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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

Case IPR2021-00237
U.S. Patent No. 10,681,109

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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I. INTRODUCTION

None of Patent Owner's arguments rebut Petitioner's showing that challenged claims 1-12 of U.S. Patent No. 10,681,109 ("109 patent") are unpatentable as obvious or the Board's preliminary finding that there is a reasonable likelihood that the prior art renders each challenged claim obvious. Paper 13 ("ID"). Patent Owner Response ("POR") repeats many of the same arguments that the Board already found unpersuasive, advancing impermissibly narrow and unsupported claim constructions designed to circumvent the prior art.

II. ARGUMENT

A. Patent Owner Advances Unsupported Claim Constructions.

1. "frame"

As the Board preliminarily found, Saha discloses compressed "frames." ID, 25-26; Petition, 27-34; Ex. 1005, 2:19-35 ("MPEG compression ... encode[s] or *compress[es] frames* in the sequence"); *id.* (describing compression for "Intra (I) *frames*," "Predicted *frames*," and "Bi-directional *frames*"); *id.*, 1:64-2:1.¹ Patent Owner's expert, Dr. Hart, conceded this point: "Q. So Saha discloses compressing frames using MPEG, correct? A. Yes." Ex. 1025, 104:21-105:5.

Unable to overcome the prior art's express disclosure of compressed "frames," Patent Owner improperly attempts to construe "frame" to mean a "single

¹ Emphasis added in quotations unless otherwise specified.

instance of the display,” purportedly to exclude Saha’s compressed “frames.”

POR, 11-18, 32-39, ID, 13.

As an initial matter, the parties agree that a frame represents a single instance in time of a video sequence or animation. As Dr. Fuchs explained: “frames represent the still images that are ordered in a sequence to produce a video or animated sequence.”² Ex. 1002 ¶¶ 31, 89. Dr. Hart likewise opines a “frame” refers to the image “at any given instance in time ...” Ex. 2009 ¶ 48; Ex. 1025, 58:25-59:6 (“[A] single instance would be a snapshot in time ...”). Ex. 1033 ¶¶ 12-13.

Patent Owner’s proposed construction, however, improperly requires that a “frame” is for “the display,” which it says must fill the entire screen of a “client display.” POR, 33 (arguing that a “single instance of the display” means a single instance of the “*client* display”), 37 (arguing “frame” means “an instance of the *client display*”), Ex. 1025, 61:5-62:2 (opining that frames “are still images that fill the entire display, *the entire screen*”). Ex. 1033 ¶ 14.

² Patent Owner incorrectly states that Petitioner equates “frame” with “image,” rendering the term “frame” superfluous. POR, 11. Rather, as explained above, a frame is not just an image, but an image in a video or animated sequence. Ex. 1002 ¶¶ 31, 89. Ex. 1033 ¶ 13.

Notably, not even Dr. Hart agrees with that construction. Rather, Dr. Hart opines that a “frame” is a “full image *generated by the application* at any given instance in time,” regardless of whether the image takes up the entire client display. Ex. 2009 ¶ 48; Ex. 1025, 68:15-70:11. Indeed, Dr. Hart directly contradicted Patent Owner's construction, testifying: “the term frame being used in Claim 1 *isn't referring to what the client is doing*.” Ex. 1025, 84:19-85:10; *compare with* POR, 33 (“[T]he relevant display is the *client* display”), 37 (“Claims 1 and 8 require ... an instance of the *client* display”). Ex. 1033 ¶ 15.

That Dr. Hart and Patent Owner dispute the meaning of their own construction demonstrates it is incorrect.

a. The intrinsic evidence does not support Patent Owner's construction.

First, the claim language refutes Patent Owner's construction. Claim 1 recites “a compressed frame” and claim 8 recites “a frame,” with none of Patent Owner's additional requirements that a frame must fill an entire “client display” or be the full image generated by the application. Ex. 1001, claims 1, 8. Ex. 1033 ¶ 17.

Second, the specification neither characterizes a frame in relation to the size of the client display, nor the full output of the server application. Patent Owner cites the Abstract (POR, 12). But the Abstract merely describes a “sequential display of modified frames,” with *no* reference to a client display, much less

entirely filling one, as Dr. Hart conceded. Ex. 1025, 91:18-93:10. If anything, the Abstract confirms Dr. Fuchs' opinion that "frames represent the still images that are ordered in a sequence to produce a video or animated sequence." Ex. 1002 ¶¶ 31, 89. Ex. 1033 ¶ 18.

Patent Owner next cites column 4, lines 10-12, which states that "the typical data processing segment is a frame." POR, 12. This passage does not refer to a display, as Dr. Hart conceded. Ex. 1025, 111:23-112:24 (lines 10-12 are "really talking about user interface time scale as opposed to the display process"). Patent Owner's other citations fare no better because none say a "frame" must fill the entire client display or represent the entire output of an application. POR, 12-14; Ex. 1025, 115:9-118:21 (Dr. Hart testifying that he has no opinion about whether the descriptions at 6:66 or 8:42-47 characterizes a frame in terms of the display). Ex. 1033 ¶¶ 19-20.

Third, the '109 patent's prosecution history does not support Patent Owner's construction. Patent Owner relies on the applicant's arguments over the Yamada reference (POR, 16-18), but these statements fall far short of the "clear and unmistakable" disavowal required by the Federal Circuit for prosecution disclaimer. *Avid Tech., Inc. v. Harmonic, Inc.*, 812 F.3d 1040, 1045 (Fed. Cir. 2016).

