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Paper 13
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC.,
Petitioner,

v.

MULLEN INDUSTRIES LLC,
Patent Owner.

IPR2025-00740 (Patent 10,828,559 B2)
IPR2025-00741 (Patent 11,376,493 B2)

Before KEN B. BARRETT, JEFFREY S. SMITH, and MIRIAM L. QUINN, *Administrative Patent Judges.*

QUINN, *Administrative Patent Judge*.

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

I. INTRODUCTION

This Decision on Institution addresses two separate proceedings arising from the filing of petitions for *inter partes review* filed by Meta Platforms ("Petitioner"): IPR2025-00740 and IPR2025-00741.[1] The first Petition requests *inter partes* review of claims 1, 12, 17, and 20 of U.S. Patent No. 10,828,559 B2 (740 IPR, Ex. 1001, "the '559 patent"). 740 Pet. 3 (740 IPR, Paper 2). In the second, the Petition challenges claims 1, 12, 17, and 20 of U.S. Patent No. 11,376,493 B2 (741 IPR, Ex. 1001, "the '493 patent). 741 Pet. 3 (741 IPR, Paper 2). Mullen Industries ("Patent Owner") filed a Preliminary Response in each proceeding. 740 IPR, Paper 9; 741 IPR, Paper 10.

Before delving into the merits of the petitions, we note that the 740 IPR and the 741 IPR involve related patents. The '493 patent involved in the 741 IPR is a continuation of the application that issued as the '559 patent. Both of these patents have a common disclosure and recite claims with significantly overlapping subject matter. The proceedings involve the same asserted prior art and substantially similar grounds, present substantially the same expert testimony, and involve substantially the same analysis of the grounds and whether sufficient evidence has been presented for a reasonable likelihood of prevailing on at least one claim of each patent. Because the limitations recited in the independent claims recite substantively

[1] The caption in this Decision identifies the two proceedings addressed in this Decision. We refer to each proceeding via a short name, the "740 IPR" and the "741 IPR", respectively, and the exhibits filed in each are identified similarly. e.g., the petition filed in the 740 IPR is identified (or cited to) as follows: "740 Petition" or "740 Pet".

identical subject matter, and given the significant overlap of evidence across both proceedings, we issue a single Decision on Institution that addresses both proceedings because it is more efficient and promotes consistency across proceedings. These proceedings are not consolidated, however. Therefore, the parties are not authorized to file combined filings for these proceedings or utilize the combined caption in any of their filings.

For the reasons stated in this Decision, we determine Petitioner has satisfied the threshold requirement set forth in 35 U.S.C. § 314(a). Because Petitioner has demonstrated a reasonable likelihood that at least one claim of the '559 patent and at least one claim of the '493 patent are unpatentable, we institute an *inter partes* review of all challenged claims based on all grounds raised in the instant Petitions. 37 C.F.R. § 42.108(a).

II. BACKGROUND

A. Real Parties-in-Interest

Petitioner identifies itself (Meta Platforms, Inc..) as a real party-in interest. 740 Pet. 1; 741 Pet. 1. Patent Owner identifies itself (Mullen Industries) as the real party-in-interest. 740 IPR, Paper 7; 741 IPR, Paper 8.

B. Related Matters

The parties state that the '559 and '493 patents are currently asserted in *Mullen Industries LLC v. Meta Platforms, Inc.*, No. 1:24-cv-00354 DAE (W.D. Tex.). Pet. 1; Paper 7, 1. The Petition identifies twelve IPRs challenging related patents. Pet. 1.

C. The Patents

The '559 and '493 patents have the same disclosure and thus, for simplicity, the summary below cites only to the '559 patent specification filed in the 740 IPR. The patent "relates to location-based game systems."

