

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY INTERACTIVE ENTERTAINMENT LLC,
Petitioner,

v.

INTELLECTUAL PIXELS LIMITED,
Patent Owner.

IPR2020-01248
Patent 8,667,093 B2

Before JENNIFER S. BISK, JENNIFER MEYER CHAGNON, 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 1–9, 13, and 15–19 (the “challenged claims”) of U.S. Patent No. 8,667,093 B2 (Ex. 1001, “the ’093 patent”). Paper 3 (“Petition” or “Pet.”). Intellectual Pixels Limited (“Patent Owner”) filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). Patent Owner informed us that it has disclaimed claims 5–9, 13, and 15–19. *Id.* at 1, n.1 (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, 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. *Related Proceedings*

The ’093 patent is asserted in *Intellectual Pixels Ltd. v. Sony Interactive Entertainment LLC*, No. 8:19-cv-01432 (C.D. Cal. filed July 25, 2019). Pet. 1; Paper 4, 2. That proceeding has been stayed pending resolution of this *inter partes* review. Paper 8, 2.

B. The '093 Patent (Ex. 1001)

The '093 patent, titled “Image Display System with Visual Server,” was filed on November 15, 2011, and claims priority to a provisional application filed on January 24, 2001. Ex. 1001, codes (22), (54), (60), (63). The '093 patent issued on March 4, 2014. *Id.* at code (45).

The '093 patent relates to computer graphics and a graphical image display system that uses a visual server to generate and transmit images to clients. *Id.* at 1:19–21. The '093 patent explains that display of three-dimensional (“3D”) images at a client requires dedicated graphics hardware not available on consumer client devices such as personal digital assistants, mobile telephones, and television set-top boxes. *Id.* at 3:9–12. The '093 patent invention seeks to display complex three-dimensional graphics, such as those used by games, on such consumer client devices by utilizing the resources of a visual server. *Id.* at 3:12–17.

Figure 1 of the '093 patent is reproduced below.

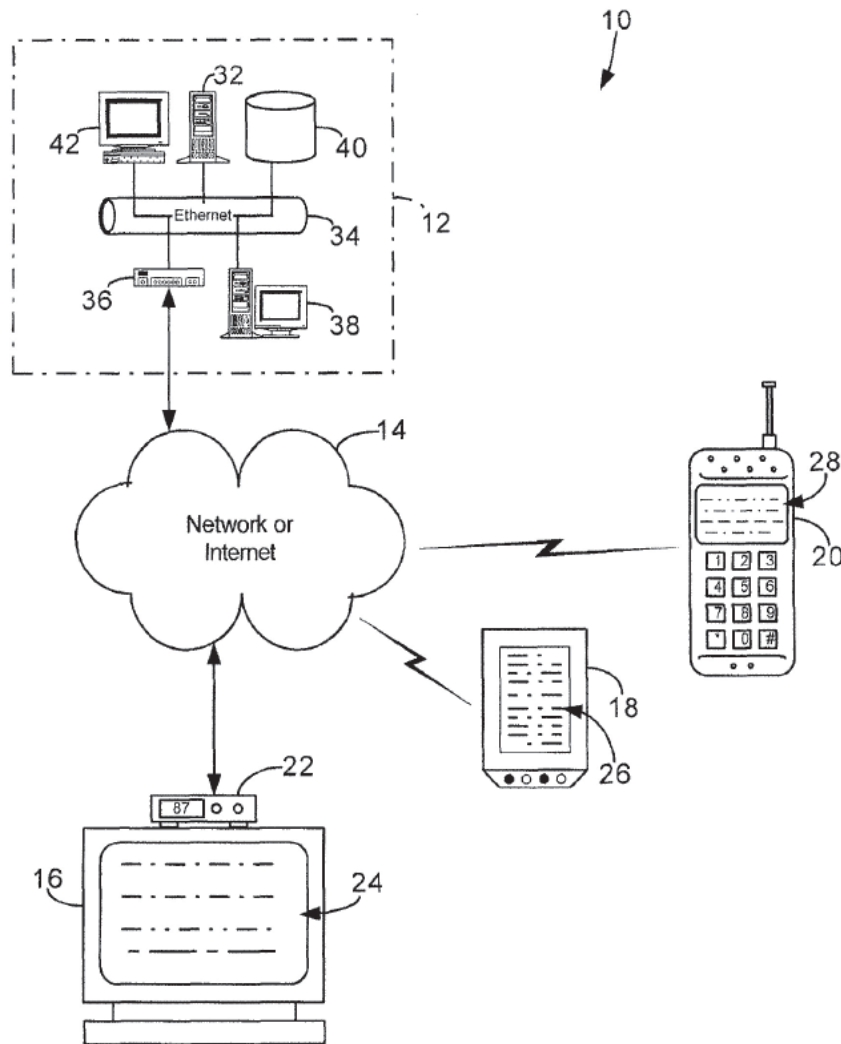


Fig. 1

Figure 1 shows image display system 10 with visual server 12 and associated components in communication with a plurality of clients (*i.e.*, television 16 with set-top box 22, PDA 18, and cellular telephone 20) across a network. *Id.* at 4:61–64; 5:13–29.

The '093 patent explains that the visual server runs standard software, such as games, and further supports software modified to enable control of an application from a client and the delivery of a result of 3D drawing to a

client. *Id.* at 3:26–29. Visual server 12 selectively receives image-modifying data from a client (16, 18, or 20) corresponding to a generated image. *Id.* at 6:3–7. The server then generates a modified image based upon the image-modifying data, compresses the image or image data with a specific compression/decompression algorithm (“codec”), and transmits the compressed data back to the client. *Id.* at 6:7–12. The client decompresses the received image data and displays the image on a display (24, 26, or 28). *Id.* at 6:24–28. The ’093 patent explains that any industry standard codecs, such as MPEG, JPEG, and H.261, may be used to compress data at the server. *Id.* at 6:28–31.

C. Challenged Claims

Petitioner challenges claims 1–9, 13, and 15–19, of which independent claim 1 and dependent claims 2–4 remain at issue. Claim 1 is reproduced below.

1. A method of playing interactive games on a client device having an image display, comprising:
 - sending user input control signals to an application, running on a server, which generates 3-dimensional graphics accordingly;
 - receiving, from said server, said 3-dimensional graphics in the form of a compressed stream of images;
 - decompressing said compressed stream of images into at least one decompressed image at said client device, said at least one decompressed image corresponding to said graphics; and
 - displaying said at least one decompressed image at the display of said client device, wherein said client device does not perform 3-dimensional graphics processing on said at least one decompressed image, and wherein said client device is separate from said server.

Ex. 1001, 9:23–38.

D. 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, 24–74.

Claims Challenged	35 U.S.C. §¹	Reference(s)/Basis
1–3	103(a)	Schmidt ²
1–3	103(a)	Schmidt, Keslin ³
4	103(a)	Schmidt, IEEE 802.3 Standard ⁴
4	103(a)	Schmidt, Keslin, IEEE 802.3 Standard

E. Disclaimer

Patent Owner states “[a]lthough Petitioner challenged claims 5–9, 13, and 15–19, those claims have been disclaimed and thus are no longer subject to an IPR challenge.” Prelim. Resp. 1, n.1 (citing Ex. 2001). 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, 1, 5.

