

**United States Court of Appeals  
for the Federal Circuit**

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**BOT M8 LLC,**  
*Appellant*

v.

**SONY INTERACTIVE ENTERTAINMENT LLC,**  
*Appellee*

**KATHERINE K. VIDAL, UNDER SECRETARY OF  
COMMERCE FOR INTELLECTUAL PROPERTY  
AND DIRECTOR OF THE UNITED STATES  
PATENT AND TRADEMARK OFFICE,**  
*Intervenor*

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2022-1291

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Appeal from the United States Patent and Trademark  
Office, Patent Trial and Appeal Board in No. IPR2020-  
00922.

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Decided: May 9, 2023

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AARON M. FRANKEL, Kramer Levin Naftalis & Frankel  
LLP, New York, NY, argued for appellant. Also repre-  
sented by JEFFREY ENG; PAUL J. ANDRE, JAMES R. HANNAH,  
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argued for appellee. Also represented by ERIC ALLAN BURESH, Overland Park, KS.

WILLIAM LAMARCA, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, argued for intervenor. Also represented by MICHAEL S. FORMAN, THOMAS W. KRAUSE, FARHEENA YASMEEN RASHEED, MEREDITH HOPE SCHOENFELD.

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Before PROST, REYNA, and CUNNINGHAM, *Circuit Judges*.

PROST, *Circuit Judge*.

Bot M8 LLC (“Bot M8”) appeals from a final written decision of the Patent Trial and Appeal Board (“Board”) in an inter partes review (“IPR”) determining all challenged claims of U.S. Patent No. 8,078,540 (“the ’540 patent”) unpatentable. We affirm.

#### BACKGROUND

Sony Interactive Entertainment LLC (“Sony”) petitioned for IPR of claims 1–6 of the ’540 patent. The ’540 patent concerns a gaming machine that authenticates certain data and that has both a motherboard and a different board. *See, e.g.*, ’540 patent col. 5 ll. 25–39; *id.* at claim 1. Two aspects of the claims are relevant here. First, the independent claims (claims 1 and 4) require that the “game program” be written to the motherboard only after the game program has been authenticated. Second, the dependent claims (claims 2, 3, 5, and 6) require two different CPUs—one on the motherboard, one on a different board—for executing the “authentication program” and “preliminary authentication program” respectively.

Claims 1 and 2 exemplify the issues on appeal concerning the independent claims and dependent claims, reciting:

1. A gaming machine, comprising:

(i) a board including a memory in which a game program for executing a game and an authentication program for authenticating the game program are stored;

(ii) a motherboard which is different from the board and connects to the board, the motherboard including another memory which is different from the memory, said another memory configured to read out and store the game program stored in the memory; and

(iii) a CPU which is provided on the motherboard, for executing the game based upon the game program stored in said another memory,

the CPU being configured to:

(a) read out the authentication program from the memory of the board, and then, store the read out authentication program in said another memory of the motherboard;

(b) execute the authentication program stored in said another memory in the process (a), and then, authenticate the game program in the memory of the board, based upon the executed authentication program;

(c) *write the game program in the memory of the board, to said another memory of the motherboard, in a case where the game program in the memory of the board is authenticated as a result of the authentication process (b); and*

(d) execute the game based upon the game program written to said another memory of the motherboard in the process (c).

2. The gaming machine according to claim 1, wherein:

a preliminary authentication program for authenticating the authentication program is further stored in the memory of the board *and another CPU which is different from the CPU, said another CPU configured to execute the preliminary authentication program, is provided on the board*, said another CPU being configured to, prior to performing the process (a):

(e) execute the preliminary authentication program stored in the memory of the board, and then, authenticate the authentication program stored in the memory of the board, based upon the preliminary authentication program.

'540 patent claims 1 & 2 (emphasis added).

In its final written decision, the Board determined that the independent claims are unpatentable based on asserted combinations of (1) Johnson and Martinek and (2) Morrow '952, Morrow '771, and Diamant.<sup>1</sup> *Sony Interactive Ent. LLC v. Bot M8, LLC*, No. IPR2020-00922, Paper 26, 2021 WL 6335602, at \*29 (P.T.A.B. Nov. 22, 2021) ("*Final Written Decision*"); *cf. id.* at \*20, \*25 (determining that the independent claims are unpatentable based on each of Johnson and Morrow '952 alone). It determined that the dependent claims are unpatentable based on the

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<sup>1</sup> U.S. Patent No. 6,565,443 ("Johnson"); U.S. Patent App. Pub. No. 2003/0130032 ("Martinek"); U.S. Patent App. Pub. No. 2004/0054952 ("Morrow '952"); U.S. Patent App. Pub. No. 2003/0064771 ("Morrow '771"); U.S. Patent App. Pub. No. 2006/0101310 ("Diamant").

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asserted combination of Johnson, Martinek, and Diamant. *Id.* at \*29.