The applicant never argued that Yamada did not disclose "a single instance

of the display” or that its image did not fill the entire client display. Ex. 2004, 273. Rather, applicant's *actual* argument—which Patent Owner omits—was that Yamada never transmits a frame to “a remote client device” because Yamada discloses “local execution of the game” on the client, not the server. *Id.*; Ex. 1025, 95:14-96:13. Further, Patent Owner's contention that the examiner “relied on Yamada's use of the MPEG protocol” and found it did not disclose a “frame” is false. POR, 17. The applicant made *no* remarks about MPEG when distinguishing Yamada, a point that Dr. Hart conceded at deposition.³ Ex. 1025, 96:15-19. Ex. 1033 ¶¶ 21-26.

b. The extrinsic evidence does not support Patent Owner's construction.

Patent Owner's extrinsic evidence does not support its construction. The IEEE Dictionary Patent Owner cites (POR, 12) defines “display frame” as a “single display image analogous to a frame in a motion picture.” Ex. 2002, 3. This definition does not require a “client display” and does not require that the image fill the entire “client display”; to the contrary, this confirms Dr. Fuchs'

³ Applicant argued during prosecution that “there is absolutely no mention of a ‘frame’ in Yamada.” Ex. 2004, 273. This means simply that Yamada does not use the word “frame,” not that a “frame” is a single instance of the display. Ex. 1033 ¶ 22.

definition that a frame is a single still image in a video sequence. Ex. 1002 ¶¶ 31, 89. Further, the IEEE Dictionary gives this definition in the “television” context (Ex. 2002, 4), which is not germane to the ’109 patent, which “relates to “*computer* systems” and “*computer* graphics.” Ex. 1001, Abstract, 1:28-33. A POSITA would have understood that client computers often display applications in windows that do not take up the full client display. Ex. 1033 ¶ 28.

Patent Owner's reliance on the Microsoft Computer Dictionary (Ex. 2003) is also misplaced. POR, 12. Patent Owner relies on the definition that a frame is a “single screen-sized image,” but as Dr. Hart testified at his deposition, the Microsoft Computer Dictionary is a “general book” and its definition does not match what is being described in the ’109 patent. Ex. 1025, 75:15-76:10. Ex. 1033 ¶ 29.

Patent Owner also relies on Dr. Fuchs' article discussing frame buffers (POR, 15), but Dr. Fuchs' article is about a different subject—an alternative to double-buffered displays—not about frames generated and compressed by a server and transmitted to a remote client for display. Ex. 1033 ¶ 30.

Finally, Patent Owner ignores the Saha reference (Ex. 1005), which describes “frames” in the context of MPEG compression, which is a preferred embodiment of the ’109 patent. Ex. 1001, 8:11-12; 6:55-62; 9:26-38; Ex. 1025, 114:7-22 (agreeing that MPEG frames are within the scope of the ’109 patent).

Ex. 1033 ¶ 31.

In sum, Patent Owner's construction of "frame" should be rejected.

2. "mobile device"

As the Board preliminarily found, PC Magazine (Ex. 1007) discloses an Apple iBook laptop, which is a "mobile device" as recited in the challenged claims. ID, 14-15, 35-40; Petition, 66-73. In an attempt to overcome this laptop prior art, Patent Owner seeks to narrow the term "mobile device" to "handheld computing device." POR, 18-23, 44-45.

Patent Owner's argument is directly contrary to its *own* arguments made in *Intellectual Pixels Ltd. v. Sony Interactive Entm't LLC*, Case No. 8:20-cv-01422-JVS-KES (C.D. Cal.) (the "-01422 Action"), where Patent Owner specifically and repeatedly pled that the claimed "mobile device" includes a "laptop" for purposes of infringement. Ex. 1031 (Original Complaint), 20-21 ("Claim 6 requires 'the client device is a mobile device.' ... The PC client devices that are supported include *laptop computers, which are mobile devices.*"), 30 ("Claim 6 requires 'the client device is a mobile device.' Remote Play satisfies this claim because Remote Play supports a variety of mobile client devices, including ... PC and Mac *laptop computers, which are mobile devices.*"); Ex. 1032 (Amended Complaint), 20-21, 30 (same). This is improper. *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001) ("A patent may not, like a 'nose of wax,' be

twisted one way to avoid anticipation and another to find infringement.”). The term “mobile device” should be given its plain and ordinary meaning, which includes laptops, just as Patent Owner argued in district court. Ex. 1033 ¶ 33.

a. The intrinsic evidence does not support Patent Owner's construction

First, the claim language recites a “mobile device”—not a handheld computing device. Ex. 1001, claim 6. If the applicant wanted to limit “mobile device” to handhelds like PDAs or mobile phones, it could have done so, just as it did in an earlier patent in the same patent family. *See* Ex. 1034 ('826 patent), claim 5 (“the client device is a PDA”), claim 6 (“the client device is a mobile phone”). Here, in contrast, the '109 claims recite “mobile device” without narrowing that term. Ex. 1033 ¶ 34.

Second, the specification lacks any “expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope” to limit “mobile device” to handheld computing devices. *Continental Circuits LLC v. Intel Corp.*, 915 F.3d 788, 797 (Fed. Cir. 2019). The specification does not use the term “handheld” or even “mobile device.” Rather, the specification generally refers to “client device,” and specifically refers to “common consumer client devices.” Ex. 1001, 3:26-33; 5:49; 9:13; 9:42. Both sides' experts agree that laptops were “common consumer devices” in 2001. Ex. 1025, 23:8-25:11. Ex. 1033 ¶ 35.

Contrary to Patent Owner's arguments, the specification's disclosure of

PDAs and mobile phones as “examples” of client devices does not limit the claims.

POR, 19. The specification confirms that PDAs and cellular telephones are mere “*exemplary* clients.” Ex. 1001, 5:51-59. It is improper to use examples from the specification to import limitations into the claims. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005). Ex. 1033 ¶ 36.

Further, Patent Owner mistakenly relies on *different* cases involving *different* patents to construe “mobile device.” Each case is distinguishable.