A “patent owner may file a statutory disclaimer under 35 U.S.C. § 253(a) in compliance with § 1.321(a) of this chapter,

¹ Because the ’093 patent issued from a patent application that was filed before March 16, 2013, patentability is governed by the version of 35 U.S.C. § 103 preceding the Leahy-Smith America Invents Act (“AIA”), Pub L. No. 112–29, 125 Stat. 284 (2011).

² Brian K. Schmidt et al., The Interactive Performance of SLIM: a Stateless, Thin-Client Architecture, 17TH ACM SYMPOSIUM ON OPERATING SYSTEMS PRINCIPLES (SOSP ’99), Dec. 12–16, 1999, at 32 (Ex. 1004, “Schmidt”).

³ U.S. Patent No. 7,274,368 B1, issued Sept. 25, 2007 (Ex. 1005, “Keslin”).

⁴ THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC., LOCAL AREA NETWORKS, CARRIER SENSE MULTIPLE ACCESS WITH COLLISION DETECTION, ANSI/IEEE STD. 802.3–1985, ISO/DIS 8802/3 (1985) (Ex. 1006, “IEEE 802.3 Standard”).

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 5–9, 13, and 15–19 of the ’093 patent. Ex. 2001. Because these 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. 37 C.F.R. § 42.107(e); *General Electric 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)); *Paragon 28, Inc. v. Wright Med. Tech., Inc.*, IPR2019-00894, Paper 17 at 29–30 (PTAB Sept. 25, 2019) (concluding that institution on claims that have been disclaimed, and thus, no longer exist, was not possible).

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, 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. *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); *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 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).

Petitioner asserts that Schmidt, either alone or in combination with Keslin and IEEE 802.3 Standard, would have rendered the subject matter of certain claims of the '093 patent obvious to one of ordinary skill in the art at the time of the invention. Pet. 24–74. We analyze the 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. 18 (citing Ex. 1002 ¶¶ 25–27). 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 '093 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) (2019). The claim construction standard includes construing claims in accordance with the ordinary and customary meaning of such claims as understood by one of ordinary skill in the art at the time of the invention. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc). In construing claims in accordance with their ordinary and customary meaning, we take into account the specification and prosecution history. *Phillips*, 415 F.3d at 1315–17. 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 indicates that, in the related district court proceeding, the court gave the term “3-dimensional graphics” its plain and ordinary meaning, and further construed the term “does not perform 3-dimensional graphics processing,” as “does not perform the graphics processing necessary to render 3D geometric objects.” Pet. 17 (citing Ex. 1013, 21). Petitioner further indicates that it had proposed to the court that the term “does not perform 3-dimensional graphics processing” means “does not use a 3D graphics renderer, or otherwise process graphics in three dimensions.” *Id.* (citing Ex. 1013, 12). Petitioner argues the challenged claims are invalid

under either its proposed construction or the district court’s construction. *Id.* at 18 (citing Ex. 1002 ¶ 48).

Patent Owner contends that Petitioner’s proposed construction is improper but “it is not material to whether Petitioner has shown a reasonable likelihood of success.” Prelim. Resp. 8–9 (citing Ex. 1013, 12–13). Patent Owner points out that the district court also construed the term “3-dimensional graphic processing” as “graphics processing necessary to render 3D geometric objects.” *Id.* at 8 (citing Ex. 1013, 10–13). Patent Owner contends that no further claim construction is necessary. *Id.*

We determine that it is not necessary to explicitly construe any term or phrase. To the extent we make any claim construction observations as part of our obviousness analysis (*see* discussion of the “sending user input signals” limitation of claim 1, *infra* § III.E.1.b), the parties are reminded that such constructions are preliminary. Our ultimate interpretation of the claim terms will be based on the complete record developed during trial.

D. Overview of the Asserted Prior Art

1. Schmidt (Ex. 1004)

Schmidt discloses a thin-client architecture known as SLIM (Stateless, Low-Level Interface Machine) with the goal of removing all state and computation from the desktop and using a low-level hardware and software independent protocol to connect client devices to the system’s computational resources over a low-cost commodity network. Ex. 1004, 33.

Figure 1 of Schmidt is reproduced below.

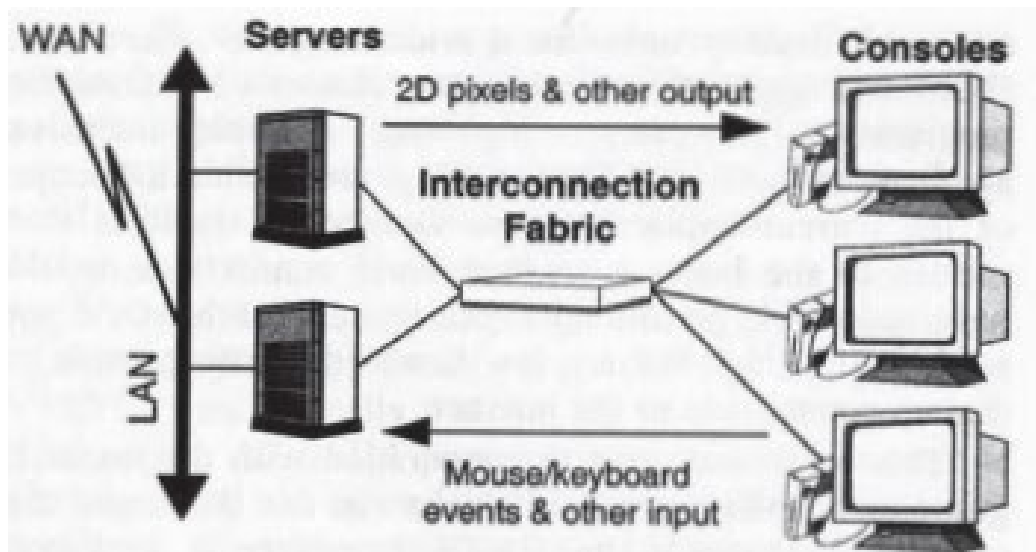


Figure 1 illustrates the main components of the SLIM architecture. *Id.* at 33. The system includes servers and consoles, where consoles transmit keyboard and mouse state events to servers via the SLIM protocol, and servers transmit audio data and display updates to consoles also via the SLIM protocol. *Id.* at 35. The servers and consoles are connected via an interconnection fabric. *Id.* at 34. For display updates, the SLIM servers send only encoded pixel updates to consoles, and each console refreshes its display from a local frame buffer using the received display update. *Id.* Schmidt also defines a set of display commands that “compress pixel data by taking advantage of the redundancy commonly found in the pixel values generated by modern applications.” *Id.* One such command, CSCS, is used to “[c]olor-space convert [a] rectangular region from YUV to RGB with optional bilinear scaling.” *Id.*

Schmidt discloses that the performance of the SLIM architecture was evaluated on multimedia applications, including a 3-D game from id Software known as Quake. *Id.* at 36. Schmidt details the implementation

of Quake on the SLIM architecture using “a translation layer which converts frames to a format suitable for use by the SLIM CSCS protocol command.” *Id.* at 45.

2. *Keslin (Ex. 1005)*

Keslin discloses a system for remote rendering of computer graphics. Ex. 1005, 1:36–38. The system includes a graphics application program, resident at a remote server that is run by a client process. *Id.* at 1:38–41.

Figure 1 of Keslin is reproduced below.