Ex. 1001, 1:20. For example, the patent describes "[a] handheld location-based game system" in which "a user's physical position on a physical playfield (e.g., the physical world, a physical environment, or a defined physical playfield) correlates to a video game character's location in a virtual playfield." *Id.* at 1:58–62. One embodiment describes using a playmat that correlates to a particular virtual playfield. *Id.* at 2:51–52. The patent also describes an "[a]ugmented [r]eality" game system where virtual indicia is displayed on a semi-transparent head-mounted display such that "a user can see both virtual indicia and his/her physical environment." *Id.* at 1:66–2:4. In this manner, the patent describes, a "user may travel as fast as he/she wants to without risk of bumping into, or tripping over, a physical object." *Id.* at 3:53–60. A camera may be provided on, or around, the head-mounted display to capture the physical environment. *Id.* at 3:61–63. A processor may further manipulate the physical environment such that "for example, virtual indicia (e.g., a video game character or component is added) . . . to the physical environment." *Id.* at 3:63–66.

D. Illustrative Claims

Challenged claim 1 of the '559 patent recites:

> A head dash mounted device comprising:
>
> a processor;
>
> a display that displays 3-D video game indicia with respect to a physical playfield based on video game logic associated with a video game;
>
> a detector for determining landscape characteristics of set physical playfield, wherein said video game logic utilizes said landscape characteristics in providing said video game;
>
> a device for updating the physical location of said device unsaid physical playfield, or in said video game logic

> utilizes the physical location of said device in providing said video game.

740 IPR, Ex. 1001, 21:43–22:4.

Claim 1 of the ’493 patent recites:

> A portable device comprising:
> a display that is operable to be head worn, or in 3-D video game indicia is operable to be provided on set display with respect to a physical play field, and said 3D video game indicia is associated with a location-based video game;
> a detector that is operable to be head worn, wherein said detector is operable to determine landscape characteristics of set physical playfield, wherein set landscape characteristics are utilized by said location-based video game; and
> a device for updating the physical location of said device on set physical playfield, where in the physical location of said device is utilized by set location-based video game.

741 IPR, Ex. 1001, 21:48–22:7.

E. Prior Art and Asserted Grounds

Petitioner asserts that claims 1, 12, 17, and 20 of the ’559 and ‘493 patent are unpatentable on the following grounds (740 Pet. 3; 741 Pet. 3):

The 740 IPR:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 12, 17, 20	103(a)	Jaszlics,[2] Rallison,[3] Sofer,[4] Ronzani[5]

The 741 IPR

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 20	103(a)	Jaszlics, Sofer, Ronzani
12, 17	103(a)	Jaszlics, Rallison, Sofer, Ronzani

Petitioner additionally presents expert testimony supporting the above grounds: Declaration of Jeremy Cooperstock. 740 IPR, Ex. 1002 ("740 Cooperstock Decl."); 741 IPR, Ex. 1002 ("741 Cooperstock Decl.").

III. ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill,

> would have possessed a bachelor's degree in electrical engineering, computer science, or similar field, with two years combined experience in designing and/or developing interactive location-based computer systems/software, such as video games or other simulations incorporating location information (such as GPS information associated with a user's physical location), and in designing and/or developing computer systems/software involving graphical virtual and/or augmented reality. A person could also have qualified as a

[2] US Patent No. 6,166,744, issued Dec. 26, 2000 (Ex. 1003).
[3] US Patent No. 6,369,952 B1, issued Apr. 9, 2002 (Ex. 1004).
[4] WO 03/107039 A2, published Dec. 24, 2003 (Ex. 1008).
[5] US Patent Application US 2002/0163486 A1, published Nov. 7, 2002 (Ex. 1009).

> person of ordinary skill in the art with some combination of (1) more formal education (such as a master's of science degree) and less technical experience, or (2) less formal education and more technical or professional experience.

740 Pet. 4 (citing Ex. 1002 ¶¶ 21–25); 741 Pet. 4. Patent Owner does not propose a level of ordinary skill. As Petitioner's description of a person of ordinary skill appears commensurate with the subject matter before us, we apply Petitioner's definition for purposes of this Decision.

B. Claim Interpretation

We interpret the challenged claims,

> using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

37 C.F.R. § 42.100(b) (2022). We construe expressly only those claim terms that require analysis to determine whether to institute *inter partes* review. *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").

