 3:26–33. We are not persuaded on the record now before us that consumer client devices such as laptops that also are portable would fall outside the scope of the claimed “mobile device.” Patent Owner’s cited authority is also inapposite here given that a different patent was at issue there. *See U.S. Auto*, 2019 WL 3423652, at *11.

For these reasons, we decline to adopt Patent Owner’s proposed construction of the term “mobile device.”

D. Overview of the Asserted Prior Art

1. Wiltshire (Ex. 1004)

Wiltshire discloses a “slim terminal gaming system” that claims to “drastically reduce[] the cost and substantially increase[] the tamper resistance of individual gaming stations” by “allow[ing] concurrent access to multiple computer gaming programs from individual gaming stations by a patron.” Ex. 1004, code (54), 2:21–28.

Figure 1D of Wiltshire is reproduced below.

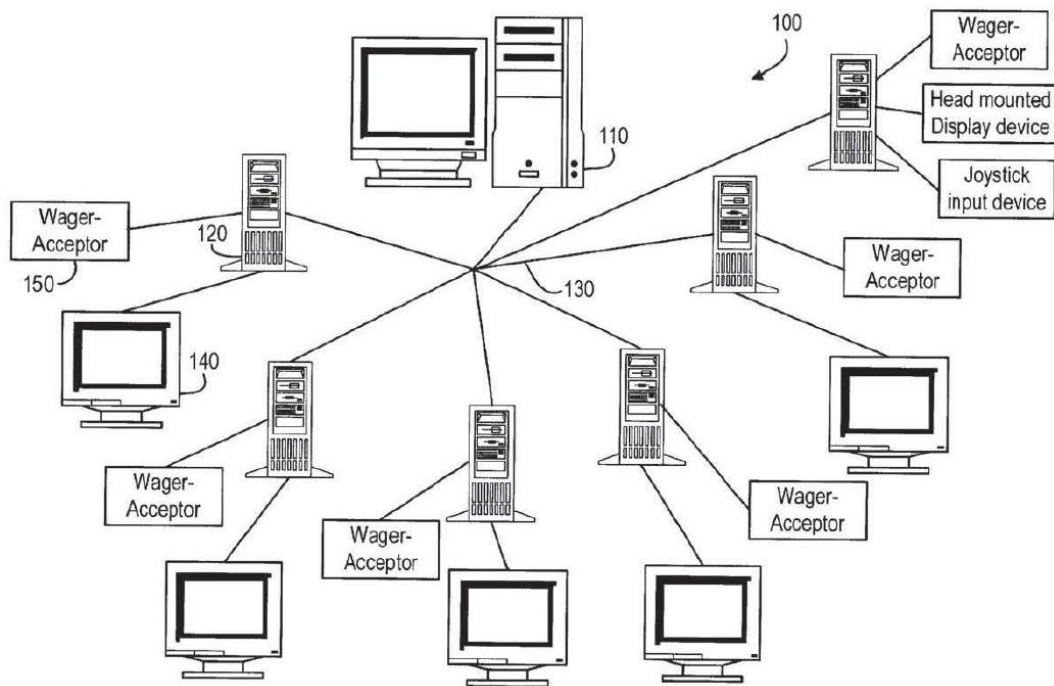


Figure 1D shows an overview of Wiltshire’s system, with “server/host computer 110 connected to a plurality of remote client/terminal computers 120.” *Id.* at 3:62–66. The client computers may have minimal storage, memory, and processing power because “the overwhelming majority of the gaming related and regulated processing is performed on the server/host computer.” *Id.* at 5:17–23. The game program running on the server determines which images are to be displayed on the display connected to each client computer and also processes any input commands detected by the client computer. *Id.* at 5:50–65.

Figure 2 of Wiltshire is reproduced below.

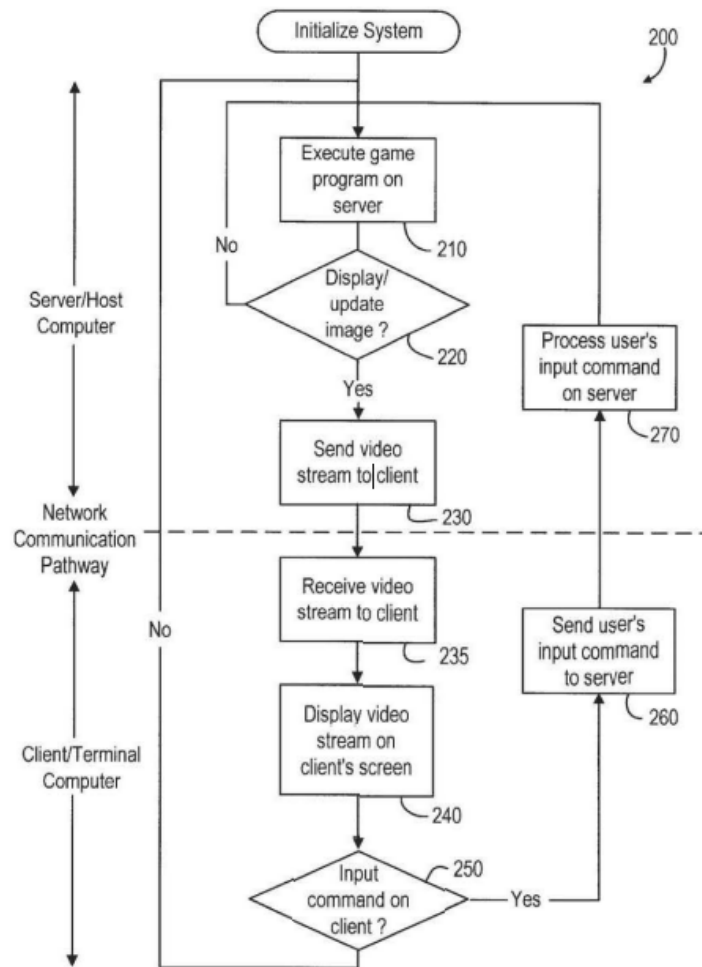


Figure 2 is a flow diagram showing the operation of Wiltshire's system. *Id.* at 7:7–8. Wiltshire explains that “an image is sent from server/host computer 110 to client/terminal computer 120,” where the “image may include . . . an encoded audio/video stream such as a compressed video MPEG stream.” *Id.* at 7:11–18. The image is generated, then transmitted to the client/terminal computer 120, where “program 122 then causes the image to be displayed on a screen of client/terminal computer 120 in stage 240.” *Id.* at 7:18–27. If an input command, such as a keystroke or a mouse click, is detected at stage 250, that command is transmitted back to the server at stage 260. *Id.* at 7:27–38.

2. *Saha (Ex. 1005)*

Saha “relates to the field of video compression, and in particular to a video decoder which provides robust error detection and concealment.”