The holding in *Rothschild v. Mitek* has no bearing on the claim construction in this case. IPR2016-00457 (Paper 8), 9-10 (P.T.A.B. July 27, 2016). The issue in *Rothschild* was not whether a mobile device can include a laptop, but whether the claimed mobile device must include an image capture device. *Id.* Further, the Board's construction in *Rothschild* did not limit the term mobile device to a handheld computing device like a PDA or mobile phone, as proposed by Patent Owner; rather, the term was construed to contemplate other mobile devices: “a mobile communication device, *such as* a mobile telephone handset or Personal Digital Assistant, that includes an imaging device” *Id.*, 10.

U.S. Auto. Ass'n v. Wells Fargo is also distinguishable. 2:18-cv-366-JRG, 2019 WL 3423652, at *11-12 (E.D. Tex. July 29, 2019). Patent Owner relies on *U.S. Auto* for the proposition that a “mobile device” must be a “handheld device” as distinct from a “portable device.” POR, 20. But claims asserted in *U.S. Auto*

expressly recited a “**handheld** mobile device.” *See* Ex. 1035 (U.S. 10,013,605), claim 12 (reciting “handheld mobile device”), claim 1 (reciting “portable device”); Ex. 1038 (U.S. 10,013,681), claim 1 (reciting “portable device”), claim 12 (reciting “mobile device”). In contrast, the ’109 claims recite no such “handheld” limitation, and thus cover all “mobile devices” whether handheld or not. Moreover, other claims asserted in *U.S. Auto* recited a “portable device” (*see id.*, claim 1 (“portable device”)), implying that in the context of the claims of *that* patent, a “portable device” is “distinct” from a “mobile device.” *U.S. Auto*, 2019 WL 3423652, at *11. Here, **none** of the ’109 claims recite “portable device” and this term appears nowhere in the ’109 patent; thus, no such distinction can be drawn.

Uniloc 2017 LLC also does not help Patent Owner. No. 2:18-CV-00493-JRG-RSP, 2020 WL 339802, at *21 (E.D. Tex. Jan. 20, 2020). POR, 20. In *Uniloc*, the patent at issue clearly gave a particular meaning to “mobile devices” by expressly distinguishing between “mobile devices” and “stationary terminals such as laptops, desktops, and workstations.” Ex. 1036 (U.S. 8,194,632), 1:27-30. Here, the ’109 patent contains no such distinctions; rather, as noted above, the ’109 patent broadly refers to common consumer client devices without limitation.

Moreover, to the extent cases about other patents are relevant, Patent Owner ignores an opinion that refutes its construction. *See, e.g., Mobile Commerce*

Framework v. Foursquare Labs, Inc., 2013 WL 485860, at *3 (S.D. Cal. Feb. 6, 2013) (“One of ordinary skill in the art would construe ‘mobile device’ to mean ‘a portable handheld communication device, *including a laptop computer.*”).

b. The extrinsic evidence does not support Patent Owner's construction.

Patent Owner's extrinsic evidence is unavailing. Patent Owner relies on a textbook published in 2008—seven years *after* the '109 patent's priority date. Ex. 2007, 3. This textbook is not probative of a POSITA's understanding of “mobile device” at the time of the claimed '109 invention—January 2001. Ex. 1033 ¶ 37.

Extrinsic evidence close in time to the '109 patent's priority date demonstrates that POSITAs considered laptops to be mobile devices:

- Ex. 1026, 4 (Wang et al., Task-Driven Computing, May 2000): “The services available in an environment change in the presence of *mobile devices, such as laptops* Typically people own some stationary devices such as desktop workstations and a *couple of mobile devices (laptops, PDAs)*, and they do their computing primarily on those devices.”
- Ex. 1027, 36 (FCC Report, August 2000): “*Mobile data devices* include ... *laptop computers* equipped with wireless modems.”

See also Ex. 1028 (Encyclopedia of Computer Science, 2000), 27 (listing laptops as examples of mobile devices); Ex. 1033 ¶¶ 38-39.

In sum, Patent Owner's narrow construction of “mobile devices” should be

rejected.

B. Wiltshire and Saha Disclose “Compressing 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.”

As the Board preliminarily found, the combination of Wiltshire and Saha discloses this limitation. ID, 22-26; Petition, 27-34. Nothing in the POR changes that conclusion. Ex. 1033 ¶ 40.

First, Patent Owner incorrectly argues that Wiltshire does not disclose an “updated” image (POR, 27-30), despite Wiltshire disclosing the “update image” step 220 in Figure 2 and “modifying” an image based on the game state on the server. Petition, 24-27; Ex. 1004, Figure 2 (stage 220 “Display/*update* image?”); 8:61-63 (“Game program 112, then responds to input command 112 by updating the state of the game and possibly *modifying the image* displayed on screen 140.”). 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. Petition, 26 (citing Ex. 1004, 8:61-63, Fig. 2). Ex. 1033 ¶ 41.