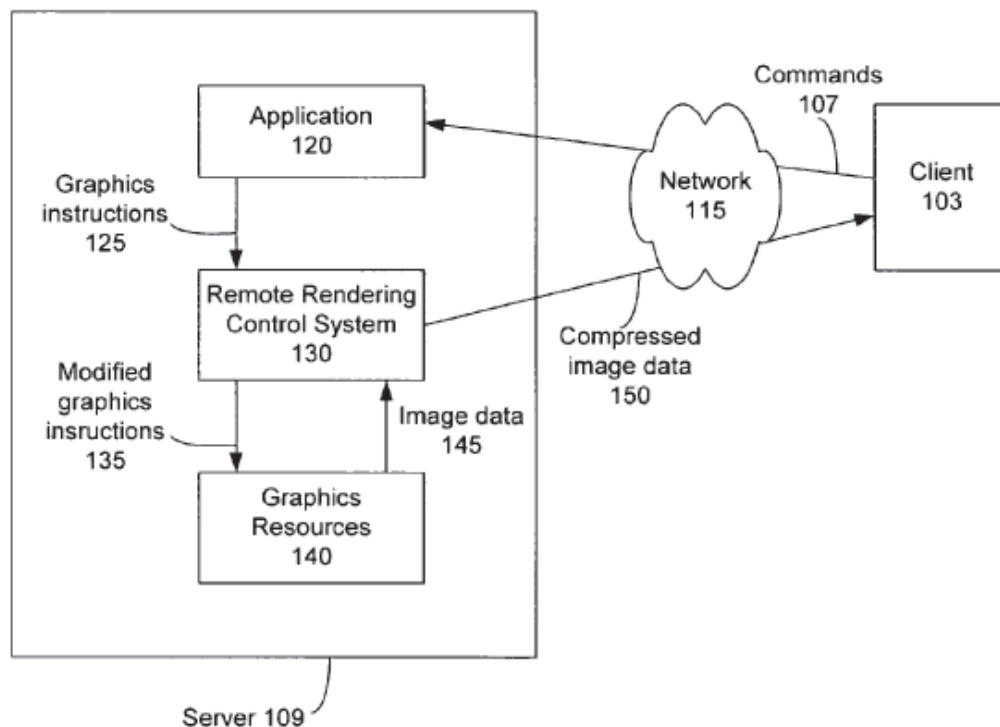


Figure 1 illustrates an overall architecture for Keslin’s system. *Id.* at 3:30–31. Client 103 issues commands 107 to remotely located server 109 to perform remote rendering. *Id.* at 3:31–34. In response, application 120 generates graphics instructions 125, which are the modified by remote rendering control system 130 based on the graphics processing capabilities and graphic contexts of specific client 103. *Id.* at 3:38–51. Graphics

resources 140 at the server then renders images based on the modified graphics instructions and returns image data 145. *Id.* at 3:51–53. As part of the rendering, image data 145 is compressed to form compressed image data 150 which is sent to the client. *Id.* at 3:54–57.

Figure 3 of Keslin is reproduced below.

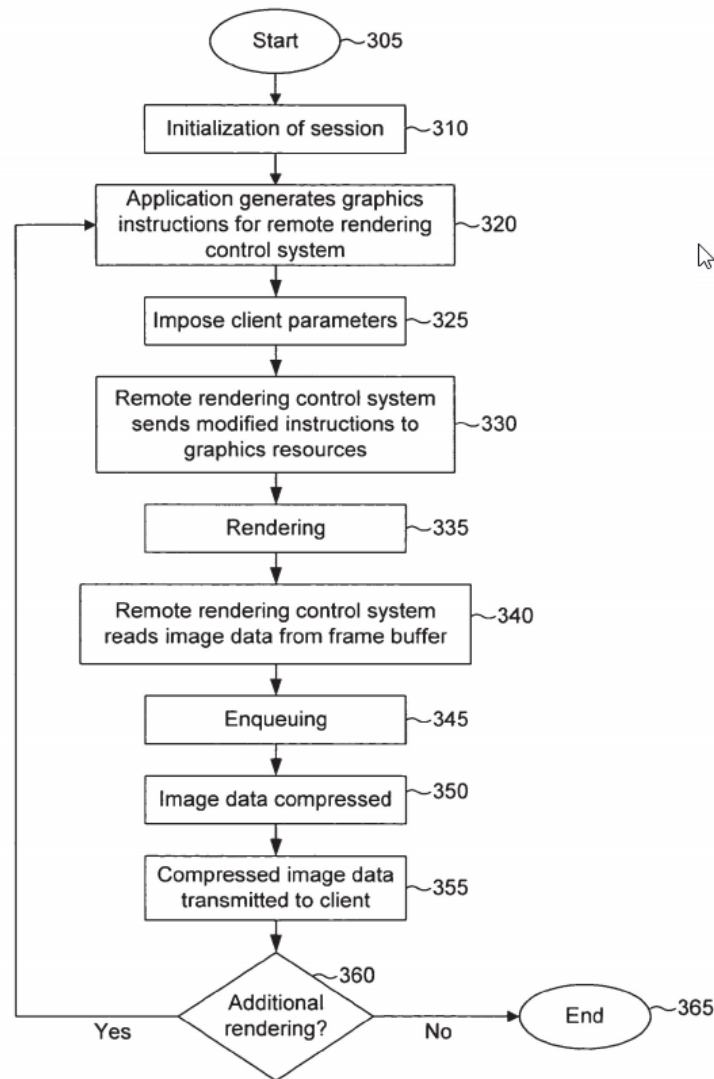


FIG. 3

Figure 3 is a flowchart that illustrates the method of remote rendering of computer graphics in Keslin. *Id.* at 2:15–16. As part of the method of remote rendering, at 350, image data is compressed into compressed image

data. *Id.* at 5:5–6. At 355, the compressed image data is transmitted to the client. *Id.* at 5:6–7.

Figure 11 of Keslin is reproduced below.

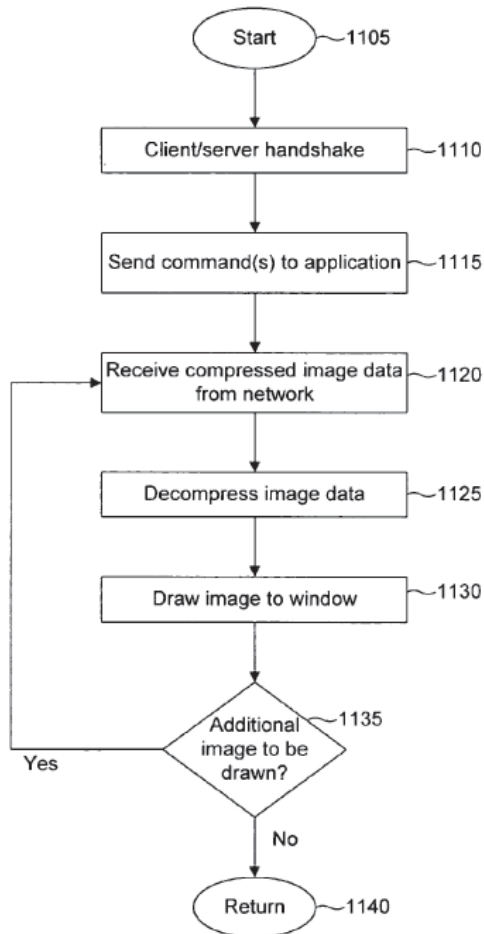


FIG. 11

Figure 11 is a flowchart illustrating the remote rendering process from the perspective of the client. *Id.* at 2:36–38. As part of the method of remote rendering, at 1125, image data is decompressed at the client. *Id.* at 7:55–56. At 1130, the appropriate image is drawn to a window at the client. *Id.* at 7:56–57.