Bot M8 timely appealed. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

#### DISCUSSION

We review the Board’s decision in accordance with the Administrative Procedure Act (“APA”), 5 U.S.C. § 706. *E.g.*, *Hunting Titan, Inc. v. DynaEnergetics Eur. GmbH*, 28 F.4th 1371, 1379 (Fed. Cir. 2022). We review claim construction de novo and any subsidiary factfindings based on extrinsic evidence for substantial evidence. *E.g.*, *Apple Inc. v. MPH Techs. Oy*, 28 F.4th 254, 259 (Fed. Cir. 2022). Substantial evidence “is such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.” *Novartis AG v. Torrent Pharms. Ltd.*, 853 F.3d 1316, 1323–24 (Fed. Cir. 2017) (cleaned up). What the prior art discloses and whether a person of ordinary skill in the art would have been motivated to combine prior-art references are both fact questions that we review for substantial evidence. *E.g.*, *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1378 (Fed. Cir. 2023).

Bot M8 raises two issues on appeal.<sup>2</sup> First, it argues that the Board misconstrued the independent claims. Second, it argues that the Board erred in determining the dependent claims unpatentable for obviousness. We address each issue in turn.

#### I

As to the independent claims, Bot M8 argues that the Board misconstrued claim 1 to find that both Johnson and

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<sup>2</sup> Bot M8 originally raised a third issue—a challenge to the Board’s institution decision as allegedly violating the Constitution’s Appointments Clause—but it withdrew that challenge before oral argument. ECF No. 54.

Morrow '952 disclose the element that requires writing the game program to the motherboard only after authenticating the game program.<sup>3</sup> The dispute concerns what data may be written to the motherboard before authenticating the game program.

Claim 1 undisputedly precludes writing the *entire* game program to the motherboard before authenticating the game program. *See Final Written Decision*, 2021 WL 6335602, at \*19 (describing this as “a point not in dispute”); *accord* Appellant’s Br. 24; Appellee’s Br. 17.

Bot M8 maintains that claim 1 further precludes writing any data—game program or not—to the motherboard before authenticating the game program. *See* Appellant’s Br. 34. The Board rejected such an interpretation as inconsistent with the claim language. *See, e.g., Final Written Decision*, 2021 WL 6335602, at \*18. We likewise reject such an interpretation. Although claim 1 precludes writing the *game program* to the motherboard before it’s authenticated, Bot M8 offers no persuasive reason to construe the claim to preclude writing other data to the motherboard before the game program is authenticated.

Bot M8 also argues, more modestly, that claim 1 at least precludes writing any *portion* of the game program to the motherboard before authenticating the game program. Appellant’s Br. 23. And, in attempting to show that the Board applied a contrary construction—one that permits portions of the game program to be written to the motherboard before authenticating the game program—Bot M8

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<sup>3</sup> Although Sony argues that Bot M8 forfeited its claim-construction arguments on this element by not preserving them before the Board, Appellee’s Br. 12–17, we need not reach that argument because, as explained below, we reject Bot M8’s claim-construction arguments on the merits.

fixates on what appears to be a single sentence in the Board’s final written decision, where the Board stated: “[Bot M8] seeks to read into claim 1 a requirement that *nothing* related to, *or any portion of, the gaming information* be read into [the motherboard’s] RAM from the mass storage device of Johnson prior to authenticating the game program.”<sup>4</sup> *Final Written Decision*, 2021 WL 6335602, at \*17 (second emphasis added); *see, e.g.*, Appellant’s Br. 17, 25 (quoting this sentence).

Assuming (for argument’s sake) that Bot M8 is correct—that claim 1 does preclude writing any portion of the game program to the motherboard before authenticating the game program—we still affirm. Our review under the APA is subject to a harmless-error rule, *see, e.g.*, 5 U.S.C. § 706 (“[D]ue account shall be taken of the rule of prejudicial error.”), and the party challenging the Board’s decision must demonstrate the harmfulness of the alleged error, *see Shinseki v. Sanders*, 556 U.S. 396, 406, 409–10 (2009); *accord Vicor Corp. v. SynQor, Inc.*, 869 F.3d 1309, 1325 (Fed. Cir. 2017). Bot M8 fails to do so here.

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<sup>4</sup> We will assume (for argument’s sake) that when the Board said “gaming information” here, it was contemplating “game program.” But even that is far from clear. The ’540 patent distinguishes between “gaming information” and “game program,” with “gaming information” including both a “game program” and a “game system program.” *See* ’540 patent col. 5 ll. 34–39; *id.* at col. 6 ll. 53–55; *id.* at col. 12 ll. 51–53. So, when suggesting that a portion of the “gaming information” may be written to the motherboard before authenticating the game program, the Board was not necessarily even referring to a portion of the *game program* specifically. Nevertheless, for argument’s sake, we will assume that the Board’s use of “gaming information” in this context contemplated “game program.”

