

Filed on behalf of Sony Interactive Entertainment LLC

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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
U.S. Patent No. 10,681,109

PETITIONER'S NOTICE OF APPEAL

Pursuant to 35 U.S.C. §§ 141-144 and 319, and 37 C.F.R. § 90.2-90.3, notice is hereby given that Petitioner Sony Interactive Entertainment LLC appeals to the U.S. Court of Appeals for the Federal Circuit from the Final Written Decision entered June 8, 2022 (Paper 38) in IPR2021-00237, attached as Exhibit A, and all prior and interlocutory rulings related thereto or subsumed therein.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Petitioner indicates that the issues for appeal include the holding that claims 1–12 of U.S. Patent No. 10,681,109 (“the ’109 patent”) are not unpatentable, as well as any finding or determination supporting or relating to these issues, including but not limited to the findings that Petitioner has “failed to show by a preponderance of the evidence that the combination of Wiltshire and Saha teaches ‘generating at least one updated image at the server in response to updating the state of the interactive software application,’ as recited in claim 1” of the ’109 patent, and that Petitioner has “failed to show by a preponderance of the evidence that the combination of Wiltshire and Saha teaches a server configured for ‘generating at least one updated image at the server in response to updating the state of the interactive software application,’ as recited in claim 8” of the ’109 patent.

Pursuant to 37 C.F.R. § 90.3, this Notice of Appeal is timely, having been duly filed within 63 days after the date of the Final Written Decision.

A copy of this notice of Appeal is being filed simultaneously with the Patent Trial and Appeal Board, the clerk's Office for the United States Court of Appeals for the Federal Circuit, and the Director of the U.S. Patent and Trademark Office.

Dated: August 10, 2022

Respectfully submitted,

/Joseph F. Haag/

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 90.2(a)(1) and 104.2(a), I hereby certify that, in addition to being filed electronically through the Patent Trial and Appeal Board's End to End (PTAB E2E) system, a true and correct original version of the forgoing PETITIONER'S NOTICE OF APPEAL is being filed by Priority Mail Express on this 10th day of August, 2022, with the Director of the United States Patent and Trademark Office, at the following address:

Office of the General Counsel
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Pursuant to 37 C.F.R. § 90.2(a)(2) and Federal Circuit Rule 15(a)(1), and Rule 52(a), (e), I hereby certify that a true and correct copy of the foregoing PETITIONER'S NOTICE OF APPEAL is being filed in the United States Court of Appeals for the Federal Circuit using the Court's CM/ECF filing system on this 10th day of August, 2022, and the filing fee is being paid electronically using pay.gov.

I hereby certify that on August 10, 2022, I caused a true and correct copy of the PETITIONER’S NOTICE OF APPEAL to be served via electronic mail, as previously agreed by the parties, on the following counsel for Patent Owner:

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Exhibit A

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*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
Granting In Part Patent Owner's Motion to Exclude
35 U.S.C. § 318(a)

I. INTRODUCTION

Sony Interactive Entertainment LLC (“Petitioner”) requested an *inter partes* review of claims 1–18 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. In its Preliminary Response, Patent Owner informed us that it had disclaimed claims 13–18. *Id.* at 5 (citing Ex. 2001 (Notice of Filing a Statutory Disclaimer of Claims in a Patent under 37 C.F.R. § 1.321(a))). Applying the standard set forth in 35 U.S.C. § 314(a), we instituted an *inter partes* review of claims 1–12 (the “Challenged Claims”)¹ of the ’109 patent. Paper 13 (“Inst. Dec.”).

After institution, Patent Owner filed a Patent Owner Response (Paper 17, “PO Resp.”), Petitioner filed a Reply to Patent Owner’s Response (Paper 22, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 26, “PO Sur-reply”). An oral hearing was held on March 10, 2022, and a copy of the transcript was entered in the record. Paper 37 (“Tr.”).

We have jurisdiction pursuant to 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of the claims on which we instituted trial. Petitioner bears the burden of proving unpatentability of the Challenged Claims, and the burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To

¹ Because Patent Owner filed a statutory disclaimer of claims 13–18 of the ’109 patent (*see* Ex. 2001) prior to our institution decision, no *inter partes* review was instituted as to those claims. Inst. Dec. 6–7; *see also* 37 C.F.R. § 42.107(e) (“No *inter partes* review will be instituted based on disclaimed claims.”).

prevail, Petitioner must prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2020).

Having reviewed the arguments and the supporting evidence, we determine that Petitioner has not shown, by a preponderance of the evidence, that claims 1–12 of the ’109 patent are unpatentable.

II. BACKGROUND

A. *Related Proceedings*

The ’109 patent is 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. That proceeding has been stayed pending resolution of this *inter partes* review. Paper 7, 2.

B. *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, 2020.² *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.

² In our decision to institute *inter partes* review, we determined that the ’109 patent has an effective filing of at least November 15, 2011, and was therefore eligible for *inter partes* review on December 4, 2020, the filing date of the Petition. Inst. Dec. 8–9.

Figure 1 of the '109 patent is reproduced below.

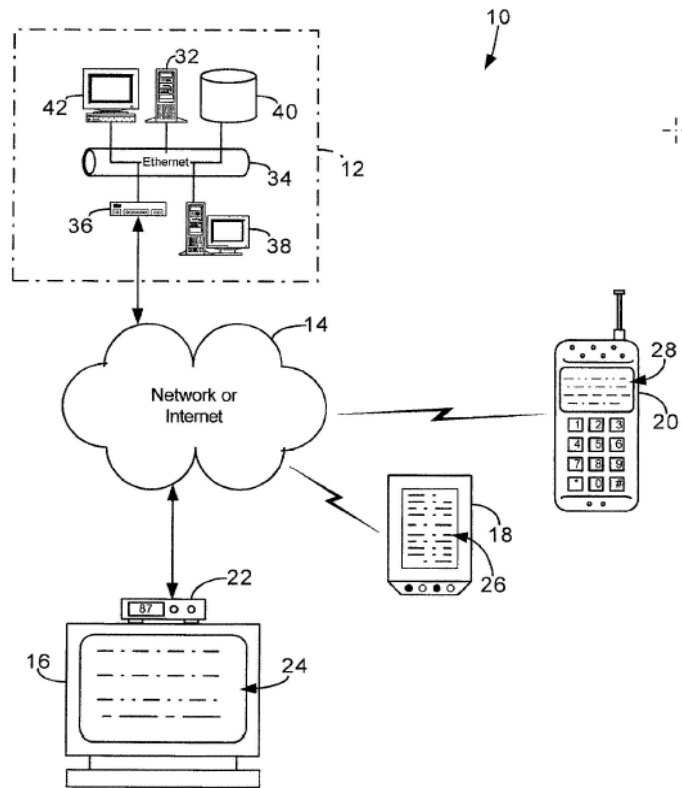


Figure 1 shows image display system 10 including visual server 12 and associated components in communication with a plurality of clients (i.e., set-top box 22, personal digital assistant (“PDA”) 18, and cellular telephone 20). Ex. 1001, 5:36–54. The '109 patent notes that “for reasons of cost, size, 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.” Ex. 1001, 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.” Ex. 1001, 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.