3. *IEEE 802.3 Standard (Ex. 1006)*

The IEEE 802.3 Standard discloses a standard published by the Institute of Electrical and Electronics Engineers relating to the Carrier Sense Multiple Access with Collision Detection (“CSMA/CD”) media access method by which two or more stations share a common bus transmission medium. Ex. 1006, 13. One feature of the standard is that “a station waits (defers) for a quiet period on the medium (that is, no other station is transmitting) and then sends the intended message in bit-serial form.” *Id.* The standard discloses that the CSMA/CD MAC sublayer defers for a specified amount of time, referred to as `interFrameSpacing`, to ensure a minimum interframe spacing and to “provide interframe recovery time for other CSMA/CD sublayers and for the physical medium.” *Id.* at 38–39.

E. Obviousness over Schmidt

Petitioner contends that claims 1–3 are unpatentable under 35 U.S.C. § 103 as obvious over Schmidt. Pet. 24–50. For the reasons that follow, we are persuaded that the evidence, including Dr. Fuch’s testimony, sufficiently supports Petitioner’s arguments and, therefore, establishes a reasonable likelihood of prevailing with respect to this ground at this stage of the proceeding.

1. *Independent Claim 1*

- a) *“A method of playing interactive games on a client device having an image display, comprising:”*

Petitioner contends Schmidt discloses a method of playing interactive games on a client device having an image display. Pet. 24–25 (citing Ex. 1002 ¶ 55). Petitioner argues that Schmidt discloses the SLIM client-server system comprising both servers and consoles. *Id.* at 25–26 (citing Ex. 1004, 33, Fig. 1; Ex. 1002 ¶ 56). Petitioner further contends that the

consoles disclosed in Schmidt are thin clients, which are desktop machines that are simple, stateless I/O devices with an image display. *Id.* at 26 (citing Ex. 1004, Abstract, 35, Fig. 1).

Petitioner contends that Schmidt further discloses a method of playing Quake, an interactive 3D game, on the SLIM console. Pet. 27 (citing Ex. 1004, Abstract, 36, 44, 45, 46; Ex. 1002 ¶ 58). Petitioner further contends Quake is an interactive game where the player interacts with the game by controlling the character within a 3D world. *Id.* at 27–28 (citing Ex. 1009, 39; Ex. 1002 ¶ 59).

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 1.⁵

b) “*sending user input control signals to an application, running on a server, which generates 3-dimensional graphics accordingly;*”

Petitioner contends Schmidt teaches or suggests sending user input control signals to an application, running on a server, which generates 3-dimensional graphics accordingly. Pet. 28 (citing Ex. 1002 ¶ 61). Petitioner contends Schmidt discloses that the SLIM console (*i.e.*, the client device) sends user input control signals in the form of mouse and keyboard inputs to the SLIM server. *Id.* at 28–29 (citing Ex. 1004, 33, Fig. 1; Ex. 1002 ¶ 62). Petitioner further contends that the mouse/keyboard events and other input are types of user input control signals because Schmidt refers

⁵ At this stage of the proceeding, we do not decide whether the preamble of claim 1 is limiting.

to these signals as “input” and “input events.” *Id.* at 29 (citing Ex. 1004, 33, 37, 38; Ex. 1002 ¶ 63). According to Petitioner, Schmidt discloses that the SLIM consoles operate by “passing keyboard and mouse state” to the servers, which respond by updating the display. *Id.* at 29–30 (citing Ex. 1004, 35, 37, 38).

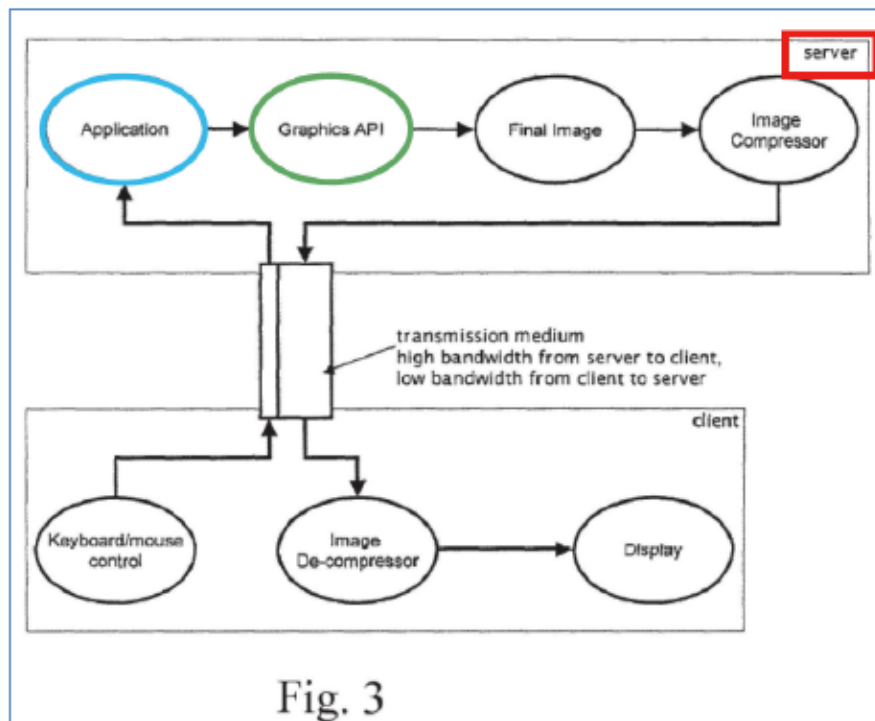
Next, Petitioner argues that Schmidt explains that its “user input control signals” are sent to an application running on the SLIM server, which, according to Petitioner, is “an application, running on a server,” as claim 1 requires. Pet. 30 (citing Ex. 1004, 33, 35). Petitioner points to Table 2 of Schmidt as showing various applications that run on the SLIM servers, including applications that generate 3-dimensional graphics, such as the 3D Quake game. *Id.* at 30–32 (citing Ex. 1004, 36 (Table 2), 44; Ex. 1002 ¶¶ 65–66).

Petitioner argues that Schmidt discloses that when using SLIM architecture to play Quake on a SLIM client, the client sends keyboard and mouse input control signals to the SLIM server running the Quake application, which in response, generates 3D graphics for display on the SLIM client, thus “generat[ing] 3-dimensional graphics” based on the user input control signals. Pet. 32 (citing Ex. 1004, 35, 44, 45). Petitioner argues that in Quake, the 3D graphics are changed as the player moves around in the game, and a person of ordinary skill in the art would have understood from Schmidt’s disclosure that mouse and keyboard inputs are sent from the SLIM console to the SLIM server, where they cause the Quake game application running on the server to generate 3D graphics based on those inputs. *Id.* at 33 (citing Ex. 1009, 39; Ex. 1002 ¶ 67).