Ex. 1005, 1:6–8, 5:66–67. Saha describes that in contrast to intraframe or still image compression techniques, “video compression algorithms for motion video use a concept referred to as interframe compression to remove temporal redundancies between frames.” *Id.* at 1:24–28, 1:44–47. Saha discloses that the “compression standard referred to as MPEG (Moving Pictures Experts Group) compression is a set of methods for compression and decompression of full motion video images[,] which uses the interframe and intraframe compression techniques.” *Id.* at 1:64–2:1. Saha explains

Interframe compression methods such as MPEG are based on the fact that, in most video sequences, the background remains relatively stable while action takes place in the foreground. The background may move, but large portions of successive frames in a video sequence are redundant. MPEG compression uses this inherent redundancy to encode or compress frames in the sequence.

An MPEG stream includes three types of pictures, referred to as the Intra (I) frame, the Predicted (P) frame, and the Bi-directional Interpolated (B) frame. The I (intra) frames contain the video data for the entire frame of video and are typically placed every 10 to 15 frames ... and are generally only moderately compressed. Predicted frames are encoded with reference to a past frame, i.e., a prior Intraframe or Predicted frame. Thus P frames only include changes relative to prior I or P frames [and] receive a fairly high amount of compression.

Id. at 2:14–30.

3. *Chen (Ex. 1006)*

Chen discusses the development and standardization of asymmetrical digital subscriber line (“ADSL”), one of a variety of digital subscriber line

(“DSL”) systems built upon the existing twisted-pair telephone technology. Ex. 1006, Abstract, 68.⁸ Chen discusses that ADSL can provide higher speed download bandwidth to a user along with lower speed upload bandwidth from the user, making it “well suited to the concept of a video-on-demand service.” *Id.* at 69. The video, audio channel, and associated overhead can be transmitted within a 1.5 Mb/s downstream channel, sufficient to receive on-demand MPEG video. *Id.* An upstream channel of 16–64 kb/s is provided to send back control signals for interactive commands such as pause, play, and so forth. *Id.*

4. *PC Magazine (Ex. 1007)*

PC Magazine is a magazine article that provides details about Apple’s then newly-announced iBook portable computer. Ex. 1007, 9. The article describes the iBook as weighing 6.6 pounds, with a 12.1 inch display, a 300 MHz G3 processor, and a battery life of over six hours. *Id.* According to the article, iBook users can roam up to 150 feet from base stations using Apple’s AirPort wireless technology that supports data-transfer rate of 11 Mbps. *Id.*

E. *Obviousness of Claims 1 and 3–12 over Wiltshire and Saha*

Petitioner contends that claims 1 and 3–12 are unpatentable as obvious over the combination of Wiltshire and Saha. Pet. 13–58. For the reasons that follow, we are persuaded that the evidence, including Dr. Fuchs’s testimony, sufficiently supports Petitioner’s arguments and, therefore, establishes a reasonable likelihood of prevailing with respect to claims 1, 3–5, and 7–10 on this ground.

⁸ Page numbers cited in this Decision are the underlying page numbers of the references themselves.

1. *Independent Claim 1*

- a) *“A method of hosting an interactive software application comprising:”*

Petitioner contends Wiltshire teaches the preamble because it discloses hosting gaming programs on its server. Pet. 19 (citing Ex. 1004, code (57), 1:26–43, 2:35–44, 7:8–9; Ex. 1002 ¶ 56). Petitioner contends that users interact with the gaming programs by sending input commands “such as mouse movements, mouse clicks or keystrokes” from the client computer to the server running the gaming program, and these input commands are used by the gaming program to “determine[] which images are to be displayed on a screen of the client/terminal computer.” *Id.* at 20 (citing Ex. 1004, 5:57–65; Ex. 1002 ¶ 57).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp. Based on our review and consideration of the current record, we determine that the information presented sufficiently supports, for purposes of institution, Petitioner’s assertions relating to the preamble of claim 1.⁹

- b) *“running at a server the interactive software application;”*

Petitioner contends that Wiltshire discloses this limitation because Wiltshire’s server “exclusively” executes the gaming programs, and the gaming program is an interactive software application because a player interacts with the gaming program. Pet. 20–21 (citing Ex. 1004, 2:35–39, 3:62–66, 7:8–9, Figs. 1A, 2; Ex. 1002 ¶¶ 60–63).

⁹ At this stage of the proceeding, we do not decide whether the preamble of claim 1 is limiting.

Patent Owner does not specifically respond to this contention. *See generally* Prelim. Resp. Based on our review of the current record, we determine that the information presented supports sufficiently, for purposes of institution, Petitioner's assertions as to this limitation.

- c) *“receiving at the server user input signals from a client device, wherein the user input signals are used to control updating of the state of the interactive software application;”*

Petitioner contends that Wiltshire teaches this limitation because Wiltshire discloses input commands detected at the client device that are transmitted back to the server. Pet. 21–23 (citing Ex. 1004, 7:27–41, Fig. 2; Ex. 1002 ¶¶ 65–67). Petitioner further contends that Wiltshire teaches that the user input signals received by the server are passed to the game program at the server for updating the state of the game program. *Id.* at 23–24 (citing Ex. 1004, 5:57–65, 7:42–43, 8:61–63, 12:44–51, 13:51–59, Fig. 2; Ex. 1002 ¶¶ 65–68).

Patent Owner does not specifically respond to this contention. *See generally* Prelim. Resp. Based on our review of the current record, we determine that the information presented supports sufficiently, for purposes of institution, Petitioner's assertions as to this limitation.

- d) *“generating at least one updated image at the server in response to updating the state of the interactive software application;”*

Petitioner contends that Wiltshire teaches this limitation because it discloses that at stage 270 of Wiltshire's method, the game program processes the input command and updates the state of the game accordingly. Pet. 24–25 (citing Ex. 1004, 7:41–45, Fig. 2; Ex. 1002 ¶¶ 73–74). Petitioner further contends that at stage 220 of Wiltshire's method, the determination of whether an image is to be displayed includes deciding whether to update

the image on the client in response to updates to the game state. *Id.* at 26 (citing Ex. 1004, 8:61–63). According to Petitioner, a person of ordinary skill in the art would have understood that the game program at the server would determine whether to generate an updated image in response to the updated game state. *Id.* (citing Ex. 1002 ¶ 76). Petitioner contends that it is the server that generates the updated image in Wiltshire. *Id.* (citing Ex. 1004, 2:35–39, 2:45–46, 5:44–46, 7:8–9, 7:18–20; Ex. 1002 ¶¶ 77–78).