Figures 2B and 2D of the '109 patent are reproduced below.

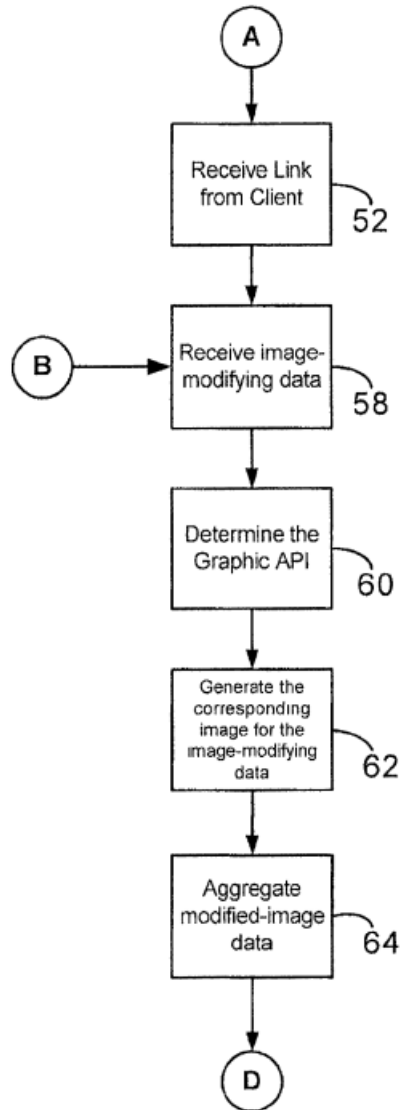


Fig. 2B

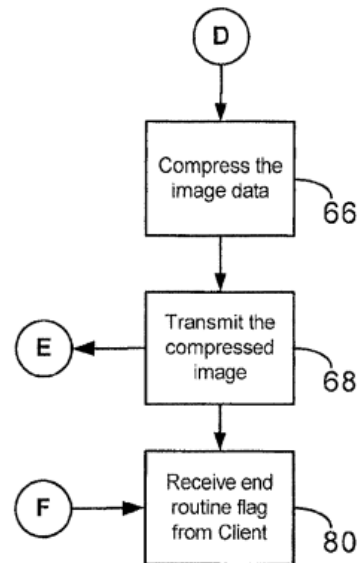


Fig. 2D

Figures 2B and 2D show a flowchart of the process on the server in receiving image-modifying data from the client, and then generating and transmitting a modified client image to the client. Ex. 1001, 5:24–29.

“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. Ex. 1001, 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.

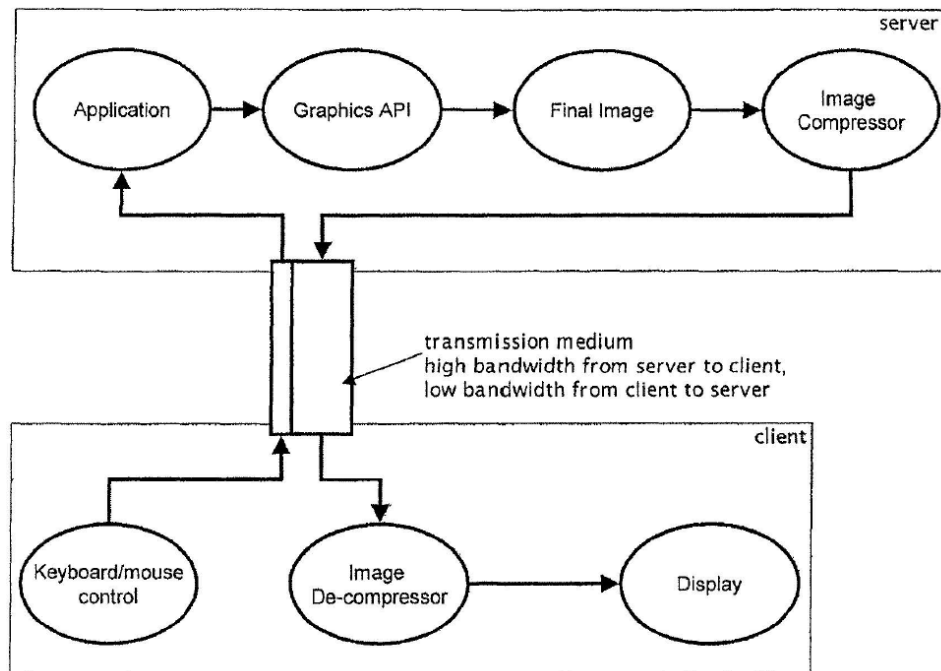


Figure 3 is a schematic of data and procedural flow in an embodiment of the '109 patent. Ex. 1001, 5:30–31. The '109 patent describes that image data is compressed at the server and transmitted to the client, where it is decompressed and displayed to the user. *See id.* at 8:1–22; *see also id.* at Figs. 2A–2D (a flowchart illustrating the processes executed on the server as well as the client to facilitate image generation).

C. Challenged Claims

We instituted review on independent claims 1 and 8, and dependent claims 2–7 and 9–12. 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.

Ex. 1001, 9:55–10:2.

D. The Instituted Grounds of Unpatentability and Declaration Evidence

As against the Challenged Claims, Petitioner asserts the following grounds of unpatentability, relying on the declaration testimony of Dr. Henry Fuchs (Exs. 1002, 1033). Pet. 3–4, 19–73.

Claim(s) Challenged	35 U.S.C. § ³	References
1, 3–12	103(a)	Wiltshire ⁴ , Saha ⁵
2	103(a)	Wiltshire, Saha, Chen ⁶
6, 11, 12	103(a)	Wiltshire, Saha, PC Magazine ⁷

Patent Owner supports its arguments with a Declaration by John C. Hart, Ph.D. (Ex. 2016).

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 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*, 800 F.3d at 1378 (discussing the burden of proof in *inter partes* review).

³ Because the Challenged Claims of the ’109 patent have an effective filing date before March 16, 2013 (*see supra* n.2), patentability is governed by the pre-AIA version of 35 U.S.C. § 103.