Patent Owner responds that claim 1 requires that the server *itself*, as opposed to an application running on the server, generates 3-dimensional

graphics. Prelim. Resp. 12–16. Specifically, Patent Owner argues that the first limitation of claim 1 recites three requirements, with the third requirement, “the server generates 3-dimensional graphics,” being separate from the first two. *Id.* at 12–13. For support, Patent Owner points to the very next limitation of claim 1 as confirming that “it is the server (not the application) generating the graphics, as it specifies ‘receiving, from said server, said 3-dimensional graphics’” *Id.* at 13 (citing Ex. 1001, 9:28). Patent Owner also cites various portions of the ’093 patent Specification to argue that it is the server, not the application, that generates a modified image. *Id.* at 13–14 (citing Ex. 1001, 1:18–21, 3:22–37, 5:43–48, 6:3–20, 6:63–67, 7:38–41).

Patent Owner’s annotated version of Figure 3 of the ’093 patent is reproduced below.



Patent Owner’s annotations to Figure 3, above, show the “Application” component of server highlighted in blue and “Graphics API”

component of the server highlighted in green. Prelim. Resp. 15. Patent Owner argues that the application component sends drawing commands to the graphics application programming interfaces (“API”), which can be one of the industry standard APIs, such as Direct3D or OpenGL, that generate the “Final Image.” *Id.* (citing Ex. 1001, 5:43–48, 8:54–62, Fig. 3). Patent Owner argues that because the application itself does not provide the graphics capability or image compression and transmission capability, it is the server that generates, compresses, and sends 3D graphics, and not the application. *Id.* at 16.

Patent Owner argues that in Schmidt, the application on the server generates 3-dimensional graphics rather than the server itself. Prelim. Resp. 16–17. Specifically, Patent Owner contends that the Quake application in Schmidt does not use the server’s graphics API or graphics processing capability, and that suggests that the application is rendering the graphics, not the server. *Id.* at 17 (citing Ex. 1004, 44). The server, Patent Owner argues, never receives or touches anything from Quake other than 2D pixels. *Id.* at 18 (citing Ex. 1004, 45).

Patent Owner’s arguments are not supported in view of the plain language of claim 1 and the disclosure of the ’093 patent. The claim recites “an application, running on a server, which generates 3-dimensional graphics accordingly.” Patent Owner narrowly reads this limitation, as requiring that the server, as opposed to the application running on the server, generate 3-dimensional graphics. A more reasonable construction of this limitation is that the server *in its entirety*, including the application running on the server, generates the 3-dimensional graphics. In other words, the phrase “which generates 3-dimensional graphics accordingly” cannot be

read separately from the first two phrases of the limitation in the manner that Patent Owner proposes.

Patent Owner's interpretation that the server and the application are two separate components of the system is contradicted by the very portions of the Specification that Patent Owner cites. Patent Owner's annotated figure 3 (above), for example, shows the application, highlighted in blue, as part of the server, labelled in red, not separate from the server. Prelim. Resp. 15. The Specification, therefore, uses the term "server" broadly to refer to the entire server component shown in Figure 3, not just select components of the server as Patent Owner proposes. Further, in describing the process thread shown in Figure 2, the Specification refers broadly to the server, and not separately to the application, even though, as Patent Owner explains, at least some of the functionality (such as sending drawing commands) is implemented by the application running on the server. *See* Ex. 1001, 7:14–8:33; *see also id.* at 3:33–34 ("the server selectively receives image-modifying data from one or more clients corresponding to a generated image, and the server generates a modified image based upon the image-modifying data, and then transmits the modified image as compressed data back to the client"), 5:32–34 ("PDA 18 and cellular telephone 20 can be in direct wireless communication with the visual server").

Likewise, when the claim recites "receiving, from said server, said 3-dimensional graphics in the form of a compressed stream of images," a more reasonable interpretation of that limitation is that the client device receives the graphics from the entire server, not just the graphics API or the image compressor component shown in Figure 3.

We are also not persuaded that the application plays no part in generating 3-dimensional graphics, which are based on the user input control

signals from the client. Patent Owner acknowledges that “the Application ‘sends drawing commands’ to the Graphics API,” but fails to explain why those drawing commands are not part of generating 3-dimensional graphics. Prelim. Resp. 15 (citing Ex. 1001, 8:59–61, Fig. 3).

We are, therefore, not persuaded that claim 1 requires that the server itself, separate from the application running on the server, generate the required 3-dimensional graphics. Thus, on the present record, Petitioner sufficiently establishes that Schmidt teaches or suggests this limitation.

c) *“receiving, from said server, said 3-dimensional graphics in the form of a compressed stream of images;”*

Petitioner argues that Schmidt teaches or suggests this limitation. Pet. 33 (citing Ex. 1002 ¶ 70). Petitioner contends that Schmidt’s servers “compress pixel data by taking advantage of the redundancy commonly found in the pixel values generated by modern applications.” *Id.* at 33–34 (citing Ex. 1004, 35, 46; Ex. 1002 ¶ 71). Petitioner further contends that Schmidt’s servers use a “color space convert and scale” or “CSCS” command to compress pixel data of frames rendered from Quake, prior to transmission to reduce bandwidth. *Id.* at 34 (citing Ex. 1004, 35 (Table 1), 38, 45; Ex. 1002 ¶ 72). According to Petitioner, the Quake game engine on the server renders an image frame comprising 3D graphics and then compresses that frame from 8-bit per pixel RGB values to 5-bit per pixel YUV values. *Id.* at 34–35 (citing Ex. 1004, 45; Ex. 1002 ¶ 73).

Petitioner contends that Schmidt’s client receives the compressed frames as a “compressed stream of images.” Pet. 35. Petitioner asserts that a person of ordinary skill in the art would understand receiving a “stream of images” to refer to receiving a sequence of image data, such as a sequence of image frames. *Id.* (citing Ex. 1002 ¶ 74). Petitioner further asserts that a

person of ordinary skill in the art would also understand that the image frames in Quake are streamed because Schmidt equates Quake with “streaming video.” *Id.* at 35–36 (citing Ex. 1004, Abstract, 34, 46; Ex. 1002 ¶ 75). Petitioner argues that Schmidt discloses that Quake images are streamed one frame at a time to client devices when it describes how the server renders each frame. *Id.* at 36 (citing Ex. 1004, 45; Ex. 1007, 21; Ex. 1002 ¶ 76).

Patent Owner responds that claim 1 requires that the server compresses a stream of images before transmitting them to the client. Prelim. Resp. 19–23 (citing Ex. 1001, 3:31–37, 6:7–12, 6:28–32, 6:63–7:2, 7:45–50, 8:59–63, 9:28–29, Figs. 2D, 3). Patent Owner contends that Schmidt’s CSCS command, on the other hand, is a protocol display command that executes on the client, rather than prior to transmission, on the server. *Id.* at 23 (citing Ex. 1005, 35). Specifically, Patent Owner argues that Schmidt’s server transmits SLIM protocol commands like CSCS to the SLIM console for execution on the console. *Id.* at 24 (citing Ex. 1004, 35). Patent Owner points out that Schmidt discloses “processing costs” for each command on the SLIM console, confirming that these are client, not server, commands. *Id.* at 24–25 (citing Ex. 1004, 37 (Table 5)).

Patent Owner further contends the CSCS command does not compress color data; it simply converts between different color formats—YUV and RGB. Prelim. Resp. 26–27 (citing Ex. 1004, 35).