Petitioner has not proposed a particular construction for any recited claim term. 740 Pet. 8; 741 Pet. 8. However, Patent Owner proposes construction of the term "physical playfield" recited in claim 1 of each of the '559 and '493 patents. 740 Prelim. Resp. 17–23; 741 Prelim. Resp. 17–23.[6]

[6] The parties' arguments and evidence are substantively identical in the 740 and 741 IPRs. In this section, therefore, citations are to the 740 IPR. Further, with authorization, Petitioner filed a Preliminary Reply, filed as

According to Patent Owner, the "physical playfield" should mean "a bounded physical playspace." 740 Prelim. Resp. 17; 740 Paper 11, 1. Patent Owner contends that the claims recite determining a physical location "on the physical playfield," which implies that there is some space in the world that is off the physical playfield. 740 Prelim. Resp. 19; 740 Paper 11, 1. Patent Owner contends that although the Specification includes the phrase "a physical playfield (e.g., the physical world, a physical environment, or a defined physical playfield)" (e.g., '559 patent, Ex. 1001, 1:58–60), the Specification explains that this phrase means that each physical playfield is bounded, where some playfields are bounded as marked pieces of land in the physical world, and some playfields are bounded as defined playfields such as a playmat. 740 Prelim Resp. at 19–23 (citing Ex. 1001, Figs. 1, 13, 2:39–43, 2:63–3:2, 3:23–25, 5:25–31, 6:11–13, 6:46–48, 8:50–62, 8:23–28, 8:53–57, 9:23–28, 20:28–58); 740 Paper 11, 2. Patent Owner contends that the claims are not limited to "augmented reality," and that even in embodiments with no actual playfield, there is scaling information that ties the virtual playfield size to an actual physical area. 740 Paper 11, 3. Patent Owner also cites to dictionary definitions of playfield that support its proposed construction. 740 Prelim. Resp. 20; 740 Paper 11, 3.

At this stage, we do not find Patent Owner's proposed construction persuasive for several reasons. The claim does not recite "a defined physical playfield." Rather, the claim recites "a physical playfield." The

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Paper 10 in the 740 IPR; and Patent Owner filed a Preliminary Sur-reply, filed as Paper 11 in the 740 IPR.

Specification's discussions of "playfield" cited by Patent Owner use non-limiting language such as "for example" and "may" in describing the playfield. Ex. 1001, 2:38–40, 2:63–3:2, 3:23–25, 6:11–13, 6:46–48, 8:48–62, 9:23–28, 20:28–58, 22:1–4. The disclosed examples of "a physical playfield" include "the physical world, a physical environment, or a defined physical playfield" (740 Ex. 1001, 1:58–60), which indicates that applicant intended "a physical playfield" as claimed to encompass more than a defined, or "bounded" physical playfield. This indication is consistent with the Specification's disclosure that "the game world corresponds to an actual area of the physical world (such as the planet Earth or New York City)." 740 Ex. 1001, 11:12–14. Thus, in one disclosed embodiment, the physical playfield is the entire (unbounded) world. We are persuaded that the Specification's descriptions of various embodiments with defined playfields and undefined playfields support construing the scope of a "physical playfield" as encompassing a physical playfield with defined boundaries, or a "bounded" playfield, as well as a physical playfield with undefined boundaries, or an "unbounded" playfield. Limiting the claim term to only "bounded" play spaces would read out broader embodiments from the claim scope. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) (holding that interpreting a claim to exclude an embodiment disclosed in the written description "is rarely, if ever, correct and would require highly persuasive evidentiary support, which is wholly absent in this case.").

We, therefore, agree at this juncture with Petitioner's claim construction analysis, and note that the alleged goal of improving the safety in virtual reality gaming does not support Patent Owner's construction.

Paper 10, 2 (Petitioner arguing that by describing an augmented reality system where a user can view the physical surroundings, a "bounded" physical playfield is not necessary). Further, we find unpersuasive, at this juncture, Patent Owner's arguments related to embodiments of how the information about the playfield is captured and stored to construct the playfield and perform scaling. Prelim. Resp. 8–16. As Petitioner notes, and we agree, none of these features are recited in the independent claims. 740 Paper 10, 2. And, to the extent there is a distinction between being "on" or "off" the "physical playfield" as Patent Owner argues, the claim language requires no such determination or detection.