⁴ U.S. Patent No. 6,409,602 B1, filed Nov. 24, 1998, issued June 25, 2002 (Ex. 1004, “Wiltshire”).

⁵ U.S. Patent No. 6,404,817 B1, filed Nov. 20, 1997, issued June 11, 2002 (Ex. 1005, “Saha”).

⁶ 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”).

⁷ PC MAGAZINE, Vol. 18:16, Sept. 21, 1999 (Ex. 1007, “PC Magazine”).

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

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. 1002 ¶ 23). Patent Owner agrees. See PO Resp. 10 (citing Ex. 2009 ¶¶ 24–25).

We determine that the parties’ agreed 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 of ordinary skill in determining the patentability of the Challenged Claims.

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). 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. Additionally, only terms that are in controversy need to be construed, and these need be construed only to the extent necessary to resolve the controversy. See *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that “only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy”); *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor*

Co., 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs.* in the context of an *inter partes* review).

Petitioner initially asserts that it “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: “frame” and “mobile device.” PO Resp. 10–21. In its Reply, Petitioner disagrees with Patent Owner’s proposed constructions for both of those terms. Pet. Reply 1–12. We do not find it necessary, however, to resolve the parties’ claim construction dispute to decide the issues in this proceeding.

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.

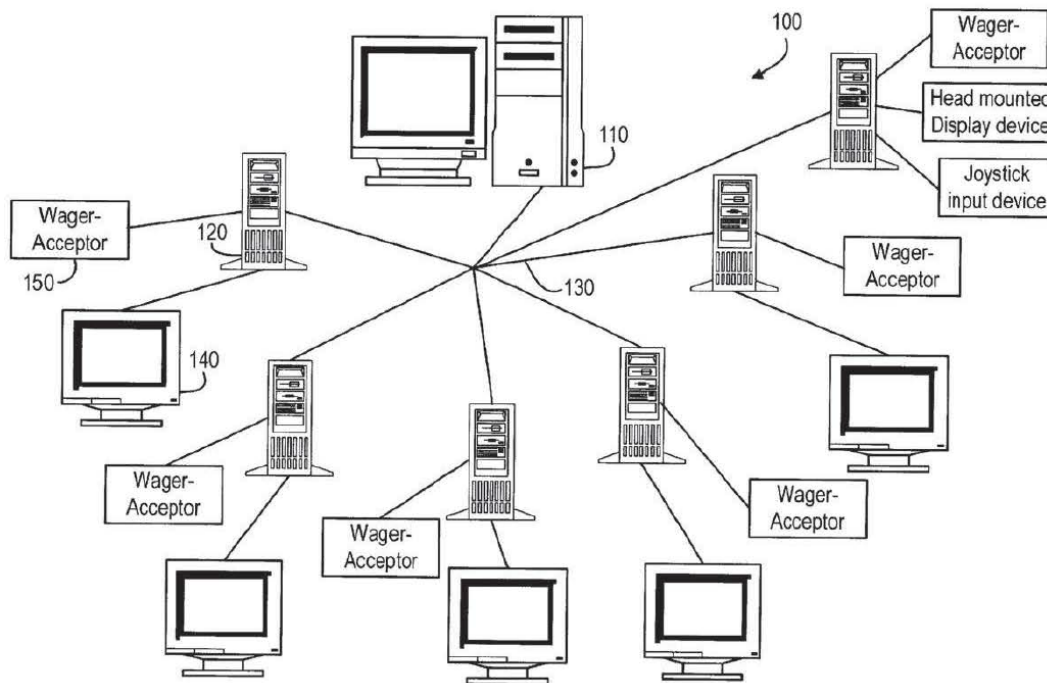


Figure 1D shows an overview of Wiltshire’s system, with “server/host computer 110 connected to a plurality of remote client/terminal computers 120.” Ex. 1004, 3:62–66. The client computers may have minimal storage, memory, and processing power because “the overwhelming majority of the gaming related 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 (e.g., display devices 140) and also processes any input commands detected by the client computer. *Id.* at 5:50–65.

Figure 2 of Wiltshire is reproduced below.

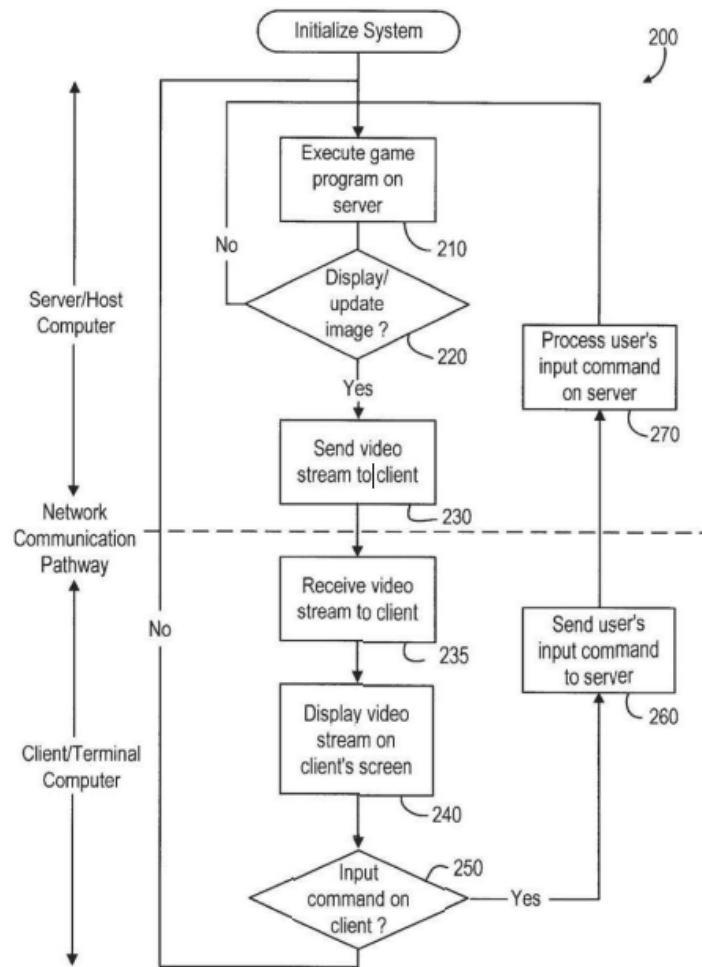


Figure 2 is a flow diagram showing the operation of Wiltshire's system.