We are not persuaded by Patent Owner’s arguments at this stage of the proceeding. Although we agree with Patent Owner that Schmidt defines CSCS as a “SLIM protocol display command” that is used to convert a region from YUV to RGB, Schmidt also discloses converting each display frame *to YUV format* at the server and *using the CSCS command to transmit*

the data directly to the console. Ex. 1004, 35, Table 1. That is, Schmidt’s server first converts the region from RGB to YUV before it is converted back at the client:

When the game engine renders a frame, it produces 8-bit, indexed-color pixels. Our translation calculates a YUV lookup table based on the RGB colormap. To display a frame, we convert the 8-bit pixel values to 5-bit YUV data via table lookup and color component subsampling. *Then, the frame is transmitted to a Sun Ray l console.*

Id. at 45; Pet. 34–35 (emphasis added). We are, therefore, persuaded by Petitioner’s argument that Schmidt discloses translating pixel data prior to transmission from the server.

We are also persuaded, for the purposes of this Decision, that the RGB to YUV translation discloses compression of pixel data. Schmidt discloses that its display commands, such as CSCS, “compress pixel data by taking advantage of the redundancy commonly found in the pixel values generated by modern applications.”⁶ Ex. 1004, 35. It further discloses that, in comparison to X protocol, which transmits each frame “with no *compression* possible, *i.e.*, a full 24 bits must be transmitted for each pixel,” “[u]sing the CSCS command, *at most* 16 bits are required per pixel (a 33% bandwidth reduction) and *compression* up to 5 bits per pixel (an 88% bandwidth reduction) is possible by altering the color-space conversion

⁶ We are not persuaded by Patent Owner’s argument that because CSCS is a *conversion* command, Schmidt’s Quake implementation does not take advantage of reducing redundancy among pixels, and, therefore, does not compress image data. Prelim. Resp. 28–29 (citing Ex. 1004, 35, 45). As discussed below, Schmidt discloses that the conversion *itself* results in a reduction of image data to be transmitted to the client. Moreover, the ’093 patent specification supports that “any compression standard” may be used to compress image data. Ex. 1001, 6:28–31.

parameters.” *Id.* at 45 (citing the X Protocol reference manual) (emphasis added), 38 (CSCS “provides a significant reduction in bandwidth”).

Because Schmidt teaches that its RGB to YUV translation *always* results in a reduction of pixel data to be transmitted, we are not persuaded by Patent Owner’s argument that “color space conversion differs from compression.” Prelim. Resp. 26. Thus, on the present record, Petitioner sufficiently establishes that Schmidt teaches or suggests this limitation.

d) “*decompressing said compressed stream of images into at least one decompressed image at said client device, said at least one decompressed image corresponding to said graphics;*”

Petitioner argues that Schmidt teaches or suggests this limitation. Pet. 40–41 (citing Ex. 1002 ¶ 87). Petitioner contends that once a compressed frame is received, Schmidt’s client console decompresses the frame by decoding the YUV pixel data into RGB pixels that can be displayed at the client’s display. *Id.* at 41 (citing Ex. 1004, 35, 40; Ex. 1002 ¶ 88). Petitioner further contends that a person of ordinary skill in the art would have understood that the SLIM console decompresses the compressed pixel data, including by decoding the YUV data to RGB data, resulting in a decoded RGB frame to be displayed at the client console’s display. *Id.* at 41–42 (citing Ex. 1010, 2:20; Ex. 1002 ¶ 89). Petitioner argues that the decompressed image corresponds to the 3-dimensional graphic frame originally rendered at the server. *Id.* at 42 (citing Ex. 1002 ¶ 90).

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) “displaying said at least one decompressed image at the display of said client device, wherein said client device does not perform 3-dimensional graphics processing on said at least one decompressed image, and wherein said client device is separate from said server”

Petitioner argues Schmidt discloses this limitation. Pet. 43 (citing Ex. 1002 ¶ 93). Petitioner contends that Schmidt discloses that the decompressed image is displayed on the client device’s display. *Id.* (citing Ex. 1004, 34, 45; Ex. 1002 ¶ 94). Petitioner further contends that Schmidt discloses that the client device “does not perform 3-dimensional graphics processing on said at least one decompressed image” because Schmidt discloses that the client console is simply a “dumb frame buffer” and does not have capability to perform any graphics processing. *Id.* at 43–46 (citing Ex. 1004, 33, 35, 44–45; Ex. 1002 ¶¶ 95–100). Petitioner also contends that Schmidt’s clients are separate from its servers. *Id.* at 46 (citing Ex. 1004, Fig. 1).

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.

f) Objective Considerations of Nonobviousness

Neither party presents evidence of objective considerations of nonobviousness at this stage of the proceeding.

g) Conclusion as to Obviousness of Claim 1

On balance, considering the record presently before us, Petitioner has established a reasonable likelihood that it would prevail in showing that Schmidt 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. *Dependent Claims 2 and 3*

Petitioner argues that claim 2 also would have been obvious in view of Schmidt. Pet. 47–48. Claim 2 additionally recites “wherein said sending and said receiving are performed across at least one of an Internet, a WAN, a LAN, an Ethernet, or wireless communication.” Ex. 1001, 9:39–41.

Petitioner contends that Schmidt teaches this additional limitation because Schmidt discloses that the SLIM system uses an interconnection fabric. Pet. 47 (citing Ex. 1004, 33; Ex. 1002 ¶ 106). Petitioner further contends that the interconnection fabric is implemented as a dedicated private network using the Ethernet protocol. *Id.* at 47–48 (citing Ex. 1004, 33–34; Ex. 1002 ¶ 107).

Next, Petitioner argues that claim 3 would have been obvious in view of Schmidt. Pet. 48–50. Claim 3 additionally recites “wherein said user input control signals are generated by a game input device.” Ex. 1001, 9:42–43. Petitioner contends that Schmidt teaches this additional limitation because Schmidt discloses a keyboard and a mouse, and an ordinarily skilled artisan would have understood that a keyboard and a mouse are types of “game input devices.” Pet. 48–49 (citing Ex. 1002 ¶¶ 110–111; Ex. 1011, 217, Fig. 9.4; Ex. 1001, Fig. 3). Petitioner contends that Schmidt further discloses sending keyboard and mouse data from the client to the server as part of the 3D interactive gameplay in Quake. *Id.* at 49 (citing Ex. 1002 ¶ 112).

Patent Owner does not raise any arguments directed specifically to claims 2 and 3. *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 two dependent claims.

3. *Preliminary Determination as to Claims 1–3 Under Petitioner’s Ground 1*

On balance, considering the record presently before us, Petitioner has established a reasonable likelihood that it would prevail in showing that Schmidt would have rendered the subject matter of claims 1–3 obvious to one of ordinary skill in the art at the time of the invention.

F. *Obviousness over Schmidt and Keslin*

Petitioner contends that claims 1–3 are unpatentable under 35 U.S.C. § 103 as obvious over Schmidt and Keslin. Pet. 59–68. For the reasons that follow, we are persuaded that the evidence, including Dr. Fuch’s testimony, sufficiently supports Petitioner’s arguments and, therefore, establishes a reasonable likelihood of prevailing with respect to this ground at this stage of the proceeding.

1. *Independent Claim 1*

Petitioner argues that the compression and decompression limitations of claim 1 are also taught by Keslin, and the claim would have been obvious to a person of ordinary skill in the art in view of Schmidt and Keslin. Pet. 59. We discuss the relevant limitations below.

a) *“receiving, from said server, said 3-dimensional graphics in the form of a compressed stream of images;”*

Petitioner contends Keslin discloses a server-client system for remote rendering of graphics on the server and providing the rendered graphics to a client. Pet. 59–60 (citing Ex. 1005, 1:36–38, 3:30–34; Ex. 1002 ¶ 156). Petitioner further contends Keslin discloses that an application residing on a server renders graphics and compresses the rendered image data before sending the image data to the client. *Id.* at 60–61 (citing Ex. 1005, 3:17–19, 4:6–22 (incorporating by reference U.S. Patent App. No. 09/458,011)).