Finally, the extrinsic dictionary definitions cited by Patent Owner are "less significant than the intrinsic record in determining the legally operative meaning of claim language." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005). And in any event, we may not rely on dictionary definitions that contradict what the patent documents describe. *See Advanced Fiber Tech. (AFT) Trust v. J & L Fiber Servs., Inc.*, 674 F.3d 1365, 1374–75 (Fed. Cir. 2012) (holding erroneous a construction informed by a dictionary definition but in disagreement with one sentence of the written description).

However, we determine at this stage that the prior art teaches "a physical playfield" even under Patent Owner's proposed construction as discussed in our unpatentability analysis below.

C. Analysis of Petitioner's Challenge of Independent Claims

Our analysis in this section focuses on the challenge to independent claim 1 of the '559 patent and independent claim 1 of the '493 patent. Petitioner alleges that Jaszlics discloses most of the limitations of these

independent claims. 740 Pet. 9–10 (stating that all grounds cite Rallison, Sofer and Ronzani in connection with minor points that are arguably disclosed by or at least obvious by Jaszlics alone); 741 Pet. 9–10 (stating that Sofer, Ronzani, and Rallison are cited in connection with minor points that are arguably disclosed by or at least obvious over Jaszlics alone).

We have reviewed Petitioner's challenge of unpatentability of the independent claims in light of Patent Owner's arguments urging the Board to find fault with said challenge. We address now the points of contention raised by Patent Owner and our preliminary determination concerning those points.

1. The "physical playfield" limitation

Both independent claims recite a "physical playfield." 740 IPR, Ex. 1001, 21:46, 21:49, 22:2; 741 Ex. 1001, 21:51, 22:1, 22:5. Patent Owner contends that Jaszlics does not teach or suggest a "physical playfield" that is "bounded," in accordance with Patent Owner's position on claim construction. 740 Prelim. Resp. 24 ("Jaszlics fails to disclose a physical playfield."), 33 (referring to arguments made in Section V of the POPR); 741 Prelim. Resp. 24 (same). According to Patent Owner, "there is no description of any boundary of a physical area to be used for any reason in Jaszlics." 740 Prelim. Resp. 24.[7] Patent Owner takes the position that although Jaszlics's user observes the landscape in the real world with virtual objects, the user is allowed to move through the landscape, without restriction and the "playing field" changes as the user moves, wherever the

[7] Patent Owner makes identical arguments in the 741 IPR, and, therefore, parallel citations to that proceeding are omitted unless necessary or for emphasis.

user goes, without any mechanisms to establish boundaries for play. *Id.* at 26–27. We do not agree with Patent Owner.

First, as discussed in our claim construction above, we are not persuaded that the claim term "physical playfield" is limited to a bounded physical play space. Second, even under this narrower construction, we are sufficiently persuaded that the combination teaches a bounded physical play space. For example, Jaszlics discloses that its system creates virtual elements in theme parks and entertainment-oriented environments. Ex. 1003, 2:14–16, 2:67–3:1; *see id*. at 18:48–55. We are sufficiently persuaded that a theme park is a bounded physical play space. In addition, Jaszlics discloses training armored vehicle crews by using both virtual vehicles and actual vehicles moving over real terrain. Ex. 1003, 1:38–60. We are sufficiently persuaded that such training occurs on an army base, which is bounded.[8] Jaszlics further discloses that its training field includes boundary markers. Ex. 1003, Fig. 15, 10:1–9. We are sufficiently persuaded that the tank training field of Jaszlics, which has boundary markers and is located on an army base, is a bounded physical play space. Therefore, even under Patent Owner's narrower construction, we are sufficiently persuaded that a person of ordinary skill would have recognized that a user would have played at least some of the video games provided by Jaszlics in combination with the teachings of Sofer, Rallison, and Ronzani, in a bounded physical play space such as a theme park or army base.

[8] Compare with 740 IPR, Ex. 1001, 5:23–28 (describing utilizing the game in a military base).