Ex. 1004, 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 any type of graphical information including a bitmap, a JPEG file, a TIFF file or even an encoded audio/video stream such as a compressed video MPEG stream.” *Id.* at 7:11–18. The image 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 not persuaded that Petitioner has established by a

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

preponderance of the evidence that these claims are unpatentable under § 103(a) in view of Wiltshire and Saha.

1. Independent Claims 1 and 8

Patent Owner argues that the combination of Wiltshire and Saha fails to teach or suggest the “generating at least one updated image” limitation of independent claims 1 and 8. PO Resp. 24–32. Specifically, Patent Owner contends that claims 1 and 8 each include distinct limitations directed to “generating,” “compressing,” and “transmitting,” and also require that the three steps be performed or be configured to be performed in that order. *Id.* at 24–26 (citing Ex. 1001, 6:33–38, 8:4–6, 8:10–14, 9:62–66, 10:39–40, Figs. 2B, 2D; Ex. 2009 ¶¶ 41–42). Patent Owner argues that Wiltshire, the reference that Petitioner primarily relies upon as teaching those limitations, “never describe[s] ‘generating at least one updated image,’ ‘compressing the at least one updated image,’ and then ‘transmitting the compressed updated image.’” *Id.* at 28; *see id.* at 27–32. We focus our analysis below on the “generating” limitation.

a) Petitioner’s Contentions

Petitioner contends that Wiltshire teaches the “generating” limitation because Wiltshire 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).

b) Patent Owner's Arguments

Patent Owner argues that Wiltshire does not disclose generating an updated image in response to user input, as required by the claims. *See* PO Resp. 24–32. Patent Owner argues that although Wiltshire discloses sending an image from the server to a client and that the image may include “a compressed video MPEG stream,” Wiltshire is entirely silent as to the content or origin of that compressed video MPEG stream, and therefore does not disclose generating an updated image, compressing that updated image, and then transmitting the compressed updated image. *Id.* at 27–28 (citing Ex. 1004, 7:13–18). According to Patent Owner, Wiltshire’s failure to teach the generating step is confirmed by Wiltshire’s disclosure that “in some embodiments, images for use by computer gaming system 100 are preloaded into a memory of client/terminal computers 120 to further reduce the amount of communication network bandwidth required.” *Id.* (quoting Ex. 1004, 8:8–11). Patent Owner argues images that are preloaded onto the client are preexisting images and are not “generated” in response to “updating the state of the interactive software application” as required by claims 1 and 8. *Id.* at 28–29 (citing Ex. 2009 ¶¶ 61–63).

Patent Owner also faults Petitioner’s characterization of step 220 shown in Figure 2 of Wiltshire, arguing that Petitioner simply assumes the single word “update” in Figure 2 means that Wiltshire would generate an “updated image” in response to updated software state when it could simply mean update the display by choosing a different preexisting image to

display, possibly an image that is already resident on the client.

PO Resp. 29–30 (citing Ex. 1004, 7:9–12, 8:8–11, Fig. 2); *see also* Tr. 42:3–14, 42:25–43:17. Patent Owner further asserts that aside from the use of “update” in Figure 2, Wiltshire does not disclose compressing any updated image, but instead describes “moving straight from determining whether an image was to be displayed at the client (step 220) to sending the image (step 230).” PO Resp. 30 (citing Ex. 1004, 7:9–15).

c) Petitioner’s Reply

In its Reply, Petitioner responds that “Wiltshire disclos[es] the ‘update image’ step 220 in Figure 2 and ‘modifying’ an image based on the game state on the server.” Pet. Reply 12 (citing Pet. 24–27; Ex. 1004, 8:61–63, Fig. 2). Petitioner contends that “Wiltshire discloses that the decision to ‘update’ or ‘modify’ an image at the server is in response to the updated game state running on the server, meaning that the server will update or modify the image in response to the updated game state when the answer to step 220 is yes.” *Id.* (citing Pet. 26; Ex. 1033 ¶ 41). According to Petitioner, Wiltshire describing “preloading images onto the client” is only for “some embodiments,” whereas “[t]he main embodiment described in Figure 2 relies on transmitting an updated image ‘from the server/host computer 110 to client/terminal computer 120,’ or as shown in the flow chart of Figure 2, ‘Send[ing] video stream to client’ 230 following the step 220 of ‘update image.’” *Id.* at 12–13 (citing Ex. 1004, 7:13–15, Fig. 2); *see also* Tr. 85:21–86:25. Petitioner asserts that “[p]re-loaded images would also make no sense for interactive video games like ‘Doom,’ which generate updated images in response to user inputs in real time.” Pet. Reply 13 (citing Ex. 1025, 52:16–23, 53:19–54:9; Ex. 1004, 1:26–43; Ex. 1033 ¶¶ 42–43).

d) Analysis

We agree with Patent Owner that Petitioner has failed to show by a preponderance of the evidence that the combination of Wiltshire and Saha teaches “generating at least one updated image at the server in response to updating the state of the interactive software application,” as recited in claim 1. We also agree with Patent Owner that Petitioner has failed to show by a preponderance of the evidence that the combination of Wiltshire and Saha teaches a server configured for “generating at least one updated image at the server in response to updating the state of the interactive software application,” as recited in claim 8. Petitioner relies on Wiltshire’s Figure 2 and Wiltshire’s description of that figure as teaching the “generating” limitation. *See* Pet. 24–27; Pet. Reply 12–18. Specifically, Petitioner argues that the “determination of whether an image is to be displayed at stage 220 includes deciding whether to ‘update’ the image,” and “stage 220 will ‘display/update [the] image’ in response to updates to the game state.” Pet. 26 (citing Ex. 1004, 8:61–63, Fig. 2) (alteration in original). According to Petitioner, a person of ordinary skill in the art would have understood that “the game program at the server will determine whether to *generate an updated image* in response to the updated game state.” *Id.* (citing Ex. 1002 ¶ 76) (emphasis added).

For the reasons discussed below, we find that Wiltshire fails to include express disclosure of generating an updated image at the server, as claimed. The parties disagree as to how a person of ordinary skill in the art would have understood Wiltshire’s gaming system to operate, based on the limited disclosure in Wiltshire on this point. We are not persuaded, by a preponderance of the evidence, that an ordinarily skilled artisan would have understood Wiltshire’s system to necessarily operate as Petitioner proposes,

but rather find Patent Owner’s proposal just as likely to have been understood by such an artisan.

As an initial matter, Patent Owner argues that the claimed steps reflect the invention described in the specification in which the server *generates* a modified image based upon the image-modifying data received from the client. PO Resp. 24–25 (citing Ex. 1001, 8:4–6, Figs. 2B, 2D; Ex. 2009 ¶¶ 40–43). Patent Owner distinguishes the claimed “generating” step from mere selection of pre-existing images, which Patent Owner contends Wiltshire discloses. *Id.* at 27–31. We agree with Patent Owner that generating an updated image, as claimed, requires creation of a new image in response to updating the state of the interactive software application.