According to Petitioner, Keslin explains that various methods of data compression were known to persons of ordinary skill in the art, and discloses a data compression module that is capable of performing those data compression methods. *Id.* at 61–62 (citing Ex. 1005, 4:6–22, Fig. 2; Ex. 1002 ¶ 157). Petitioner contends that the flow chart of Keslin’s method also confirms that image data is compressed at the server before it is transmitted to the client. *Id.* at 62–63 (citing Ex. 1005, 5:3–6, Fig. 3; Ex. 1002 ¶ 158).

Patent Owner argues a person of ordinary skill in the art would not have been motivated to add Keslin’s compression and decompression to the SLIM client disclosed in Schmidt in light of Schmidt’s express teaching to remove all state and computation from the SLIM client. Prelim. Resp. 38–42. Patent Owner’s arguments are directed to Petitioner’s proposed motivation to combine the two references, and are addressed below. *See infra* § III.F.1.c. Patent Owner does not otherwise respond to Petitioner’s arguments as to this limitation. *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.

b) “*decompressing said compressed stream of images into at least one decompressed image at said client device, said at least one decompressed image corresponding to said graphics;*”

Petitioner contends Keslin discloses that, when the client receives the compressed image, the client will decompress the image data. Pet. 63–65 (citing Ex. 1005, 4:6–22, 7:45–60, Fig. 11; Ex. 1002 ¶ 159). 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) Motivation to Combine Schmidt and Keslin

Petitioner contends that a person of ordinary skill in the art would have been motivated to apply Keslin's teachings of image compression and decompression techniques in a client-server system as taught by Schmidt. Pet. 65 (citing Ex. 1002 ¶ 161). Petitioner argues both Schmidt and Keslin describe similar remote rendering systems with similar architectures, where both Schmidt and Keslin utilize servers to perform rendering of graphics, where both references utilize clients that transmit input control signals to the server, and where the server transmits graphics to the client. *Id.* at 65–66 (citing Ex. 1004, Fig. 1; Ex. 1005, Fig. 1; Ex. 1002 ¶ 162). Petitioner further argues Schmidt explicitly recognizes that “some form of compression is possible” to reduce bandwidth requirements, and, thus, Schmidt contains an express suggestion to look at similar references that utilize image compression, such as Keslin. *Id.* at 66–67 (citing Ex. 1004, 45; Ex. 1002 ¶ 164). Petitioner additionally argues that applying Keslin's compression teachings is a simple application of known technique (*i.e.*, image compression and decompression) to improve a similar client-server system, as disclosed in Schmidt, in the same way (*i.e.*, reducing the size of graphics transmission to reduce bandwidth and improve the overall performance of the SLIM system). *Id.* at 67 (citing Ex. 1004, 38; Ex. 1002 ¶ 165).

Petitioner further asserts that a person of ordinary skill in the art would have had a reasonable expectation of success in applying image compression and decompression to Schmidt because Schmidt explains that “some form of compression is possible” in the SLIM system. Pet. 67–68 (citing Ex. 1004, 45, Fig. 1; Ex. 1005, Fig. 1; Ex. 1002 ¶ 166).

Patent Owner responds that a person of ordinary skill in the art reviewing Schmidt would not have a reason to add computation and complexity to the SLIM client in contravention of Schmidt's express teachings. Prelim. Resp. 38–39. Patent Owner contends that Schmidt discloses decompression at the server, not the client, and an ordinarily skilled artisan would not be motivated to move this decompression operation to the “dumb frame buffer” SLIM client for which Schmidt's stated purpose is to remove “all state and computation.” *Id.* at 39–40 (citing Ex. 1004, 32–33, 44). According to Patent Owner, an ordinarily skilled artisan would understand that the SLIM client is likely to be far more burdened performing that decompression than the server, causing a lag in presenting images at the client. *Id.* Patent Owner also argues that contrary to Petitioner's contention, Schmidt's stated preference is to minimize computation at the client even at the expense of higher bandwidth overhead. *Id.* at 41 (citing Ex. 1004, 45). Accordingly, Patent Owner argues, Petitioner has failed to carry its burden of showing obviousness in the face of these contrary teachings by Schmidt. *Id.* at 41–42.

“Whether an ordinarily skilled artisan would have been motivated to modify the teachings of a reference is a question of fact.” *WBIP v. Kohler Co.*, 829 F.3d 1317, 1327 (Fed. Cir. 2016) (citations omitted). “[W]here a party argues a skilled artisan would have been motivated to combine references, it must show the artisan ‘would have had a reasonable expectation of success from doing so.’” *Arctic Cat v. Bombardier Recreational Prod. 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)).

Because we determine that, on the current record, Schmidt teaches compression of image data at the SLIM server and decompression of image data at the SLIM client (*see supra* § II.E.1), we do not agree with Patent Owner that Schmidt teaches away from decompressing image data at the SLIM client. Although we agree with Patent Owner that one of Schmidt's goals is to reduce processing costs at the client, Schmidt acknowledges that client processing costs incurred in reducing bandwidth can be "worthwhile," and touts the SLIM system's ability to better compress data and reduce bandwidth in comparison to the X protocol. *See, e.g.*, Ex. 1004, 38 (noting that CSCS "provides a significant reduction in bandwidth, making it worthwhile despite the high processing overhead"), 40 (noting that operations such as decoding protocol commands for display incurs processing overhead), 45 (stating that "SLIM provides substantial savings on higher bandwidth operations"); Pet. 66–67.

Accordingly, for purposes of this Decision, we determine Petitioner provides an adequate reason why an ordinarily skilled artisan would have combined Keslin's compression/decompression functionality with Schmidt's SLIM system in the manner asserted by Petitioner. *See KSR*, 550 U.S. at 420 ("any 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").

2. *Dependent Claims 2 and 3*

Petitioner contends that the combination of Schmidt and Keslin teaches the additional limitations recited in dependent claims 2 and 3 for the same reasons Schmidt alone teaches the additional limitations recited in claims 2 and 3. Pet. 59, 68. Patent Owner does not raise any arguments directed specifically to claims 2 and 3. *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 two dependent claims.

3. *Preliminary Determination as to Claims 1–3 Under Petitioner's Ground 2*

On balance, considering the record presently before us, Petitioner has established a reasonable likelihood that it would prevail in showing that the combination of Schmidt and Keslin would have rendered the subject matter of claims 1–3 obvious to one of ordinary skill in the art at the time of the invention.