Patent Owner additionally argues that Rallison "provides no description of any physical playfield (i.e., a bounded physical play space)." 740 Prelim. Resp. 28. According to Patent Owner, Rallison lacks sensors or detector as claimed and that one of Rallison's embodiments describes an immersive display, giving the user no view of the physical environment. *Id.* 28–29. In the 740 IPR, Petitioner relies on Rallison as supporting the contention that Jaszlics's head-mounted device would have included a processor. 740 Pet. 13–14.[9] Therefore, the argument that Rallison's head-mounted personal visual display fails to teach its use in a "bounded" physical play space is not persuasive. Nor is it persuasive to argue that the transparency of Rallison (or lack thereof) is a feature that would dissuade us from considering the teaching that the display would include a processor, as discussed next.

2. A "head-mounted device" that includes a "processor"

Patent Owner disputes that Jaszlics teaches a "head-mounted device" that includes a "processor" or that a person of ordinary skill in the art would have had reason to combine the teachings of Jaszlics and Rallison as alleged by Petitioner. 740 Prelim. Resp. 38. Patent Owner also alleges that Jaszlics is not compatible with Rallison. *Id.* at 39–41. None of these arguments are persuasive at this juncture.

First, Patent Owner concedes that Jaszlics's goggles are a display, such as display 111 of Figure 2. *Id.* at 35. Then Patent Owner states that even if these goggles were a "simple computer monitor" they need not

[9] In the 741 IPR, Petitioner does not rely on Rallison at all for the independent claim.

include a processor. *Id.* at 36. This argument is bare attorney argument and finds fault with Jaszlics under inherency rather than obviousness—focusing on whether a processor is necessarily present rather than whether the location of a processor in Jaszlics's visor would have been obvious. *See W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1555 (Fed. Cir. 1983) ("Inherency and obviousness are distinct concepts."). Further, Patent Owner's argument does not persuasively undermine Petitioner's evidence that a person of ordinary skill in the art would have found obvious that the Jaszlics goggles/visor would have included a processor, such as an integrated display controller or image signal processing circuitry to provide images to the display of the head-mounted device. 740 Pet. 13; 740 Cooperstock Decl. ¶ 76 (relying on Ex. 1014, page 3, "display generator").

Second, Petitioner's explanation of its alternative theory—that Rallison is evidence of the knowledge that a head-mounted display would include a processor—provides sufficient rational underpinning for the combination of teachings. Petitioner proffers that a person of ordinary skill in the art would have understood that including a processor in a head-mounted display is a known technique to improve a similar device (Jaszlics's visor) in the same way and predictably. 740 Pet. 15 (citing Ex. 1004, 10:4–14; 740 Cooperstock Decl. ¶ 80). We do not find at this juncture that this argument is unsupported or speculative, as Patent Owner argues. Additionally, we understand Patent Owner's arguments—that Jaszlics system would have no need for incorporating a processor in the visor as taught by Rallison—as contentions that Jaszlics either teaches away from such a combination or the benefits of such a configuration are outweighed by significant drawbacks. These contentions are

underdeveloped and unsupported. Petitioner's argument and evidence, at this juncture, reasonably explain the reasons to combine under precedent that there is a motivation to combine when "a known technique 'has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way.'" *See Intel Corp. v. PACT XPP Schweiz AG,* 61 F.4th 1373, 1380 (Fed. Cir. 2023) (quoting *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007)). The location of the processor in the head-mounted display of Jaszlics does not need to be the best option, so long as it is a suitable option. *See PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197-98 (Fed. Cir. 2014).

Finally, as for Rallison and Jaszlics's alleged incompatibility, we are not persuaded that more evidence is needed at this juncture for details on the modification of Jaszlics to include the processor of Rallison. Such argument amounts to a bodily incorporation argument, and our analysis focuses rather on whether a person of ordinary skill in the art would have been motivated to combine the "teachings" as alleged. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Indeed, we note the evidence presented by Petitioner that a head-mounted display's use of electronics to generate the displayed video images was well known. 740 Cooperstock Decl. ¶ 82; Ex. 1004, 10:4–14.