Figures 2A and 2B from the '109 patent are reproduced below.

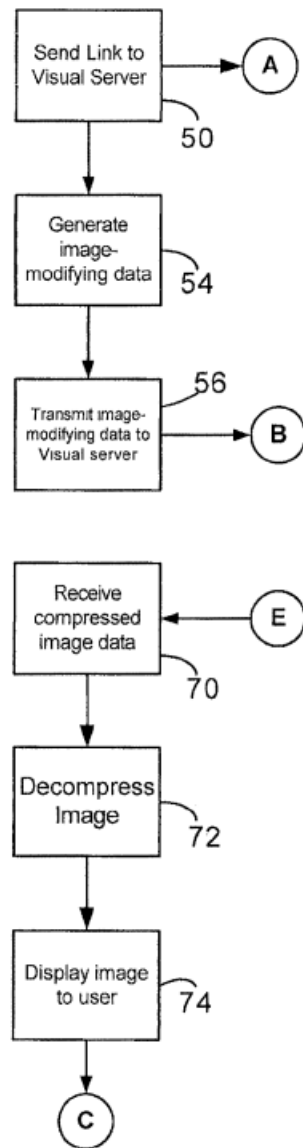


Fig. 2A

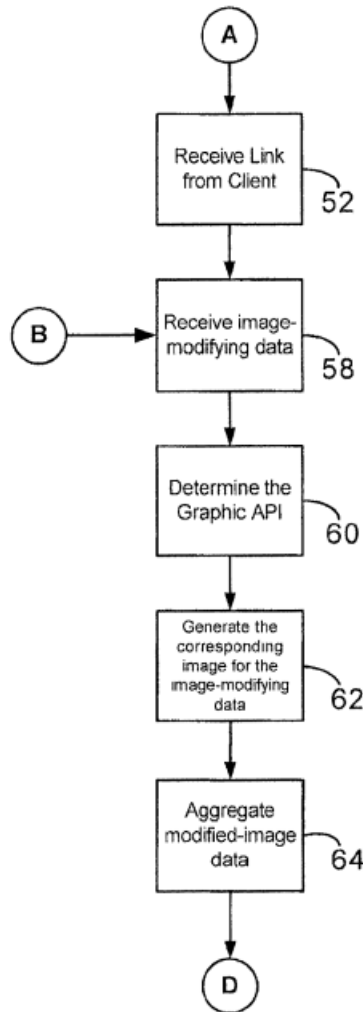


Fig. 2B

Figure 2A shows a flowchart of the process on the client in communication with the server to facilitate image generation. Ex. 1001, 5:21–23. Figure 2B shows a flowchart of the process on the server in receiving image-modifying data from the client, and then generating and transmitting a modified client image to the client. *Id.* at 5:24–27. As evident from Figures 2A and 2B, the

generating step involves generating the “corresponding image for the image-modifying data” received from the client, i.e., creating a new image based on data received from the client. *See also id.* at 8:4–6 (“The virtual server 12 otherwise determines the graphic API, as shown at step 60, based upon the image-modifying data receiving, and then generates the corresponding modified image based upon the image-modifying data received from the client 16, 18, 20, as shown at step 62.”). The claimed steps track this disclosure, requiring receiving user input signals from the client, using those signals to update the state of the interactive software application, and generating an updated image in response to updating the state of the interactive software application. *See, e.g., id.* at 9:58–64; *see also* Ex. 2009 ¶ 40 (“The second ‘generating’ step generates an updated image in response to these user input signals (specifically to reflect the new state of the interactive software application updated according to the user input signals).”). We therefore agree with Patent Owner that modifying what is displayed on the client device merely by selecting a pre-existing image does not meet the “generating” limitation. In view of this determination, we are not persuaded, by a preponderance of the evidence, that Wiltshire discloses the “generating” limitation.

To start with, step 220 of Wiltshire’s Figure 2 does not disclose *generating* an updated image in response to the updated game state. Instead, it merely states “display/update image?” Ex. 1004, Fig. 2. The description accompanying Figure 2 of Wiltshire does not explain what “display/update image?” means. *See* Ex. 1001, 7:6–44. Rather, the cited disclosure in Figure 2 is located only within a decision symbol—a symbol used to indicate a *question* in the flow diagram, not the steps that occur after the decision. In describing step 220, Wiltshire discloses that “[s]tage 220 then

determines *whether an image is to be displayed* on the screen of client/terminal computer 120, in which case operation 200 proceeds to stage 230.” *Id.* at 7:9–12 (emphasis added); PO Resp. 29. That is, even though the flowchart at step 220 shows “display/update image?” it does not disclose actually updating the image; it merely discloses asking the question, and discloses “determining whether an image is to be displayed.” According to Wiltshire:

In stage 230, an image is sent from server/host computer 110 to client/terminal computer 120. The image may include any type of graphical information including a bitmap, a JPEG file, a TIFF file or even an encoded audio/video stream such as a compressed video MPEG stream.

Ex. 1004, 7:12–16. Step 230, in response to the “display/update image?” decisional step, discloses *sending* the image to the client computer. It does not disclose how that image is obtained at the server.

We agree with Petitioner that Wiltshire separately discloses that “Game program 112 . . . responds to input command 112 by updating the state of the game and *possibly modifying the image displayed* on screen 140,” and that disclosure teaches that the displayed image is possibly modified, but, beyond that, Wiltshire does not disclose *how* the displayed image is modified. Ex. 1004, 8:61–63 (emphasis added). When read in context of Wiltshire’s preceding discussion of Figure 2 and Wiltshire’s disclosure of preloaded images, Petitioner has not persuasively shown that modifying the image displayed involves generating an updated image. Rather, we are persuaded that modifying the display refers to selecting an already available image to display on the client. *See, e.g.*, Ex. 1004, 7:9–14 (“Stage 220 then determines *whether an image is to be displayed* on the screen of client/terminal computer” (emphasis added)). Moreover,

Wiltshire's disclosure of possibly modifying the image displayed on the screen relates to user interactions where a user selects one of the games displayed in the casino floor image shown in Figure 4B, where the screen is modified to display the image shown in Figure 5A. *See id.* at 8:42–67. As discussed in further detail below, Petitioner has not persuasively shown that each of these “updated” or “modified” casino floor and game displays are generated as opposed to selected from pre-existing images.