Patent Owner does not specifically respond to this contention. *See generally* Prelim. Resp. Based on our review of the current record, we determine that the information presented supports sufficiently, for purposes of institution, Petitioner’s assertions as to this limitation.

e) *“and compressing the at least one updated image and transmitting the compressed updated image to the client device, wherein the server transmits the updated image as a compressed frame that can be decompressed and displayed as an updated image at the client device.”*

Petitioner contends that the combination of Wiltshire and Saha teaches this limitation. Pet. 27. Petitioner asserts that at stage 230 of Wiltshire’s method, the updated image is sent from server/host computer to the client/terminal computer. *Id.* (citing Ex. 1004, 7:13–14). Petitioner further asserts that to reduce bandwidth requirements, Wiltshire discloses that the server may compress the updated images as “a compressed video MPEG Stream.” *Id.* at 27–28 (citing Ex. 1004, 7:15–18; 7:62–64). Petitioner adds that, as recognized by the ’109 patent, MPEG is an example of compressing an image. *Id.* at 28 (citing Ex. 1001, 6:56–62; Ex. 1002 ¶ 81).

Petitioner contends that a person of ordinary skill in the art would have understood from Wiltshire that the client computer must be capable of

decompressing the compressed MPEG stream (including the compressed image frame) because without decompression, the compressed MPEG stream could not be displayed at the client computer. *Id.* (citing Ex. 1004, 7:15–18, 7:26–27; Ex. 1002 ¶¶ 83–84). Petitioner further contends that although Wiltshire does not discuss the details of MPEG decompression at the client, an ordinarily skilled artisan would have known those details based on their knowledge of the well-understood MPEG standard, as confirmed by Saha. *Id.* (citing Ex. 1002 ¶¶ 83–85; Ex. 1008; Ex. 1009).

Petitioner points out that Saha provides an overview of the two “predominant MPEG standards” in 1998, and that these MPEG standards “describe an encoder to generate compressed ‘frames’ (also called ‘pictures’)” of three types. *Id.* at 28–29 (citing Ex. 1005, 1:64–2:1, 2:5–14, 2:19–35; Ex. 1002 ¶¶ 49, 88). Petitioner further asserts that Saha also discloses MPEG decoders that receive the compressed frames and decompress them for display. *Id.* at 29–30 (citing Ex. 1005, 4:9–13, 4:51–58, 4:63–5:4, 5:43–45; 5:28–37; Ex. 1002 ¶ 90). Petitioner argues that a person of ordinary skill in the art “would have known that MPEG includes ‘compressed frames’ and provides a method for both compression and decompression of frames.” *Id.* at 30 (citing Ex. 1004, 6:56–62, 7:13–18, 7:25–27, 7:62–64; Ex. 1002 ¶ 91; Ex. 1008; Ex. 1009). Petitioner points out that the ’109 patent indicates that MPEG was an “industry standard” form of video compression that was “already present” in client devices before the ’109 patent. *Id.* (citing Ex. 1001, 9:32–38; Ex. 1002 ¶ 91).

Petitioner next contends that a person of ordinary skill in the art would have been motivated to apply Saha’s teaching of MPEG decompression of compressed frames to Wiltshire’s client computer. *Id.* (citing Ex. 1002

¶¶ 92–93). Petitioner argues that Wiltshire provides an express motivation to combine with Saha because Wiltshire teaches that its system may use the MPEG standard for compressing the updated images that are sent to the client and because Saha details the MPEG standards, including decompressing compressed frames. *Id.* at 30–31 (citing Ex. 1004, 7:15–19; Ex. 1005, 2:21–35; 4:9–13; Ex. 1002 ¶ 94). Petitioner further argues that decompressing an MPEG stream at the client is one of just a finite number of identified and predictable solutions known to a person of ordinary skill in the art and that such a person would have recognized that decompressing the stream using MPEG such that the image can be displayed at the client computer would have been an obvious, if not the only, choice. *Id.* at 31–32 (citing Ex. 1002 ¶ 95).

According to Petitioner, there would have been a reasonable expectation of success in applying Saha’s teachings of MPEG’s decompression of a compressed frame to the teachings of Wiltshire because Saha’s teaching of MPEG and compressed frames would be used for its intended purpose of providing compression for various applications and to reduce the bandwidth requirements. *Id.* at 32–33 (citing Ex. 1004, 7:62–65; Ex. 1005, 2:10–13, 4:9–13, 5:46–56; Ex. 1002 ¶ 96).

Patent Owner responds that neither Wiltshire nor Saha discloses the server transmitting the updated image *as a compressed frame*, as required by claim 1. Prelim. Resp. 18. Patent Owner argues that while Wiltshire “disclose[s] transmitting ‘an image,’” it does not “teach or suggest transmitting an image as a compressed frame.” *Id.* at 19–20 (citing Ex. 1004, 7:13–15, 7:18–22). Patent Owner reiterates that the term “frame” means “a single instance of the display,” and argues that Wiltshire does not

disclose “what part or component of the *client display* the ‘image’ comprises.” *Id.* at 20 (citing *id.* § III.A) (emphasis added). In fact, Patent Owner argues, Wiltshire discloses less than the prior art reference Yamada that applicant overcame during prosecution of the ’109 patent. *Id.* (citing Ex. 2004, 235, 273, 289; Ex. 2005, 19:33–35) (noting that Yamada discloses an “MPEG decoder [that] decompresses image data such as a background image and a character image used in the game, supplied from the STB 6 via the wireless communication”).

Turning to Saha, Patent Owner argues that “applying MPEG to [Wiltshire’s] image is simply a form of compressing the image,” and “does not change the nature of the input image into something more than it was before applying compression.” *Id.* at 21 (citing Pet. 28–29). Patent Owner asserts that “‘frame’ in the MPEG context simply means picture.” *Id.* According to Patent Owner, Saha’s disclosure of frames “is not the ‘frame’ of claims 1 and 8 as the examiner agreed during prosecution when crediting applicant’s argument that Yamada’s disclosure of MPEG did not disclose the use of frames.” *Id.* at 21–22 (citing Ex. 2004, 273). Patent Owner contends that the Examiner’s allowance of claim 1 over Yamada “establishes that *something more* than transmitting images using MPEG compression is required to show the use of a ‘frame.’” *Id.* at 23 (emphasis added).

Based on our review of the current record, we are persuaded that the information presented supports sufficiently, for purposes of institution, Petitioner’s assertions as to this limitation. As discussed above, we do not agree with Patent Owner that the claim term “frame” should be limited to “a single instance of the display.” *See supra* § III.C.1. Saha expressly

discloses transmitting an image as a compressed frame that can be decompressed and displayed as an image at the client device. Ex. 1005, 2:14–17 (“Interframe compression methods such as MPEG are based on the fact that, in most video sequences, the background remains relatively stable while action takes place in the foreground.”); 2:21–23 (“An MPEG stream includes three types of pictures, referred to as the Intra (I) frame, the Predicted (P) frame, and the Bi-directional Interpolated (B) frame.”). In view of Saha’s express disclosure of frames, we are not persuaded by Patent Owner’s argument that the combination of Wiltshire and Saha fails to teach transmitting the updated image as a compressed frame.