Specifically, Bot M8 fails to demonstrate that the Board, in making its unpatentability determinations, actually relied—or even might have relied—on a construction that permits writing portions of the game program to the motherboard before authenticating the game program. By all indications, the Board simply didn’t need to; it found that both Johnson and Morrow ’952 disclose writing only *non-game-program* data to the motherboard before authenticating the game program. See, e.g., *Final Written Decision*, 2021 WL 6335602, at \*16 (“[Sony] also shows that Johnson expressly teaches loading only enough of the operating system that is needed to access the files stored on the mass storage device 211 and perform the verification operations, *which would have been understood not to include game programs.*” (emphasis added) (cleaned up)); *id.* (quoting favorably Sony’s expert’s testimony that, in one Johnson embodiment, “the application module files (i.e., game program) are also not loaded or written into [the motherboard’s] RAM until the verification procedure successfully completes” (quoting J.A. 856–57 ¶ 183)); *id.* at \*27 (discussing Morrow ’952). We review these factfindings for substantial evidence, and Bot M8 has not shown that they were lacking in that regard. Given these findings, then, there would have been no occasion for the Board to apply a construction that permits writing portions of the game program to the motherboard before authenticating the game program. We therefore conclude that any error in the Board’s suggestion that claim 1 permits as much was harmless.<sup>5</sup>

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<sup>5</sup> Although the foregoing discussion suffices, we further note that Bot M8’s own explanation of Johnson and Morrow ’952 bolsters this conclusion. For example, when explaining why it believes that these references don’t disclose the relevant claim element, Bot M8 tends to say only



Bot M8’s challenge concerning the independent claims depends on its arguments of claim-construction error. Because we conclude that the Board did not err in this respect or that any error was harmless, we affirm as to the independent claims.

## II

As to the dependent claims, Bot M8 argues that the Board erred in determining them unpatentable for obviousness because a person of ordinary skill in the art would not have been motivated to combine Johnson, Martinek, and Diamant to yield the invention of claim 2.

Again, as relevant here, claim 2 requires two different CPUs—one on the motherboard, one on a different board—for executing the “authentication program” and “preliminary authentication program” respectively.

The Board found that Martinek discloses a board (different from the motherboard) with a CPU (different from the motherboard’s CPU) that can execute an authentication program. *See Final Written Decision*, 2021 WL

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that they write “data” to the motherboard before authenticating the game program—without clearly specifying what “data” it’s talking about. *See Appellant’s Br.* 31–34. And, when articulating why it believes the Board incorrectly found that these references disclose the relevant claim element, Bot M8 identifies as “erroneous” the Board’s interpretation that claim 1 does not preclude *any and all* data from being written to the motherboard before the game program is authenticated. *See Appellant’s Br.* 34 (regarding *Morrow ’952*); *id.* at 32 (regarding *Johnson*). This simply reinforces that Bot M8’s real issue with the Board’s interpretation is that it allowed for *some* data—even non-game-program data—to be written to the motherboard before the game program is authenticated. As already discussed, Bot M8 has not shown error in that interpretation.

6335602, at \*21–22. The Board also found that Diamant discloses a preliminary authentication program. *See id.* And although the Board acknowledged Bot M8’s argument that, in Diamant, the analogous “authentication program” and “preliminary authentication program” are both executed on the same CPU, *id.* at \*22, \*24, the Board credited (among other things) Sony’s “persuasive reasons why a person of ordinary skill in the art would have understood a benefit of combining [the references’] teachings to arrive at a process that uses two CPUs,” *id.* at \*24. In particular, the Board quoted favorably the testimony of Sony’s expert, who explained that “using processor 505 of Martinek to first authenticate Johnson’s verification module before loading it into [the motherboard’s] RAM accomplishes the goal expressly described in Martinek of acting as a gate to ‘allow data to enter a host computer only after validation.’” *Id.* at \*23 (quoting J.A. 872 ¶ 212 (quoting J.A. 983 at [0114] (Martinek))). That is, the Board credited Sony’s expert’s explanation of why Martinek itself supplies a motivation. *Id.*; *see also id.* at \*24 (finding “for the reasons explained above that the express disclosures in the asserted references provide reasons and motivations that support the asserted combination”).

On appeal, Bot M8 again stresses that “no reference of record[] shows using two different CPUs for two separate authentication processes.” Appellant’s Br. 36. But Bot M8 fails to persuade us why no reasonable factfinder could have found as the Board did—that given Sony’s expert’s explanation and the references themselves, it nonetheless would have been obvious to a person of ordinary skill in the art to combine the references to yield the claimed invention. We conclude that substantial evidence supports the factfindings underpinning the Board’s obviousness determination, and we otherwise see no error in that determination.

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CONCLUSION

We have considered Bot M8's remaining arguments and find them unpersuasive. For the foregoing reasons, we affirm.

**AFFIRMED**