In support of Petitioner's contentions, Dr. Fuchs testifies that

Wiltshire discloses that the decision to “update” or “modify” an image at the server is in response to the updated game state running on the server, meaning that *the server will, at times, update or modify the image in response to the updated game state*. . . . For example, if the decision at step 220 of Figure 2 is to “update [the] image,” Wiltshire's server will do so, as Wiltshire explicitly describes, including at column 8, lines 61–63.

Ex. 1033 ¶ 41 (citing Ex. 1002 ¶¶ 71–79) (emphasis added). We do not find Dr. Fuchs's testimony persuasive because Wiltshire's disclosure does not support that “updating” or “modifying” the image displayed on the client necessarily requires *generating* an updated image in response to the updated game state instead of simply selecting a pre-existing image to display, as argued by Patent Owner. *See* PO Resp. 24–25 (arguing that the claimed steps reflect the invention described in the specification in which the server generates a modified image) (citing Ex. 1001, 8:4–6, Figs. 2B, 2D; Ex. 2009 ¶¶ 40–43); Ex. 2009 ¶ 40 (“The second ‘generating’ step generates an updated image in response to these user input signals (specifically to reflect the new state of the interactive software application updated according to the user input signals).”). As discussed above, the cited portion of Wiltshire merely discloses “*possibly modifying the image displayed on screen,*”

without explaining how the displayed image may be modified. As Patent Owner points out, Petitioner does not argue that Wiltshire renders the “generating” limitation obvious or that a person of ordinary skill in the art would have found it obvious to modify Wiltshire’s system to implement the generating step. *See* Pet. 24–27 (“Wiltshire discloses this limitation.”); Ex. 1002 ¶¶ 71–79; Ex. 1033 ¶ 41; *see also* PO Resp. 31–32 (arguing that Petitioner does not argue that Wiltshire renders the “generating” limitation obvious). Wiltshire’s silence on how images displayed at the client are updated or modified renders Petitioner’s contentions deficient.

Instead, we find persuasive Dr. Hart’s testimony that a person of ordinary skill in the art would have understood Wiltshire’s disclosure “that the ‘image [] generated by the game computer program’ could include the contents of a pre-existing compressed image file,” rather than requiring the image be updated. Ex. 2009 ¶ 62 (emphasis added); *id.* ¶ 63 (testifying that a person of ordinary skill in the art would have understood at least two ways to include contents of a pre-existing image file in view of Wiltshire’s disclosure). Dr. Hart bases his testimony on the fact that Wiltshire’s disclosure regarding its step 230 states that that image “may include any type of graphical information” and that graphical information could include “a JPEG file” or “a TIFF file.” *Id.* ¶ 62 (citing Ex. 1004, 7:18–19). The fact that Wiltshire specifically refers to the use of a *file* supports Dr. Hart’s testimony that the updated image that Wiltshire refers to could simply be a pre-existing image file. *See id.* ¶ 63; *see also* PO Resp. 28 (providing a potential scenario that need not “involve the creation of a new image or compression because the video clip may come from a file held on the server just for that purpose”).

Wiltshire further discloses that “in some embodiments, images for use by computer gaming system 100 are preloaded into a memory of client/terminal computers 120 to further reduce the amount of communication network bandwidth required.” Ex. 1004, 8:8–11. Petitioner does not argue these preloaded images are generated in response to “updating the state of the interactive software application” as required by the claims. *See* PO Resp. 29; *see generally* Pet. Reply. Petitioner instead argues that preloading images is only for “some embodiments” of Wiltshire’s system, and not the “main embodiment.” Pet. Reply 12–13. That argument misses the point. Wiltshire’s discussion here is directed to reducing the amount of network bandwidth required rather than how the images themselves are obtained. Wiltshire’s reference to “some embodiments” therefore distinguishes the location where those pre-existing images are stored, not the very use of preexisting images. *See* Ex. 1004, 8:8–11; *see also* 7:65–8:2 (explaining how caching the transmitted images can also reduce the amount of bandwidth required); Tr. 46:17–47:5.

Petitioner contends “[p]re-loaded images would also make no sense for interactive video games like ‘Doom,’ which generate updated images in response to user inputs in real time.” Pet. Reply 13 (citing Ex. 1004, 1:26–43). Dr. Fuchs testifies, with an example of gameplay from Doom, that the Doom player’s perspective changes dynamically based on what the user is doing in real time, and that “[e]ach image is updated to reflect the current state of the player within the game world.” Ex. 1033 ¶¶ 42–43 (citing <https://www.youtube.com/watch?v=8mEP4cflrd4>). Dr. Fuchs explains that “[p]re-loading an image [in Wiltshire] would not work in this type of game because the client would not know what action the player would take at every instant in time.” *Id.* ¶ 43. But Wiltshire does not teach

using the operation disclosed in Figure 2 with Doom, and we find nothing in Wiltshire to suggest that a person of ordinary skill in the art would have understood that Wiltshire's system could possibly have supported that game in the manner proposed by Petitioner. In fact, the *only* mention of Doom in Wiltshire appears in a lengthy list of games that Wiltshire states as included in the definition of the term "game" or "gaming"—provided in the "Related Art" section of Wiltshire. *See* Ex. 1004, 1:26–44. Given Wiltshire's use solely of casino gaming stations for its description of the invention (as discussed below), we are not persuaded that a person of ordinary skill in the art would have understood that every video game mentioned on the list in the background section could also be implemented using the operation disclosed in Wiltshire's Figure 2. *See, e.g., id.* at 1:15–25 (describing computer gaming systems in the related art), 2:20–3:3 (summary of Wiltshire's invention); PO Sur-reply 12–13; Ex. 1025, 45:10–19, 48:11–49:2.

On the other hand, Wiltshire's disclosure only provides details as to how its system is used to implement casino games such as Bertha, Blackjack, Video Poker, Slots, and Keno. *See* Ex. 1004, 8:37–11:53; *id.* at 8:42–9:2 (discussing the virtual casino floor that allows a user to select one of many casino games supported by the gaming system). Figures 4A–9D illustrate the images displayed on the client computer's screen during operation of Wiltshire's gaming system. *Id.* at 8:38–41. For example, Wiltshire's Figure 4A, reproduced below, shows an "attract mode" image displayed on the client screen. *Id.* at 8:42–44.