In view of Wiltshire’s teaching that its server transmits compressed video MPEG streams to its client devices, we are also persuaded that Petitioner provides an adequate reason why an ordinarily skilled artisan would have applied Saha’s teaching of MPEG decompression of compressed frames to Wiltshire’s client devices in the manner asserted by Petitioner. See Pet. 30–31 (citing Ex. 1004, 7:15-19; Ex. 1005, 2:21-35).

Thus, on the present record, Petitioner sufficiently establishes that the combination of Wiltshire and Saha teaches or suggests this limitation.

f) Conclusion as to Obviousness of Claim 1

Considering the record presently before us, Petitioner has established a reasonable likelihood that it would prevail in showing that the combination of Wiltshire and Saha would have rendered the subject matter of claim 1 obvious to one of ordinary skill in the art at the time of the invention.

2. Independent Claim 8

Claim 8 recites “an image display system,” “a server having a processor and memory configured to execute an interactive software

application,” and also recites other limitations that are similar to those in claim 1. Ex. 1001, 10:27–45. Petitioner asserts that Wiltshire teaches an image display system because each of its client device is connected to a display device. Pet. 42 (citing Ex. 1004, 3:66–67, 7:25–27, Figs. 1A, 1D, 2; Ex. 1002 ¶ 127).

Petitioner contends that Wiltshire teaches the claimed server because it discloses a server/host computer that runs Wiltshire’s game program. Pet. 43 (citing Ex. 1004, 4:49–65; Ex. 1002 ¶¶ 130, 131).

For the remaining limitations of claim 8, Petitioner relies on its arguments directed to claim 1. Pet. 43–45 (citing Pet. §§ XI(A)(1)(a)–(d); Ex. 1002 ¶¶ 133–138). Petitioner therefore contends that claim 8 is unpatentable over Wiltshire in combination with Saha. *Id.* at 45 (citing Ex. 1002 ¶ 139).

Patent Owner’s arguments for claim 8 are the same as those directed to claim 1. *See* Prelim. Resp. 17–24 (arguing both claims together).

For the reasons discussed above with regard to claim 1, and because Petitioner sufficiently shows that Wiltshire discloses an image display system and the claimed server, we determine that the information presented supports sufficiently, for purposes of institution, Petitioner’s assertions as to claim 8.

3. Dependent Claims 3–5, 7, 9, and 10

Petitioner argues that claim 3 would have been obvious in view of Wiltshire and Saha. Pet. 34–36. Claim 3 depends on claim 1 and additionally recites “wherein the server is configured for bidirectional communications with a plurality of client devices, the bidirectional communication including receiving at the server user input signals and

transmitting the compressed updated image.” Ex. 1001, 10:8–12. Petitioner contends that Wiltshire teaches this additional limitation because Wiltshire’s system connects its server to a plurality of client devices, and data is transmitted from the server to the client device in one direction and from the client device to the server in the other direction. Pet. 34–36 (citing Ex. 1004, 3:62–66, 4:52–59, 7:13–15, 7:34–39, Figs. 1D, 2; Ex. 1002 ¶¶ 101–103). Petitioner further contends that at stage 230 of Wiltshire’s method, an image is sent from the server to the client, and at stage 250, user input commands detected at the client program are transmitted back to the server. *Id.* at 36 (citing Ex. 1004, 7:13–15, 7:34–39; Ex. 1002 ¶ 104). Petitioner therefore contends that claim 3 is unpatentable over Wiltshire in combination with Saha. *Id.* (citing Ex. 1002 ¶ 105).

Claim 4 depends on claim 1 and additionally recites “wherein the server is configured to receive user input data and transmit compressed updated images with a plurality of client devices.” Ex. 1001, 10:13–15. Petitioner relies on its arguments directed at claim 3 to argue that Wiltshire teaches the additional limitation of claim 4. Pet. 37 (citing Pet. § XI(A)(2); Ex. 1004, 7:13–15; 7:34–39; Fig. 1D; Ex. 1002 ¶ 107). Petitioner therefore contends that claim 4 is unpatentable over Wiltshire in combination with Saha. *Id.* (citing Ex. 1002 ¶ 108).

Claim 5 depends on claim 1 and additionally recites “wherein at least two of the plurality of client devices include different device platforms.” Ex. 1001, 10:16–18. Petitioner contends that Wiltshire teaches the additional limitation of claim 5 because it discloses various client devices such as Intel x86 or Pentium based computers, Mac PowerPC computers, and Sun SPARC computers, which a person of ordinary skill in the art

would have understood as examples of different device platforms. Pet. 38 (citing Ex. 1004, 5:14–23; Ex. 1002 ¶ 111). Petitioner further contends that a person of ordinary skill in the art would have been motivated to use different device platforms with Wiltshire’s server because it would allow more players using different client platforms to play the same game, and that there would have been a reasonable expectation of success that different device platforms would have operated successfully in Wiltshire. *Id.* at 38–39 (citing Ex. 1004, 4:43–48, 6:44–48, 8:24–33, Figs. 1C, 3; Ex. 1002 ¶¶ 113–115). Petitioner therefore contends that claim 5 is unpatentable over Wiltshire in combination with Saha. *Id.* at 39 (citing Ex. 1002 ¶ 117).

Claim 7 depends on claim 1 and additionally recites “wherein the interactive software application is an interactive game that is configured to run at the server, which is in bidirectional communication with a plurality of client devices, and wherein said updating the state of the software application includes updating the game state of the interactive game.” Ex. 1001, 10:21–26. Petitioner relies on its arguments directed at claims 1 and 3 to argue that Wiltshire teaches the additional limitation of claim 7. Pet. 41 (citing Pet. §§ XI(A)(1)(b), XI(A)(1)(d), XI(A)(2); Ex. 1002 ¶¶ 122–125). Petitioner therefore contends that claim 7 is unpatentable over Wiltshire in combination with Saha. *Id.* (citing Ex. 1002 ¶ 126).