G. *Obviousness over Schmidt and the IEEE 802.3 Standard*

Petitioner contends that claim 4 would have been obvious in view of Schmidt and the IEEE 802.3 Standard. Pet. 68–72. Claim 4 depends from claim 1 and additionally recites “wherein said sent user input control signals are sent after a specified elapsed time.” Ex. 1001, 9:44–45. Petitioner contends that the combination of Schmidt and the IEEE 802.3 Standard teaches this additional limitation because the IEEE 802.3 Standard teaches or suggests that, in a CSMA/CD protocol, Ethernet devices wait a specified, elapsed time, known as interframe spacing, prior to transmission. Pet. 69–70 (citing Ex. 1006, 38–39; Ex. 1002 ¶ 172). Petitioner further contends that interframe spacing is the “minimum interframe spacing” for the protocol and is defined as a time period of 9.6 microseconds. *Id.* at 70 (citing Ex. 1006, 56; Ex. 1002 ¶ 172). Petitioner also contends that Schmidt's SLIM system uses the Ethernet protocol, and, therefore, uses Ethernet's CSMA/CD procedure of waiting a specified time period prior to transmission. *Id.* at 70–71 (citing Ex. 1004, 33–34; Ex. 1002 ¶ 174). Thus, according to Petitioner, an ordinarily skilled artisan reading Schmidt would have understood that

transmission from the SLIM client to the SLIM server would be sent in accordance with the Ethernet protocol described by the IEEE 802.3 Standard, where input control signals sent by the SLIM client will wait if there is a pending transmission on the network, and then transmit after a specified elapsed time period (*i.e.*, the interframe spacing period). *Id.* at 71 (citing Ex. 1002 ¶ 175).

Petitioner argues a person of ordinary skill in the art would have been motivated to apply the teachings of an interframe spacing delay from the IEEE 802.3 Standard to the client-server system taught by Schmidt. Pet. 71 (citing Ex. 1002 ¶ 176). Petitioner argues that because Schmidt's SLIM system uses the Ethernet protocol and a person of ordinary skill in the art would understand that the SLIM client devices send user input control signals after a specified elapsed time period (*i.e.*, the interframe spacing) according to the IEEE 802.3 Standard. *Id.* at 71–72 (citing Ex. 1004, 34; Ex. 1006, 38; Ex. 1002 ¶ 177). Petitioner further argues there would have been a reasonable expectation of success because the combination does not require any modifications to Schmidt's use of Ethernet, but rather uses Ethernet in the intended manner, with the interframe spacing working as intended in Schmidt. *Id.* at 72 (citing Ex. 1006, 39; Ex. 1002 ¶ 178).

Patent Owner responds that Petitioner's rationale for combining the IEEE 802.3 Standard with Schmidt is flawed. Prelim. Resp. 43–48. Patent Owner argues Petitioner has made no effort to show that Schmidt's system actually uses the Ethernet protocol described in the IEEE 802.3 Standard. *Id.* at 47. According to Patent Owner, Schmidt instead uses Fast Ethernet, which is a higher speed version (up to 100 megabits per second) of Ethernet than the Standard Ethernet version described in the IEEE 802.3 Standard (up to 10 megabits per second). *Id.* at 44–45 (citing Ex. 1004, 34–36; Ex. 1006,

iii, vi; Ex. 2003, 1; Ex. 2004). Patent Owner argues that Petitioner has failed to show that the later Fast Ethernet protocol includes the features, such as interframe spacing, that were previously present in the Standard Ethernet protocol. *Id.* at 46–47 (citing Ex. 1004, 34).

We are persuaded, on the present record, that Schmidt teaches using the Ethernet protocol, including the version disclosed in the IEEE 802.3 Standard. Ex. 1004, 34; Ex. 1006, 39. Although we agree with Patent Owner that Schmidt discloses that a “switched, full-duplex 100Mbps ethernet” was used in its experiments, it also makes clear that the SLIM console, “Sun Ray 1 supports a 10/100 Base-T ethernet connection.” Ex. 1004, 34; *see also id.* at 35 (stating that SLIM console’s “network interface is a standard 10/100Mbps ethernet controller”); Pet. 70. In addition, Schmidt discloses that its experiments were also conducted over lower bandwidth connections, including over a 10Mbps connection. Ex. 1004, 39–40 (“At 10Mbps users could not distinguish any difference from operating at 100Mbps.”). We are, therefore, not persuaded that Schmidt’s disclosure is limited to the later version of Ethernet. Prelim. Resp. 45–46 (acknowledging that “Schmidt does not say what version of the IEEE standard its interconnection fabric employed”).

Moreover, we are not persuaded on this record that features such as interframe spacing defined in the earlier Ethernet standard would become unsupported in the later Ethernet standard. *See, e.g.*, Ex. 2003, 1 (“Various flavors of Ethernet operate at different speeds and use different types of media. However, all the versions of Ethernet are compatible with each other, so you can mix and match them on the same network.”).

Accordingly, for purposes of deciding whether to institute trial, we determine Petitioner provides an adequate reason why one of ordinary skill

in the art would have combined the teachings of Schmidt and the IEEE 802.3 Standard in the manner asserted by Petitioner, and that the information presented supports sufficiently, for purposes of institution, Petitioner's assertions as to claim 4.

H. Obviousness over Schmidt, Keslin, and IEEE 802.3 Standard

Petitioner contends that claim 4 is unpatentable under 35 U.S.C. § 103 as obvious over Schmidt, Keslin, and the IEEE 802.3 Standard. Pet. 72–74. Petitioner contends that the combination of Schmidt, Keslin, and the IEEE 802.3 Standard teaches the additional limitation recited in dependent claim 4 for the same reasons the combination of Schmidt and the IEEE 802.3 Standard teaches the additional limitation recited in claim 4. Pet. 72–73 (citing Pet. §§ XI.B, XI.C; Ex. 1002 ¶¶ 180–182). Petitioner contends that a person of ordinary skill in the art would have been motivated to combine Schmidt with both Keslin and the IEEE 802.3 Standard, with a reasonable expectation of success, for reasons previously described (*supra* §§ III.F.1.c, III.G). Pet. 73–74 (citing Pet. §§ XI.B, XI.C; Ex. 1004, 33–34, 45; Ex. 1002 ¶¶ 183–184).

Patent Owner responds that because Petitioner has failed to show that a person of ordinary skill in the art would have been motivated to combine Schmidt with the IEEE 802.3 Standard for the reasons previously discussed (*supra* § III.G), Petitioner has also failed to show that a person of ordinary skill in the art would have been motivated to combine Schmidt with both Keslin and the IEEE 802.3 Standard for the same reasons. Prelim. Resp. 44, 48.

As previously described (*supra* § III.G), we determine that Petitioner provides an adequate reason why one of ordinary skill in the art would have combined the teachings of Schmidt and the IEEE 802.3 Standard in the

manner asserted by Petitioner. Accordingly, for purposes of institution, we determine that Petitioner provides an adequate reason why one of ordinary skill in the art would have combined the teachings of Schmidt, Keslin, and the IEEE 802.3 Standard in the manner proposed by Petitioner, and that the information presented supports sufficiently, for purposes of institution, Petitioner's assertions as to claim 4.

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 '093 patent is unpatentable on the grounds asserted in the Petition. 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

It is, therefore,

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '093 patent is hereby instituted on the challenge to claims 1–3 under 35 U.S.C. § 103 as unpatentable over Schmidt;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '093 patent is hereby instituted on the challenge to claims 1–3 under 35 U.S.C. § 103 as unpatentable over Schmidt and Keslin;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '093 patent is hereby instituted on the challenge to claim 4 under 35 U.S.C. § 103 as unpatentable over Schmitt and the IEEE 802.3 Standard;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the '093 patent is hereby instituted on the challenge to claim 4 under 35 U.S.C. § 103 as unpatentable over Schmidt, Keslin, and the IEEE 802.3 Standard;

FURTHER ORDERED that review is not instituted as to claims 5–9, 13, and 15–19, 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.

IPR2020-01248
Patent 8,667,093 B2

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