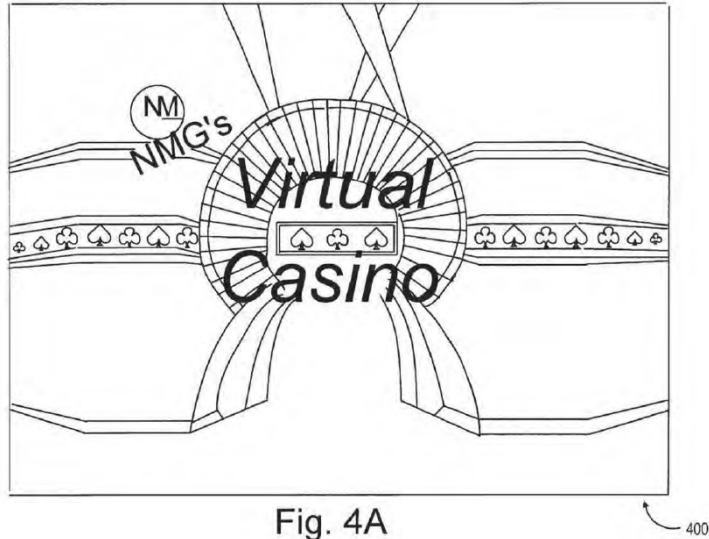


Figure 4A is an image displayed on the screen of a client computer in attract mode. Ex. 1004, 3:20–21.

Dr. Hart testifies that a person of ordinary skill in the art would have understood that these graphic elements “need not be generated in real-time and an efficient implementation would have used a premade video file for these elements.” Ex. 2009 ¶ 66; Tr. 45:7–46:14. Once a user activates Wiltshire’s gaming system by touching the screen, the casino floor image shown in Figure 4B, reproduced below, is displayed on screen. Ex. 1004, 8:45–51.

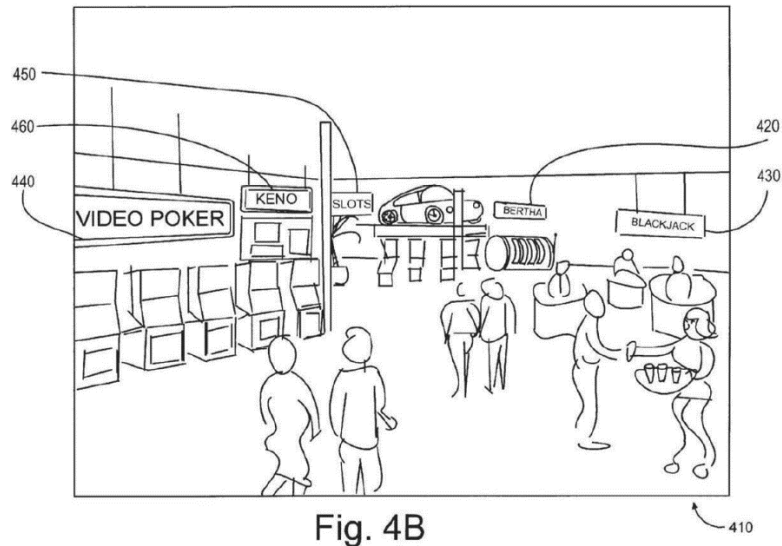
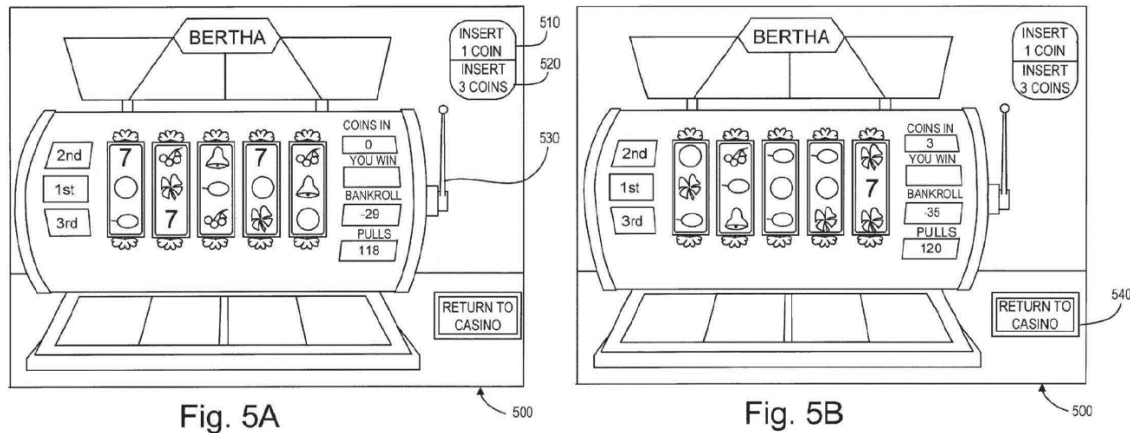


Figure 4B is an image displayed on the screen of a client computer showing a virtual casino floor.
Ex. 1004, 3:22–24.

Dr. Hart testifies that a person of ordinary skill in the art would have similarly understood that the appropriate manner in which to display such a casino floor image would have been through a pre-encoded MPEG file that would be utilized for the display. Ex. 2009 ¶ 67. Wiltshire discloses that each of the available games is represented by a virtual button and once the user selects any of those games by clicking on a section of the screen, that command is passed along to game program 112, which updates the state of the game possibly modifying the image displayed on the client's screen. Ex. 1004, 8:51–63. For example, if the user selects Bertha on display shown in Figure 4B, the image shown in Figure 5A is displayed to the user, and when the user pulls the lever shown in Figure 5A to activate the slot machine, the image shown in Figure 5B is displayed to the user. *Id.* at 8:66–9:8.

Figures 5A and 5B of Wiltshire are reproduced below.



Figures 5A and 5B are a images displayed on the screen of a client computer showing a front view of a slot machine. Ex. 1004, 3:26–30.

In view of Wiltshire’s disclosure, Dr. Hart’s testimony that each of these “updated” or “modified” displays could have been accomplished through the use of pre-encoded files is persuasive. *See* Ex. 2009 ¶ 62; Tr. 47:17–48:25. Wiltshire’s example screens in Figures 4A–9D suggest that these could have simply been pre-existing images and would not necessarily need to be generated in real time. We therefore agree with Patent Owner that “Wiltshire’s disclosure [is] completely silent as to the content or origin of that ‘compressed video MPEG stream’” and that Petitioner imparts to Wiltshire something Wiltshire never discloses. PO Resp. 27–28 (citing Ex. 2009 ¶¶ 60–68).

Fundamentally, Petitioner’s contentions as to the “generating” claim limitation are based not on a specific disclosure in Wiltshire but rather on how a person of ordinary skill in the art would have understood Wiltshire’s gaming system to operate from Wiltshire’s limited disclosure. As explained above, the examples provided by Petitioner do not persuade us by a preponderance of the evidence that one of ordinary skill in the art would

have understood Wiltshire's system as operating differently than as proposed by Patent Owner. As a result, we do not find it more probable than not that one of ordinary skill in the art would have understood Wiltshire's system to operate as Petitioner proposes. And even though one of ordinary skill in the art would have recognized that client display in Wiltshire's system is updated in response to user input signals, we find that Petitioner has not established by a preponderance of the evidence that an updated image is *generated* as part of that process.