Claim 9 depends on claim 8 and additionally recites “wherein the user input signals are generated at the client device to update the state of the interactive software application from the state that initiated the current image displayed on the display coupled to the client device.” Ex. 1001, 10:46–50. Petitioner relies on its arguments directed at claim 1 to argue that Wiltshire teaches (1) user input signals are generated at the client device,

(2) those user input signals update the state of the game at the server, (3) an updated image is generated at the server and transmitted to the client, and (4) the updated image is displayed on the client device. Pet. 45–46 (citing Pet. §§ XI(A)(1)(c)–(d); Ex. 1002 ¶ 141). Petitioner further contends that Wiltshire also provides examples showing how a user input signal generated at the client updates the current image displayed at the client display with a new state of the game. *Id.* at 46 (citing Ex. 1004, 7:7–8, 8:39–11:54, Fig. 2; Ex. 1002 ¶ 142). Petitioner cites to the blackjack game example in Wiltshire, where the initial image of a blackjack table on a client display is modified when the user presses the “double down button.” *Id.* at 46–48 (citing Ex. 1004, 7:25–27, 8:39–41, 9:13–14, 9:63–65, Figs. 6A, 6B; Ex. 1002 ¶¶ 143–144). Petitioner therefore contends that claim 9 is unpatentable over Wiltshire in combination with Saha. *Id.* at 49 (citing Ex. 1002 ¶ 145).

Claim 10 depends on claim 8 and additionally recites “wherein the server is configured to exchange user input data and compressed updated images with a plurality of client devices.” Ex. 1001, 10:51–53. Petitioner relies on its arguments directed at claims 1 and 3 to argue that Wiltshire teaches the additional limitations of claim 10. Pet. 49–50 (citing Pet. §§ XI(A)(1)(c), XI(A)(1)(e), XI(A)(2); Ex. 1004, 7:65–8:2; Ex. 1002 ¶¶ 147–149). Petitioner therefore contends that claim 10 is unpatentable over Wiltshire in combination with Saha. *Id.* (citing Ex. 1002 ¶ 150).

Patent Owner does not raise any arguments directed specifically to claims 3–5, 7, 9, and 10. *See generally* Prelim. Resp.

Based on our review of the current record, we determine that the information presented supports sufficiently, for purposes of institution, Petitioner's assertions as to these dependent claims.

4. *Dependent Claims 6, 11, and 12*

Petitioner argues that claim 6 would have been obvious in view of Wiltshire and Saha. Pet. 39–40. Claim 6 depends on claim 1 and additionally recites “wherein the client device is a mobile device.” Ex. 1001, 10:19–20. Petitioner contends that Wiltshire discloses this additional limitation because Wiltshire's clients can include “wireless communication pathways” to “allow[] a patron to participate in a mobile gaming environment.” Pet. 40 (citing Ex. 1004, code (57), 13:20–25). According to Petitioner, a person of ordinary skill in the art would have understood that Wiltshire's client devices with wireless communication capabilities must be mobile devices in order to be used in the described “mobile gaming environment.” *Id.* Petitioner contends that, based on Wiltshire's disclosure that a client computer “can also be any type of cost effective special purpose or general purpose computer such as an Intel® x86 or Pentium® based computer [or] a Mac® PowerPC computer,” a person of ordinary skill in the art would have understood that such computers could be, for example, laptops, and that those laptops could be used in Wiltshire's “mobile gaming environment.” *Id.* (citing Ex. 1007, 9; Ex. 1020, 7–12; Ex. 1002 ¶¶ 119–120). Petitioner therefore contends that claim 6 is unpatentable over Wiltshire in combination with Saha. *Id.* (citing Ex. 1002 ¶ 121).

Claim 11 depends on claim 8 and additionally recites “wherein the interactive software application is a game and wherein the client device is a

mobile device.” Ex. 1001, 10:54–56. Petitioner relies on its arguments directed at claim 1 to argue that Wiltshire teaches a game program that is an interactive software application. Pet. 50 (citing Pet. § XI(A)(1)(a)–(b); Ex. 1002 ¶ 152). Petitioner relies on its arguments directed at claim 6 to argue that Wiltshire teaches a mobile device. *Id.* at 51 (citing Pet. § XI(A)(5); Ex. 1002 ¶ 153). Petitioner therefore contends that claim 11 is unpatentable over Wiltshire in combination with Saha. *Id.* (citing Ex. 1002 ¶ 154).

Claim 12 depends on claim 10 and additionally recites “wherein the interactive software application is a game and wherein at least one of the plurality of client devices is a mobile device.” Ex. 1001, 10:57–59. Petitioner relies on its arguments directed at claim 1 to argue that Wiltshire teaches a game program that is an interactive software application. Pet. 50 (citing Pet. §§ XI(A)(1)(a)–(b); Ex. 1002 ¶ 156). Petitioner relies on its arguments directed at claim 6 to argue that Wiltshire teaches a mobile device. *Id.* at 51 (citing Pet. § XI(A)(5); Ex. 1002 ¶ 157). Petitioner therefore contends that claim 12 is unpatentable over Wiltshire in combination with Saha. *Id.* (citing Ex. 1002 ¶ 158).

Patent Owner responds that Petitioner fails to show a reasonable likelihood of success on unpatentability of claims 6, 11, and 12 under Petitioner’s ground 1 because Wiltshire does not disclose the claimed mobile device. Prelim. Resp. 24–29. Patent Owner asserts that Wiltshire’s disclosure that Petitioner relies upon as teaching a mobile device discloses the use of a “head-mounted display together with a joystick input device and wireless communication pathways,” which allow “a patron to participate in a mobile gaming environment.” *Id.* at 25 (citing Ex. 1004, code (57)). Patent

Owner further asserts that Wiltshire explains that “(stereo) head mounted displays with separate input controls such as a six degrees of freedom joystick/mouse can be used *in place of touch screen display devices*.” *Id.* at 25–26 (citing Ex. 1004, 4:19–22). According to Patent Owner, these touch screen display devices are *not* the client devices; instead, the display devices are *connected to* the client devices. *Id.* (citing Ex. 1004, 3:66–67, 4:4–7, Fig. 1D). Patent Owner asserts that it is apparent from Wiltshire’s Figure 1D that the mobile gaming client is the same client/terminal computer as the others but without the separate display shown on the other client/terminal computers. *Id.* at 26–27.

Patent Owner argues that Petitioner’s reliance on Wiltshire’s disclosure of “[a] cost effective special purpose or general purpose computer” as teaching a mobile device is also misplaced because Wiltshire does not mention or suggest use of a laptop computer, which, according to Patent Owner, is not surprising given the nature of the clients in Wiltshire’s commercial gambling system. *Id.* at 27–28. Lastly, Patent Owner argues, based on its proposed claim construction, that even if Wiltshire suggests use of a laptop, a laptop is a portable device, not a mobile device, as claimed. *Id.* at 29 (citing Ex. 1007, 9).