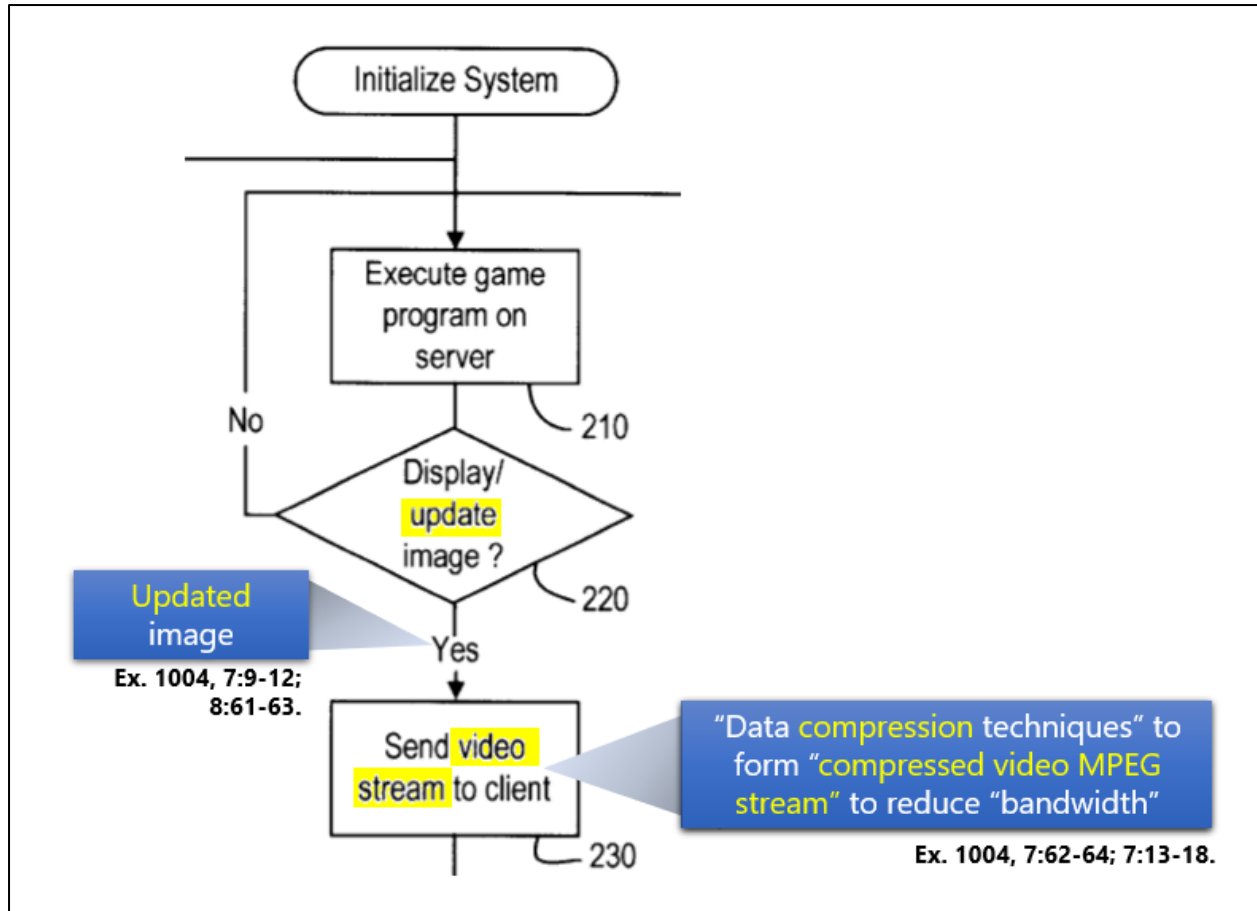
Patent Owner also argues that “update” merely means selecting a new image that is already preloaded on the client and thus Wiltshire does not transmit that updated image. POR, 28-30. That is incorrect. Patent Owner points to an

alternative embodiment in Wiltshire describing “preloading images onto the client,” but Wiltshire makes clear that is only for “some embodiments.” Ex. 1004, 8:8-11. The main embodiment described in Figure 2 relies on *transmitting* an updated image “from the server/host computer 110 to client/terminal computer 120” (Ex. 1004, 7:13-15), 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.*, Fig. 2. Pre-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. Ex. 1025, 52:16-23, 53:19-54:9; Ex. 1004, 1:26-43 (listing “Doom” as one of the games in Wiltshire’s system). Ex. 1033 ¶¶ 42-43.

Second, Patent Owner argues that Wiltshire’s updated image is not compressed (POR, 27-32), despite the fact Wiltshire expressly discloses using “data *compression*” to reduce “bandwidth” when sending an updated image from the server to the client, and specifically sending a “*compressed* MPEG video stream.” Petition, 27-34, Ex. 1004, 7:15-18, 7:57-64. The dispute between the parties relates to whether Wiltshire’s “update image” step 220 followed by “send video stream to client” step 230, where the “image is sent from server ... to client ... and may include ... a compressed video MPEG stream” (*id.*, Fig. 2, 7:13-18), means (1) the server updates the image, compresses it, and sends it to the client as a compressed MPEG video stream (as Petitioner contends), or (2) that Wiltshire

“described moving straight from determining whether an image was to be displayed at the client (step 220) to sending the image (step 230)” without compressing the image (as Patent Owner contends). POR, 30.

Wiltshire discloses the server updating the image and sending it as a compressed MPEG video stream to the client. As described above, the image from Wiltshire's step 220 that feeds into the transmission step 230 is an updated image, and Patent Owner ignores that the updated image transmitted in step 230 expressly “may include ... a *compressed video MPEG stream*.” Ex. 1004, 7:15-18. Further, sending a “compressed video MPEG stream” corresponds with step 230 shown in Figure 2, which is labeled “Send *video stream* to client.” *Id.*, Fig. 2 (step 230). Wiltshire reiterates that the bandwidth for server to client communications “can be further reduced using data *compression* techniques ...” *Id.*, 7:57-64. In sum, Wiltshire's text and Figure 2 disclose compressing an updated image for transmission:



Ex. 1004, Figure 2 (partial, annotated). Ex. 1033 ¶¶ 44-47.