Moreover, in arguing that Patent Owner fails to show how each of the interactive games listed in Wiltshire's background section would be implemented in Wiltshire's system, Petitioner improperly attempts to shift the burden to Patent Owner. *See, e.g.*, Pet. Reply 13. "In an *inter partes* review, the burden of persuasion is on the petitioner to prove 'unpatentability by a preponderance of the evidence,' 35 U.S.C. § 316(e), and that burden never shifts to the patentees." *Dynamic Drinkware*, 800 F.3d at 1378. Even in the context of the burden of production, "no burden shifts from the patent challenger to the patentee . . . where the only issues to be considered are what the prior art discloses, whether there would have been a motivation to combine the prior art, and whether that combination would render the patented claims obvious." *Magnum Oil Tools*, 829 F.3d at 1376. Patent Owner's argument is that Wiltshire's disclosure is silent as to the content or origin of that MPEG stream, and therefore, Wiltshire fails to teach the "generating" limitation. *See* PO Resp. 28. It is Petitioner's burden to demonstrate, by a preponderance of the evidence, that a person of ordinary skill in the art would have necessarily understood Wiltshire's disclosure in the manner that Petitioner proposes. *See, e.g., Magnum Oil Tools*, 829 F.3d at 1377–79 (holding that the Board

erred where it required Patent Owner to rebut Petitioner’s assertions that a skilled artisan would have been motivated to combine the prior art references, where Petitioner’s evidence failed to support its assertion in the first place).

We find that Petitioner has failed to meet that burden as to the “generating” limitation of claims 1 and 8 of the ’109 patent.

2. Conclusion as to Obviousness of Claims 1, 3–12

“Once all relevant facts are found, the ultimate legal determination [of obviousness] involves the weighing of the fact findings to conclude whether the claimed combination would have been obvious to an ordinary artisan.”

Arctic Cat Inc. v. Bombardier Recreational Prods. Inc., 876 F.3d 1350, 1361 (Fed. Cir. 2017). Because we conclude, based on the evidence and arguments presented by Petitioner in its Petition and the Reply, that Petitioner has not met its burden to show by a preponderance of the evidence that a person of ordinary skill in the art would have understood the combination of Wiltshire and Saha as teaching “generating at least one updated image at the server in response to updating the state of the interactive software application,” as claimed, Petitioner has not shown that the subject matter of claims 1 and 8 of the ’109 patent would have been obvious over Wiltshire and Saha at the time of the invention. For the same reasons, we conclude that Petitioner has not shown that the subject matter of dependent claims 3–7 and 9–12 of the ’109 patent would have been obvious over Wiltshire and Saha at the time of the invention. *Mylan Pharm. Inc. v. Research Corp. Techs., Inc.*, 914 F.3d 1366, 1376 (Fed. Cir. 2019) (“Dependent claims, with added limitations, are generally not obvious when their parent claims are not.”); Pet. 34–41, 45–51.

F. Obviousness over Wiltshire, Saha, and Chen; Obviousness over Wiltshire, Saha, and PC Magazine

Petitioner contends that the subject matter of claim 2 would have been obvious in view of Wiltshire, Saha, and Chen. Pet. 3, 58–65. Petitioner further contends that the subject matter of claims 6, 11, and 12 would have been obvious in view of the combination of PC Magazine with Wiltshire and Saha. *Id.* at 3–4, 66–73. In each of these grounds, however, Petitioner relies upon the same analysis discussed above in connection with the Wiltshire and Saha ground for the “generating” limitation of independent claims 1 and 8. *See* Pet. 58–73. Accordingly, for the same reasons discussed above regarding the “generating” limitation of claims 1 and 8 in the context of the Wiltshire-Saha ground, Petitioner has not shown by a preponderance of the evidence that the combined teachings of Wiltshire, Saha, and Chen would have rendered the subject matter of claim 2 obvious or that the combined teachings 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.

IV. PATENT OWNER’S MOTION TO EXCLUDE

Patent Owner filed a motion to exclude Exhibits 1024, 1029, and 1030, and a portion of Dr. Fuchs’s declaration (Exhibit 1033 ¶ 79). Paper 31, 1–6; Paper 33, 1–5.

Exhibit 1024 is an exhibit to the deposition of Dr. Hart, and Petitioner does not refer to that exhibit in its briefing. Paper 32, 10. Petitioner has no objection to excluding Exhibit 1024 from the record. *Id.* Accordingly, Patent Owner’s motion to exclude as to Exhibit 1024 is *granted*.

Petitioner relies on Exhibits 1029 and 1030 as well as paragraph 79 of Dr. Fuchs’s declaration in Petitioner’s Reply for demonstrating that a person

of ordinary skill in the art would have been motivated to combine Chen with Wiltshire and Saha. *See* Pet. Reply 25–27. Under the particular circumstances in this case, we need not assess the merits of Patent Owner’s Motion to Exclude as to these exhibits. As discussed above, because we determine that Petitioner has not demonstrated by a preponderance of the evidence that the combination of Wiltshire and Saha teaches the “generating” limitation of independent claims 1 and 8 of the ’109 patent, we do not address Petitioner’s contentions based on the combination of Wiltshire, Saha, and Chen as to dependent claim 2 of the ’109 patent. Accordingly, Patent Owner’s motion to exclude as to Exhibits 1029 and 1030 as well as paragraph 79 of Exhibit 1033 is *dismissed* as moot.

V. CONCLUSION

For the reasons discussed above, Petitioner has not demonstrated, by a preponderance of the evidence, that claims 1–12 of the ’109 patent are unpatentable. Our conclusions regarding the Challenged Claims are summarized below:

Claims Challenged	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 3–12	103(a)	Wiltshire, Saha		1, 3–12
2	103(a)	Wiltshire, Saha, Chen		2
6, 11, 12	103(a)	Wiltshire, Saha, PC Magazine		6, 11, 12
Overall Outcome				1–12

VI. ORDER

It is, therefore,

ORDERED that claims 1–12 of U.S. Patent No. 10,681,109 B2 are not determined to be unpatentable;

FURTHER ORDERED that Patent Owner’s motion to exclude (Paper 31) is *granted in part* and *dismissed in part*; and

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

IPR2021-00237
Patent 10,681,109 B2

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