Based on the current record, we agree with Patent Owner that Petitioner has not shown sufficiently that Wiltshire discloses that Wiltshire’s client device is the claimed mobile device. Wiltshire relates to “[a] computer gaming system . . . that both drastically reduce[s] the cost of gaming stations and allow[s] contemporaneous access to multiple game programs from a single gaming station.” Ex. 1004, code (57). Wiltshire’s system is directed at commercial gaming where gaming stations include “a

display device, a wager or bet-acceptor, and controls such as buttons, keyboards, levers or the like,” and support casino games. *Id.* at 1:16–18, Figs. 4A–9D. Wiltshire’s client/terminal computers are “cost effective special purpose or general purpose computer[s] such as an Intel® x86 or Pentium® based computer, a Mac® PowerPC computer, a Sun® SPARC®,” or “WinTerm™ 3315SE terminals” that “need to have minimal storage, memory and processing power.” *Id.* at 5:14–30. There is no express disclosure in Wiltshire that its client/terminal computers are laptops and Petitioner has not sufficiently shown, based on the disclosure of Wiltshire alone, that these computers could be laptops. Pet. 40. Dr. Fuchs’s declaration testimony mirrors Petitioner’s arguments that a person of ordinary skill in the art would have understood that Wiltshire’s client devices must be mobile devices and could be laptops that could be used in a mobile gaming environment. Ex. 1002 ¶¶ 119-120. We find Dr. Fuchs’s testimony upon which Petitioner relies to be conclusory. Pet. 40 (citing Ex. 1002 ¶¶ 119-120).

We are also not persuaded by Petitioner’s argument that a person of ordinary skill in the art would have understood Wiltshire’s disclosure of wireless communication pathways as directed to the use of mobile devices, such as laptops. *Id.* The mention of “wireless communication pathways” in Wiltshire is brief and relates to the use of “a stereo head-mounted display together with a joystick input device . . . allow[ing] a patron to participate in a mobile gaming environment.” Ex. 1004, code (57). As Patent Owner points out, Wiltshire’s Figure 1D depicts the client device with these features as the *same* client computer as the other client computers but without the separate display that is shown connected to the other client

computers. *Id.* at Fig. 1D; Prelim. Resp. 26–27 (annotating Fig. 1D). Each of the client devices shown in Figure 1D is also similarly connected to a “Wager-Acceptor,” and the examples of the communication pathway 130 between the server and each of the client devices listed in Wiltshire are all wired network interfaces. Prelim. Resp. 28; Ex. 1004, 5:31–44 (listing various 1000 base-T switches and CAT-5 twisted pair cabling).

We are therefore not persuaded, on the current record, that Petitioner has shown sufficiently that Wiltshire discloses that its client device is a “mobile” device or teaches that it can be a mobile device, and thus, we are not persuaded that Petitioner has shown that the combination of Wiltshire and Saha renders claims 6, 11, and 12 obvious.

5. Preliminary Determination as to Petitioner’s Ground 1

Considering the record presently before us, Petitioner has established a reasonable likelihood that it would prevail in showing that the combination of Wiltshire and Saha would have rendered the subject matter of claims 1, 3–5, and 7–10 obvious to one of ordinary skill in the art at the time of the invention.

F. Obviousness of Claims 6, 11, and 12 over Wiltshire, Saha, and PC Magazine

Petitioner contends that claims 6, 11, and 12 would have been obvious in view of the combination of PC Magazine with Wiltshire and Saha. Pet. 66–73. Petitioner contends that PC Magazine describes the Apple iBook as a “portable” laptop computer for mobile use, and it includes “wireless technology” that allows users to “roam up to 150 feet” from a base station. *Id.* at 67 (citing Ex. 1007, 9). Petitioner further contends that given the iBook’s six-hour battery life, a person of ordinary skill in the art would

have understood that the iBook is a mobile device capable of operating when not connected to a power outlet.

Petitioner contends that a person of ordinary skill in the art would have been motivated to use laptops, such as the iBook disclosed in PC Magazine, as the client computers in Wiltshire because the iBook uses a G3 processor, which is a “PowerPC processor,” and falls within Wiltshire’s teaching of “client/terminal computers.” *Id.* at 68 (citing Ex. 1004, 5:14–17; Ex. 1007, 9; Ex. 1021, 3:23–25; Ex. 1019, Abstract; Ex. 1002 ¶¶ 217–218). Petitioner asserts that the iBook is equipped with wireless communication technology and sufficient hardware to play interactive games in Wiltshire’s system, which would have further motivated an ordinarily skilled artisan to use the iBook as the client device to support “mobile gaming” in Wiltshire. *Id.* at 68–69 (citing Ex. 1004, code (57), 13:20–25; Ex. 1007, 9; Ex. 1002 ¶ 219).

Petitioner contends that using a mobile device for a client device would have been just one of a finite number of known options contemplated by a person of ordinary skill in the art for use in Wiltshire, i.e., either the client devices can be non-mobile or the client devices can be mobile. *Id.* at 69. Petitioner asserts that because mobile devices were well known at the time of the ’109 patent invention, using mobile devices would have been a predictable and identified option that was obvious to try. *Id.* (citing Ex. 1007, 9; Ex. 1002 ¶ 220). Petitioner argues that its proposed substitution of a laptop would have been a simple one of one known element for another to obtain predictable results. *Id.* (citing Ex. 1002 ¶ 221).

Petitioner contends that a person of ordinary skill in the art would have had a reasonable expectation of success in using the laptops described

in PC Magazine as the client computers in Wiltshire's computing system. *Id.* According to Petitioner, a person of ordinary skill in the art would have understood that the iBook's "300-MHz G3 processor" would have been more than sufficient to decode MPEG-1 and MPEG-2 encoded video streams, and that iBook's wireless speeds fall within Wiltshire's stated bandwidth requirement. *Id.* at 70 (citing Ex. 1004, code (57), 5:14–17; Ex. 1007, 9; Ex. 1002 ¶¶ 50, 222–224). Petitioner also asserts that Wiltshire, Saha, and PC Magazine are analogous art to the '109 patent and are thus properly used for the obviousness combination. *Id.* at 70–71 (citing Ex. 1001, code (57), 1:29–33, 3:34–37; Ex. 1007, 9; Ex. 1002 ¶ 226).

Petitioner relies on the same arguments for the "mobile device" limitation of claims 11 and 12. *Id.* at 71–73.

Patent Owner responds, based on its proposed claim construction, that the iBook disclosed in PC Magazine is a "portable" computer, not the claimed mobile device. Prelim. Resp. 30 (citing Ex. 1007, 9). Patent Owner also contends that Petitioner's argument ignores that Wiltshire's system was a commercial gambling system in which the client computers are equipped to facilitate that purpose, and that Petitioner has not explained how an iBook, even if it could be client computer 120 in Wiltshire's system, would function with a Wager-Acceptor attached, much less be mobile. *Id.* at 30–32 (citing Ex. 1004, code (57), 2:45–51, 4:30–33). Moreover, Patent Owner contends, a person of skill in the art would not have thought a mobile coin or bill collector or even a mobile device containing credit card information, was a good idea because mobility makes theft much easier. *Id.* at 32–33 (citing Ex. 2006, 1:14–30). Patent Owner further responds that because Wiltshire does not teach the use of mobile devices in its system, Wiltshire

does not provide a reason to use a laptop computer as a client. *Id.* at 33–34 (citing Prelim. Resp. § IV.B.2; Ex. 1004, code (57), Fig. 1D).