Unable to dispute this express disclosure, Patent Owner and Dr. Hart incorrectly contend that Wiltshire “described moving straight from determining whether an image was to be displayed at the client (step 220) to sending the image (step 230)” without compressing the image. POR, 30. Dr. Hart contends that when Wiltshire discloses that the “image may include ... a *compressed* video MPEG stream,” that actually means to “*decompress* the file on the server/host and combine the *decompressed* image with any other image elements generated by the game program.” Ex. 2009 ¶ 63. In other words, contrary to Wiltshire’s teaching to

transmit a “*compressed* video MPEG stream” from the server to the client (Ex. 1004, 7:15-18), Dr. Hart argues that Wiltshire should be read to teach the opposite: transmitting a *decompressed* image. Ex. 1025, 150:23-152:9, 153:8-21. Not only does this not follow from Wiltshire's disclosure of compression, but decompressing on the server prior to transmission to the client would conflict with Wiltshire's teaching to reduce bandwidth during transmission “using data compression techniques.” Ex. 1004, 7:57-64. Ex. 1033 ¶ 48.

Patent Owner alternatively argues that Wiltshire's disclosure of transmitting a “compressed video MPEG stream” actually means sending a *pre*-compressed MPEG file, such as a pre-rendered “video clip banner ... to play at the top of the screen showing the word ‘Jackpot’ surrounded by fireworks.” POR, 28. Wiltshire discloses no such thing, and even Patent Owner admits that “Wiltshire does not disclose this example.” *Id.* Nor would sending pre-compressed MPEG files be suitable for interactive video games like “Doom,” which generate updated images in response to user inputs in real time, as discussed above. Indeed, Patent Owner's own expert rejects this argument; Dr. Hart testified that Wiltshire does not transmit a compressed video MPEG stream at all, much less a pre-loaded one. Ex. 1025, 153:8-21, 149:23-150:4. Ex. 1033 ¶¶ 49-50.

Finally, Patent Owner and Dr. Hart incorrectly argue that Saha's MPEG

disclosure⁴ is limited to off-line encoding, and that a POSITA would not have understood how to use MPEG for live, real-time interactive games disclosed in Wiltshire. POR, 30-31; Ex. 2009 ¶¶ 69-79 (opining Wiltshire and Saha lack detail supposedly needed to provide “real-time MPEG encoding of live streams”). But the '109 patent also does not disclose details of how to use MPEG for live, real-time interactive games. Wiltshire and the '109 patent disclose the *same* level of detail on MPEG compression. For example, Wiltshire describes box 230 of its Figure 2 as transmitting a “compressed video MPEG stream.” Ex. 1004, 7:13-17. At a near-identical level of detail, box 66 of '109 patent Figure 2D says simply “Compress the image data”:

⁴ Patent Owner incorrectly suggests that Saha is not relevant to Petitioner's ground of obviousness for the “compressing” and “transmitting” limitations. POR, 31-32. The limitations “compressing” and “transmitting the compressed updated image” require transmitting “a compressed frame,” which is rendered obvious by the combination of Wiltshire and Saha, as described in the Petition. Petition, 30.

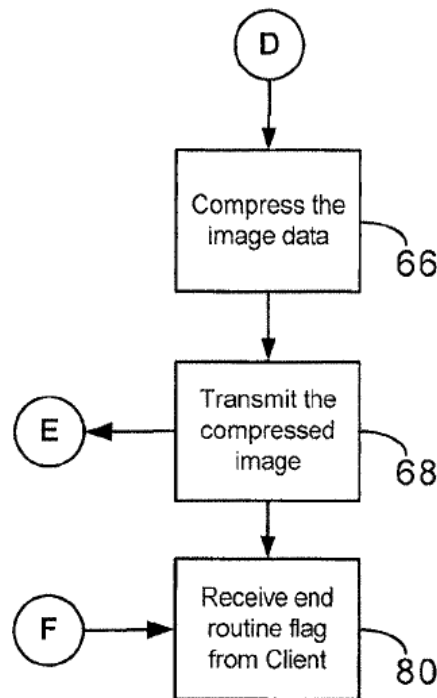


Fig. 2D

Ex. 1001, Fig. 2D. Dr. Hart testified that this box 66 is sufficient instruction to a POSITA to enable real-time MPEG encoding of live streams. Ex. 1025, 146:17-149:5. But so too is Wiltshire's instruction to transmit a "compressed video MPEG stream." In both cases, as Dr. Fuchs explained and the Levoy article (Ex. 1016) confirmed, the details of real-time image compression (including by using MPEG) were already well known to POSITAs before the '109 patent. Ex. 1002 ¶ 27, Ex. 1016, 21. Ex. 1033 ¶¶ 51-53.

C. Wiltshire and Saha Discloses Transmitting a "[Compressed] Frame."

As the Board preliminarily found, the combination of Wiltshire and Saha

discloses “transmitting a [compressed] frame.” ID, 25-26; Petition, 27-34.

Nothing in the POR changes that conclusion. Ex. 1033 ¶ 54.

First, Patent Owner relies on its unsupported claim construction of “frame,” which is incorrect. See Section II.A.1. Under the plain meaning of “frames”—i.e., “the still images that are ordered in a sequence to produce a video or animated sequence” (Ex. 1002 ¶¶ 31, 89)—Saha discloses “frames” and compressed “frames” using MPEG. See ID, 25-26; Petition, 27-34; Ex. 1005, 2:19-35 (“MPEG compression ... *compress[es] frames in the sequence*”), 1:64-2:1, Ex. 1025, 104:21-105:5 (Dr. Hart agreeing “Saha discloses compressing frames, using MPEG”). Ex. 1033 ¶ 55.

Second, even under Patent Owner's incorrect construction, Wiltshire and Saha would still disclose a “frame.” Wiltshire provides multiple examples of “images” that are “*displayed on a screen* of a client/terminal computer.” Ex. 1004, 3:23-57, 8:38-41, Figs. 4-9. Each of these images are full displays (e.g., the entire game table or slot machine), not partial displays, like a single button or banner. *Id.*, Figs. 4-9. Moreover, Wiltshire's primary embodiment uses “full screen refreshes” on the client display. Ex. 1004, 8:1-7 (explaining that “in some embodiments, to further reduce the amount of network bandwidth, ... image updates ... are limited to areas of the screen that are actually modified rather than *full screen refreshes*”). By disclosing alternative embodiments that may use

partial screen updates, Wiltshire confirms that its main embodiment results in “full screen refreshes” on the client—which means the compressed frame transmitted from the server to the client is for the full client screen. Ex. 1033 ¶¶ 56-58.