Patent Owner also responds that the options for Wiltshire’s clients are not limited as proposed by Petitioner because a laptop under Patent Owner’s proposed construction is not a mobile device, and because the fact that mobile devices were known is not, by itself, a reason to use them in Wiltshire’s system. *Id.* at 34–35 (citing *L.A. Biomed. Rsch. Inst. at Harbor-UCLA Med. Ctr. v. Eli Lilly & Co.*, 849 F.3d 1049, 1064 (Fed. Cir. 2017)). Patent Owner contends that the results of Petitioner’s proposed combination would not have been predictable given the constraints on Wiltshire’s commercial gambling system and that a person of ordinary skill in the art would not have a reasonable expectation of success in using the laptops in Wiltshire’s system where mobility is a detriment. *Id.* at 35–36 (citing Ex. 2006, 1:24–30).

As discussed above (*supra* § III.C.2), we are not persuaded to limit the claimed “mobile device” as excluding portable devices, in the manner proposed by Patent Owner. We are therefore persuaded, for the purposes of institution, that PC Magazine’s disclosure of an Apple iBook teaches the claimed mobile device. Ex. 1007, 9. Based on our review of the current record, we determine that the information presented also supports Petitioner’s assertions as to at least one of the reasons offered by Petitioner to combine the two references.

“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 at 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 Products 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)).

Based on the current record, we are persuaded by Petitioner’s argument that using a laptop for a client device would have been just one of a finite number of known options contemplated by an ordinarily skilled artisan for use in Wiltshire’s system and would have been a predictable and identified option that was obvious to try. Pet. 69 (citing Ex. 1002 ¶ 220). Dr. Fuchs testifies in support of Petitioner’s rationale to combine that “the personal computer industry had already begun shifting towards offering viable mobile laptop products to the general public” and “many businesses competed to offer their own laptop models to potential customers.” Ex. 1002 ¶ 220 (citing Ex. 1007). According to Dr. Fuchs, “mobile devices like laptops were so well known at the time,” that “using mobile devices would have been a predictable and identified option that was obvious to try.” *Id.* Dr. Fuchs further testifies that “even lower-power laptops that normally would not be capable of playing certain games natively could be used as the client devices in Wiltshire’s system” because Wiltshire’s system ran the game software exclusively on the server. *Id.* ¶ 219. Dr. Fuchs also testifies that a person of ordinary skill in the art would have understood that “a laptop could already be used to perform some of the same processes as a stationary desktop computer,” and that using the iBook laptop would have been a simple substitution of one known element for another to obtain predictable

results, with a reasonable expectation of success. *Id.* ¶¶ 221–221 (citing Ex. 1004, code (57), 5:14–17; Ex. 1007, 9).

We are persuaded by Dr. Fuchs’s testimony for purposes of deciding whether to institute trial, and we determine that Petitioner provides an adequate reason for one of ordinary skill in the art to have modified Wiltshire’s system with the PC Magazine’s teaching in the manner asserted by Petitioner. *See KSR*, 550 U.S. at 420 (“[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed”). This is not a final determination, however, which will be made after the record is fully developed at trial.

We therefore determine that Petitioner established a reasonable likelihood that it would prevail in showing that the combination of Wiltshire, Saha, and PC Magazine would have rendered the subject matter of claims 6, 11, and 12 obvious to one of ordinary skill in the art at the time of the invention.

G. Obviousness of Claim 2 over Wiltshire, Saha, and Chen

Petitioner argues that claim 2 would have been obvious in view of Wiltshire, Saha and Chen. Pet. 39–40. Claim 2 depends on claim 1 and additionally recites “wherein a first bandwidth for transmitting the user input data between the client device and the server and a second bandwidth for transmitting the compressed updated image from the server to the client device are asymmetric.” Ex. 1001, 10:3–7. Petitioner contends that Chen discloses the additional limitation of claim 2, and that the combination of Chen with Wiltshire and Saha renders this claim obvious. Pet. 59 (citing Ex. 1002 ¶ 193). Petitioner asserts that Chen describes the ADSL standard,

which discloses a first bandwidth of 16-64 kb/s for upstream transmissions and second bandwidth of 1.544 Mb/s for downstream transmissions. *Id.* at 59–60 (citing Ex. 1006, 69; Ex. 1001, 6:14–16; Ex. 1002 ¶ 195).

Petitioner further contends that a person of ordinary skill in the art would have been motivated to apply Chen’s teaching of two asymmetric bandwidths to the combination of Wiltshire and Saha because Wiltshire describes using the Internet as a communication pathway between its server and clients, and Chen teaches that ADSL is an “ideal vehicle for Internet access” and other “telecommuting applications.” *Id.* at 61 (citing Ex. 1004, 5:30–32; Ex. 1006, 69). Petitioner further contends that Chen describes ADSL as “well suited to the concept of video-on-demand service” and Wiltshire’s system provides a form of “video-on-demand.” *Id.* at 61–63 (citing Ex. 1006, 69; Ex. 1002 ¶ 198). Petitioner also contends that using ADSL would have been just one of a finite number of known options for providing Internet connectivity described in Wiltshire because at that time, broadband Internet access was typically provided by either ADSL or cable networks. *Id.* at 63 (citing Ex. 1006, 69; Ex. 1007, 76; Ex. 1002 ¶ 201). According to Petitioner, a person of ordinary skill in the art would have had a reasonable expectation of success in the combination because Wiltshire describes using a communication pathway such as the Internet, discloses a video on demand system that uses MPEG for transmitting video streams, and the proposed combination would have used ADSL, which supports MPEG, in the intended manner. *Id.* at 63–64 (citing Ex. 1002 ¶¶ 202–204).

Patent Owner responds that “Petitioner’s proposed use of Chen’s ADSL *for home installation* relies on hindsight and ignores Wiltshire’s description of its system as a gambling system *for commercial*

establishments that is not disclosed or suggested to be installed in homes.” Prelim Resp. 37 (emphases added). According to Patent Owner, “Chen justified the use of ADSL for residential applications: ‘Researchers realized that for residential applications, a POTS service, where the traditional telephone service can be provided whether the ADSL is on or off, was more practical than ISDN service.’” *Id.* at 38 (citing Ex. 1006, 69). Patent Owner argues based on that disclosure that Chen “proposed using data channels on telephone wires at frequencies above the voice transmission frequencies used for traditional analog telephone service in homes,” and thus “Chen taught the use of ADSL in residential homes.” *Id.* (citing Ex. 1006, 71–72).

Patent Owner asserts that ADSL was meant to make the most of a preexisting telephone connection to residential homes, and Petitioner has offered no evidence to support its use outside of that context or to show that ADSL was an optimum choice for commercial establishments. *Id.* Patent Owner contends that a person of ordinary skill in the art would have understood Wiltshire’s system was designed for a commercial gambling establishment, not in residential homes. *Id.* at 39–42 (citing Ex. 1004, 1:15–18, 1:22–28, 2:45–65, 3:13–14, 4:31–33, 12:10–13, Fig. 1D). Patent Owner argues that Petitioner fails to address why a person of ordinary skill in the art would want to use a technology meant to optimize bandwidth on residential telephone systems in a commercial establishment. *Id.* at 42.

Patent Owner further argues that Wiltshire’s system is not a video-on-demand system and Petitioner’s reliance on Chen’s suitability for video-on-demand to combine it with Wiltshire is misplaced. *Id.* at 44. Patent Owner also disagrees that ADSL was one of just one of a finite number of known options for providing Internet connectivity described in Wiltshire given the

existence of other services such as DSL lines and SOHO networks. *Id.* at 45 (citing Ex. 1007, 76). Patent Owner thus contends that Petitioner has failed to make a reasonable likelihood of success showing on its assertion that the combination of Chen with Wiltshire and Saha would have rendered claim 2 obvious. *Id.* at 46.

For purposes of institution, in view of the arguments and evidence presented, we are satisfied that Petitioner sufficiently demonstrates, with citations to evidence of record, including Dr. Fuchs’s testimony, that one of ordinary skill in the art would have applied Chen’s teaching of a first bandwidth and a second bandwidth that are asymmetric to the combination of Wiltshire and Saha.

Based on the current record, we are not persuaded by Patent Owner’s arguments that Petitioner’s proposed combination fails because Chen’s teaching of ADSL is limited to residential installations. Prelim. Resp. 37–39. Chen does not expressly limit the use of ADSL to residential service. *See generally* Ex. 1006. Although we agree with Patent Owner that Chen does discuss a simulation study of the effect of in-house wiring on the performance of ADSL (*id.* at 71–72), that alone does not suggest that an ordinarily skilled artisan would have understood Chen’s disclosure as limiting the use of ADSL to residential applications.

Nor does the statement in Chen that Patent Owner relies on to support its argument. Chen states that “[r]esearchers realized that for residential applications, a POTS service, where the traditional telephone service can be provided whether the ADSL is on or off, was more practical than ISDN service.” Ex. 1006, 69. We are not persuaded that this statement indicates that ADSL was proposed as *solely* for use in residential homes; instead it

explains why the proposed ADSL architecture was more practical than ISDN service for residential applications. In fact, Chen mentions other applications of ADSL that may not have necessarily been residential. *See id.* (explaining that “[t]he capabilities of ADSL are also well suited to applications such as network computing where software and database records could be stored on network servers and retrieved at a speed equivalent to CD-ROM access, and tele-education, where a specialist can be shared with a large student population through downstream channels, and individual feedback can be provided through upstream channels”).

Petitioner’s argument is also supported by Dr. Fuchs’s testimony that Chen’s teaching that ADSL is an ideal vehicle for Internet access would have motivated an ordinarily skilled artisan to use ADSL in implementing the Internet communication access described in Wiltshire. Ex. 1002 ¶ 197 (citing Ex. 1006, 69).

Although we agree with Patent Owner that Wiltshire does not disclose that its system is a video-on-demand system, Petitioner persuasively argues ADSL may have been “well-suited to exchange the same type of information (i.e., user input controls on one hand and image/video data on the other) as disclosed in Wiltshire.” Pet. 62 (citing Ex. 1002 ¶¶ 199–200). Dr. Fuchs testifies that a person of ordinary skill in the art would have understood that keyboard data (such as the data from a key press) is typically encoded as 8-bit ASCII data and Wiltshire’s upstream input commands would require less bandwidth than the downstream video transmissions. Ex. 1002 ¶¶ 199–200 (citing Ex. 1018, code (57)). Dr. Fuchs further testifies that a person of ordinary skill in the art would have understood that sending compressed updated images from Wiltshire’s server to the client requires higher

bandwidth of at least 1.3 Megabits per second when an MPEG stream is used. *Id.* (citing Ex. 1006, 69). Dr. Fuchs testifies that a person of ordinary skill in the art would have been motivated to use the smaller bandwidth of ADSL for exchanging user input commands and the larger bandwidth of ADSL for transmitting the compressed image using MPEG, providing a better user experience, particularly for real-time interactive games. *Id.*

¶ 200. We are persuaded by Dr. Fuchs's testimony for purposes of deciding whether to institute trial.

Petitioner also has sufficiently shown that a person of ordinary skill in the art would have had a reasonable expectation of success in Petitioner's proposed combination given Wiltshire's teaching of the use of the Internet as a communication pathway and the use of MPEG for transmitting video streams, therefore suggesting that the system would be compatible with ADSL. Pet. 63–64.

For purposes of deciding whether to institute trial, we determine Petitioner provides an adequate reason for one of ordinary skill in the art to have modified Wiltshire's system with the Chen's ADSL teaching in the manner asserted by Petitioner. This is not a final determination, however, which will be made after the record is fully developed at trial.

Petitioner has therefore established a reasonable likelihood that it would prevail in showing that the combination of Wiltshire, Saha, and Chen would have rendered the subject matter of claim 2 obvious to one of ordinary skill in the art at the time of the invention.

IV. CONCLUSION

After considering the evidence and arguments presented in the Petition and Preliminary Response, we determine that the information

presented shows a reasonable likelihood that Petitioner would prevail in establishing that at least one of the remaining challenged claims of the '109 patent is unpatentable. Thus, we institute an *inter partes* review as set forth in the Order below. Trial shall commence on the entry date of this Decision.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '109 patent is hereby instituted on the challenge to claims 1 and 3–12 under 35 U.S.C. § 103(a) as unpatentable over Wiltshire and Saha;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '109 patent is hereby instituted on the challenge to claim 2 under 35 U.S.C. § 103(a) as unpatentable over Wiltshire, Saha, and Chen;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '109 patent is hereby instituted on the challenge to claims 6, 11, and 12 under 35 U.S.C. § 103(a) as unpatentable over Wiltshire, Saha, and PC Magazine;

FURTHER ORDERED that review is not instituted as to claims 13–18, which have been disclaimed; 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 commencing on the entry date of this Decision.

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