Finally, Wiltshire discloses a “frame” under Dr. Hart’s view that a frame is a “full image *generated by the application* at any given instance in time.” Ex. 2009 ¶ 48; Ex. 1025, 68:15-69:10. As explained above, every “image” shown in Wiltshire is a full image output from the server’s game application, showing the full display (e.g., the entire game table or slot machine). Ex. 1004, 3:23-57, Figs. 4-9. There is nothing in Wiltshire to suggest that the images shown in Figure 4-9 are partial outputs of an application, such as a single button. Ex. 1033 ¶ 59.

D. Wiltshire Discloses a “Mobile Device.”

The Petition established that Wiltshire discloses a “mobile device” to a POSITA. Petition, 39-40, 50-51. Patent Owner’s arguments to the contrary are incorrect. Ex. 1033 ¶¶ 60, 64.

First, Patent Owner’s argument that Wiltshire’s “wireless communication pathways” are between the head mounted display and the joystick is incorrect. POR, 41-42. As shown in Figure 1D of Wiltshire, the “communication pathways” are lines labeled 130 connecting each client to the server—*not* lines connecting the head mounted display and joystick to the client. Wiltshire defines “communication pathway” 130 as the “pathways suitable for connecting *server/host* computer 100

to the *client/terminal* computers 120.” Ex. 1004, 5:38-51. Further, the communication pathway between clients and server can include “RF links,” which are wireless connections, as Dr. Hart agreed. Ex. 1004, 3:67-4:3; Ex. 1025, 155:4-18. Thus, Wiltshire’s “wireless communication pathways” that allow “a mobile gaming environment” (Ex. 1004, Abstract) are wireless connections between the clients and the servers. Ex. 1033 ¶ 61.

Second, Patent Owner incorrectly argues that all clients in Wiltshire require wager-acceptors, and thus cannot be mobile. POR, 42. But Wiltshire’s wager-acceptors are used only “in some embodiments,” not all. Ex. 1004, 4:30-33. Further, the examples of wager-acceptors can include a “smart-card reader” or “credit card reader” (*id.*, 4:33), which could be used with laptops without preventing mobility since they do not hold cash or coins. Ex. 1033 ¶ 62.

Third, Patent Owner ignores that Wiltshire discloses that the clients can run “Windows CE,” which is an operating system suitable for use in handheld devices. Ex. 1004, 6:55-59. Thus, under Patent Owner’s construction, Wiltshire contemplates using handheld devices for its mobile gaming platform. Ex. 1033 ¶ 63.

E. PC Magazine Discloses a “Mobile Device.”

The Petition established that, alternatively, PC Magazine’s Apple iBook laptop is a “mobile device,” which the Board preliminarily found as well. Petition,

66-73; ID, 35-40; Ex. 1007, 9. Patent Owner's arguments to the contrary fail. Ex. 1033 ¶ 65.

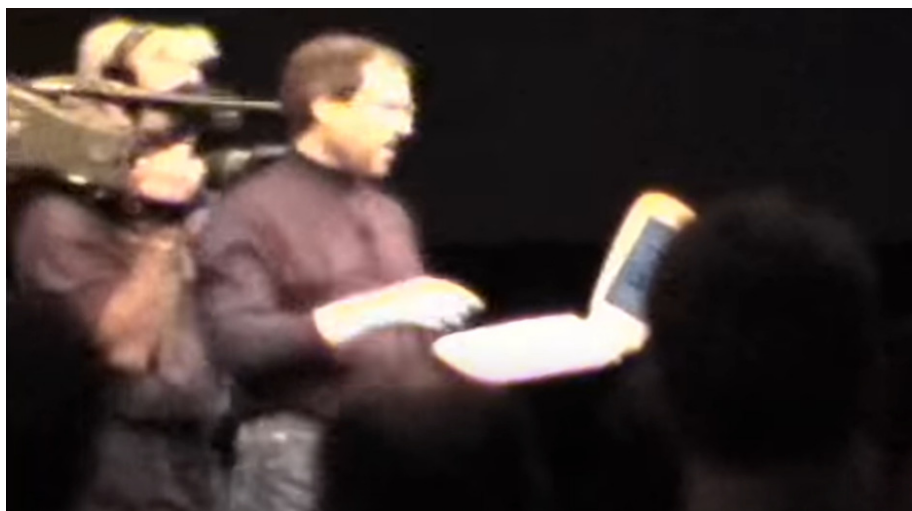
First, Patent Owner relies on its incorrect claim construction of “mobile device.” See Section II.A.2. Under the correct plain meaning, as well as under Patent Owner's own arguments in parallel district court litigation, the Apple iBook laptop, with its wireless capability, was a “mobile device.” Ex. 1033 ¶ 66.

Second, references to the iBook as “portable” do not mean it is not also a “mobile device.” POR, 45. For example, Dr. Hart conceded that mobile telephones and PDAs are also “portable,” but they are still “mobile devices.” Ex. 1025, 131:2-7. As explained in the Petition, the iBook is not just portable, but uses “wireless technology” to allow it to be used in a mobile fashion. Ex. 1033 ¶ 67.

Finally, even under Patent Owner's incorrect construction that the mobile device must be handheld, the iBook still is a “mobile device.” When the Apple iBook was first unveiled during MacWorld in 1999, Steve Jobs demonstrated its mobile and wireless capability by browsing multiple websites while holding the iBook in his left hand, as shown in the following screen captures:⁵

⁵ <https://youtu.be/3iTNWZF2m3o?t=876> and <https://youtu.be/HFngngjy4fk?t=57>

(video of MacWorld NY presentation referenced in Ex. 1007, 9 (iBook introduced “[a]t New York's recent MacWorld trade show”)).



Ex. 1033 ¶¶ 68-71.

F. A POSITA Would Have Been Motivated to Combine PC Magazine with Wiltshire and Saha.

The Board preliminarily found that a POSITA would have been motivated to combine PC Magazine with Wiltshire and Saha with a reasonable expectation of success. ID, 39-40; Petition, 68-71. Patent Owner is unable to show otherwise.

Ex. 1033 ¶ 72.

First, Patent Owner incorrectly states that Wiltshire's client computers all require wager-acceptors that take coins or cash, which discourages using a laptop like the iBook. POR, 46-48. As explained above (Section II.D), Wiltshire's client computers do not require wager-acceptors. Ex. 1004, 4:30-33. Also, Patent Owner ignores that wager-acceptors can include card readers, which would not carry any cash, and thus its notion that laptops present a security risk is unavailing. *Id.* Ex. 1033 ¶ 73.

Second, Patent Owner's argument that Wiltshire is limited to a casino environment, in which mobile devices would not be used, is incorrect. POR, 49-51. Wiltshire broadly defines "game" and "gaming," to which its disclosure applies. Ex. 1004, 1:26-43 (defining "game" and "gaming" as including "video based games such as Doom, Pong, Packman, Myst" and "video games based on sports"). Wiltshire expressly contemplates "non-casino games" (Ex. 1004, 12:11), including video games such as "Doom" and "Myst," neither of which are casino

games. Ex. 1004, 1:26-43; Ex. 1025, 36:1-25. This is confirmed in Wiltshire's claims, which recite "[a] computer gaming system" without any limitation to a casino or similar environment. Ex. 1004, 12:21-43. Further, Wiltshire discloses input commands "such as mouse movements, mouse clicks or keystrokes" (Ex. 1004, 5:59-65), which a POSITA would understand applies to non-casino gaming like playing Doom or Myst, for example. Ex. 1033 ¶ 74.

As the Supreme Court has instructed, a POSITA is one of "ordinary creativity, not an automaton." *KSR v. Teleflex Inc.*, 550 U.S. 398, 421 (2007). A POSITA would have not limited Wiltshire to only casino applications, particularly in view of Wiltshire's disclosures of non-casino embodiments described above.

Finally, Patent Owner wrongly characterizes Dr. Fuchs' opinion that "the personal computer industry had already begun shifting towards offering viable mobile laptop products to the general public" as a "bald statement." POR, 50. Dr. Fuchs cited PC Magazine (Ex. 1007), which disclosed the iBook and other laptops being advertised to both businesses and consumers. Ex. 1002 ¶ 220. Indeed, Dr. Hart admitted to using laptops extensively before 2001. Ex. 1025, 169:8-170:25. Ex. 1033 ¶ 75.

G. A POSITA Would Have Been Motivated to Combine Chen with Wiltshire and Saha.

The Board preliminarily found that a POSITA would have been motivated to combine Chen with Wiltshire and Saha with a reasonable expectation of success.

Petition, 58-65; ID, 40-45. Again, Patent Owner is unable to show otherwise. Ex. 1033 ¶ 76.

First, Patent Owner relies on two false premises to argue against motivation to combine: (1) that Wiltshire is limited to commercial casino establishments, and (2) that Chen is limited to residential applications. POR, 53-59. Neither is correct. As explained above, Wiltshire is not limited to casinos and instead teaches use of its system in a variety of gaming contexts, including playing games like Doom at home. Section II.F. Conversely, Chen discloses more than just ADSL in residential contexts, but also for business applications like accessing database records and tele-education.⁶ Ex. 1006, 69; ID, 44. Further, it was well known that ADSL could be used for the “last mile” to both “businesses and residences.” Ex. 1029 (Ahamed 1995), Abstract; *see also* Ex. 1030 (Kompatsiaris 2000), Abstract (DSL “reach[es] practically every home and business”). Ex. 1033 ¶¶ 77-78.

Second, Patent Owner mistakenly assumes that Wiltshire requires transmitting multiple, concurrent MPEG video streams to multiple clients, and that Chen's description of ADSL could only provide one MPEG video stream. POR,

⁶ Notably, Dr. Hart does not offer any opinion that Chen's ADSL is limited to residential use or that a POSITA would not combine it with Wiltshire for that reason. Ex. 2009, *passim*.

61-62. But Wiltshire discloses a system that can be used with only one client computer. Ex. 1004, claim 1 (“**one** or more client/terminal computers”); Ex. 1025, 31:22-32:21 (Dr. Hart admits: “I believe Wiltshire discloses the use of one client terminal computer.”). Further, claim 2 of the ’109 patent does not require more than one client computer. Ex. 1001, claim 2, Ex. 1025, 156:18-23 (agreeing that claim 2 does not require multiple client devices). Thus, it is immaterial whether ADSL could support more than one concurrent MPEG video stream. In any event, a POSITA would understand that any given application in Wiltshire need not consume the entire 1.3 Mbps bandwidth. For example, Wiltshire contemplates games like Pong or simpler games that could stream multiple concurrent MPEG videos that total less than 1.3 Mbps. Ex. 1033 ¶ 79.

Finally, Patent Owner incorrectly contends that Petitioner has not provided any evidence that ADSL was one of a finite number of options for providing Internet connectivity. POR, 62-63. Patent Owner challenges this statement, but does not identify any options other than ADSL or cable networks as described by Dr. Fuchs. *Id.* Patent Owner also argues that the PC Magazine article (Ex. 1007) cited by Dr. Fuchs mentions DSL, not ADSL. But a POSITA would understand DSL to refer to ADSL, as evidenced by the contemporaneous recognition that ADSL was the “ideal vehicle for providing Internet Access” (Ex. 1006, 69), and that the ’109 patent also uses the term “DSL” when describing asymmetric DSL.

Ex. 1001, 6:14-16. Ex. 1033 ¶ 80.

III. CONCLUSION

Because Patent Owner has failed to rebut Petitioner's showing that the challenged claims are unpatentable, all challenged claims should be cancelled.

Respectfully Submitted,

/Joseph F. Haag/

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Table of Exhibits

Exhibit	Description
1001	U.S. Patent No. 10,681,109 (“109 patent”)
1002	Declaration of Dr. Henry Fuchs
1003	Declaration of Dr. Hall-Ellis
1004	U.S. Patent No. 6,409,602 (“Wiltshire”)
1005	U.S. Patent No. 6,404,817 (“Saha”)
1006	Chen, “The Development and Standardization of Asymmetrical Digital Subscriber Line,” IEEE Communications Magazine, May 1999 (“Chen”)
1007	PC Magazine, September 21, 1999 (“PC Magazine”)
1008	Baron et al., “MPEG Overview,” ITU/SMPTE Tutorial on Digital Terrestrial Broadcasting, January 1, 1994 (“Baron”)
1009	ITU-T Recommendation H.262 (“MPEG Standard”)
1010	Stay Order, Intellectual Pixel Ltd. v. Sony Interactive Entm’t LLC, Case No. 8:19-cv-01432-JVS-KES (C.D. Cal.), D.I.126
1011	Stay Stipulation, Intellectual Pixel Ltd. v. Sony Interactive Entm’t LLC, Case No. 8:19-cv-01432-JVS-KES (C.D. Cal.), D.I. 125
1012	<i>SPEX Techs., Inc. v. Kingston Tech. Corp.</i> , No. CV16-07349 JVS(AGRX), 2018 WL 2446801
1013	Scheduling Order, Intellectual Pixel Ltd. v. Sony Interactive Entm’t LLC, Case No. 8:20-cv-01422-JVS-KES (C.D. Cal.), D.I. 36
1014	In Re: Coronavirus Public Emergency Order Concerning Reopening of the Southern Division, C.D. Cal. General Order No. 20-12, C.D. Cal. General Order 20-12

Exhibit	Description
1015	Order Regarding Motion to Dismiss, Intellectual Pixel Ltd. v. Sony Interactive Entm't LLC, Case No. 8:20-cv-01422-JVS-KES (C.D. Cal.), D.I. 42.
1016	"Polygon-Assisted JPEG and MPEG Compression of Synthetic Images," by Marc Levoy ("Levoy")
1017	First Amended Complaint, Intellectual Pixel Ltd. v. Sony Interactive Entm't LLC, Case No. 8:20-cv-01432-JVS-KES (C.D. Cal.), D.I. 69
1018	U.S. Patent No. 5,771,238 ("Sutton")
1019	"A G3 PowerPC™ Superscalar Low-Power Microprocessor," IEEE 1997 ("PowerPC")
1020	PC Magazine, April 23, 1996 ("1996 PC Magazine")
1021	U.S. Patent No. 6,434,695 ("Esfahani")
1022	Declaration of James M. Dowd in Support of Motion for Admission Pro Hac Vice
1023	Declaration of S. Dennis Wang in Support of Motion for Admission Pro Hac Vice
1024	Pictures of devices
1025	November 6, 2021 Deposition Transcript of Dr. John C. Hart
1026	Wang and Garlan, Task-Driven Computing, May 2000 ("Wang")
1027	In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With respect to Commercial Mobile Services, FCC Report, August 18, 2000 ("FCC Report")
1028	Encyclopedia of Computer Science, Fourth Edition, 2000 ("Encyclopedia of Computer Science")

Exhibit	Description
1029	Ahamed et al., Digital Subscriber Line (HDSL and ADSL) Capacity of the Outside Loop Plant, IEEE Journal on Selected Areas in Communications, Vol. 13, No. 9, December 1995 ("Ahamed")
1030	Kompatsiaris et al., Using Asymmetric Digital Subscriber Line (ADSL) for Fast Internet and Multimedia Services ("Kompatsiaris")
1031	Complaint, Intellectual Pixel Ltd. v. Sony Interactive Entm't LLC, Case No. 8:20-cv-01422 (C.D. Cal.), D.I. 1 ("Original Complaint")
1032	Amended Complaint, Intellectual Pixel Ltd. v. Sony Interactive Entm't LLC, 8:20-cv-01422 (C.D. Cal.), D.I. 33 ("Amended Complaint")
1033	Reply Declaration of Dr. Henry Fuchs
1034	U.S. Patent No. 8,131,826 ("826 patent")
1035	U.S. Patent No. 10,013,605
1036	U.S. Patent No. 8,194,632
1037	PC Magazine Encyclopedia
1038	U.S. Patent No. 10,013,681

CERTIFICATE OF COMPLIANCE REGARDING WORD COUNT

I hereby certify that the foregoing, *Petitioner's Reply to Patent Owner's Response*, contains 5,563 words as measured by the word processing software used to prepare the document, in compliance with 37 C.F.R. § 42.24 (d).

Respectfully submitted,

Dated: November 23, 2021

/Joseph F. Haag/
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Registration No. 42,612

CERTIFICATE OF SERVICE

I hereby certify that on November 23, 2021 I caused a true and correct copy of the following materials:

- Petitioner's Reply to Patent Owner's Response;
- Table of Exhibits;
- Exhibits 1024-1038; and
- Certificate of Compliance Regarding Word Count

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