Furthermore, we note that Patent Owner's incompatibility arguments (740 Prelim. Resp. 39–41) focus on characterizing Jaszlics as relying solely on a camera feed to construct the real-world image, which is not an accurate characterization of Jaszlics. Jaszlics describes display implementations where the "observer would normally observe the external world through an optical or other instrument, [and] the virtual images can be injected into this

instrument, as described under image injection." Ex. 1003, 9:48–54; *see also* Ex. 1003, 9:15–22 (explaining the embodiment of image injection where a virtual image is projected, focused, and injected in the collimated field of an optical device that normally shows only the real-world image). Furthermore, even if Jaszlics were to rely only on the camera imaging for the display of the real-world environment, Rallison discloses an embodiment in which its display is not see-through, so that user only views the generated images without a simultaneous view of the environment. Ex. 1004, 11:45–49, 16:57–59; *see also* Ex. 1004, 10:46–53. Therefore, the disclosed head-mounted displays of Jaszlics and Rallison appear to have more in common than alleged by Patent Owner, both teaching the use of semi-transparent and non-transparent displays.

In conclusion, we are unpersuaded by Patent Owner's arguments that the Petition has not shown that the teachings of Jaszlics alone or in combination with those of Rallison teaches or suggests the limitation of a "head-mounted device" comprising "a processor" as recited in claim 1 of the '559 patent. Rather, we are persuaded that Petitioner has shown sufficiently that Jaszlics alone or in combination with Rallison teaches or suggests the limitation to a person of ordinary skill in the art at the time of the invention. 740 Pet. 13–17.

3. A "detector" for determining "landscape characteristics of said physical playfield" in the "head-mounted display" or "operable to be "head-worn"

Petitioner asserts that Jaszlics alone or in view of Sofer (in the form of a head-mounted range scanner) teaches the "detector" limitation of the independent claims. 740 Pet. 25–37; 741 Pet. 21–32. Because dependent

claim 12 of the '559 and '493 patents further requires that the detector include a camera, Petitioner further maps the "detector" limitation of claim to Jaszlics alone or in combination with Ronzani, in addition to the theory that Sofer also teaches the use of cameras. 740 Pet. 37–44; 741 Pet. 33–39.

Patent Owner takes issue with Petitioner's challenge, noting that there is no motivation to move either Sofer's or Ronzani's hardware to the user's head gear. 740 Prelim. Resp. 41; 741 Prelim. Resp. 32. We do not agree with Patent Owner at this juncture.

First, regarding Petitioner's contention of a range scanner as the "detector," the argument that the scanner is commercially available and of such size that it would not be suitable for being head-worn are belied by the disclosures of Jaszlics. Petitioner points out that Jaszlics's scanner is a "*modification* of a commercially available solid-state infrared surveyor ranging laser." 740 Pet. 27–28 (citing Ex. 1003, 12:19–20, 12:34–36); 741 Pet. 23 (citing Ex. 1003, 12:19–20, 12:34–36). Patent Owner's argument left out the disclosure that the embodiment described in Jaszlics is *a modification* and not the same scanners depicted in Patent Owner's briefing. Furthermore, that the scanner in Jaszlics receives signals from a tracker to ensure the correspondence between the scanner's aim and the gaze of the observer, does not undermine Petitioner's position that Jaszlics expressly describes a mobile individual using the display goggles or visor as an embodiment of a moving observer, *without the use of a vehicle*. 740 Pet. 32 (citing Ex. 1003, 10:63–67, 5:13–18, 11:16–18, 1:64–67; 740 Cooperstock Decl. ¶ 103), 36–37; 741 Pet. 27 (citing Ex. 1003, 10:63–67, 5:13–18, 11:16–18, 1:64–67; 741 Cooperstock Decl. ¶ 94), 32. Jaszlics discloses the

functionality of dynamically obtaining the range scanner data and Sofer contributes the teaching that it was known for a range scanner that produces such data to be a head-worn device. 740 Pet. 32–33; 741 Pet. 27–28. We are persuaded at this juncture by Petitioner's proffer of a rational underpinning for the reason to look to Sofer's head-worn range scanning device given that Jaszlics contemplates an individual, mobile user to use its game system. 740 Pet. 36–37 (citing 740 Cooperstock Decl. ¶ 108); 741 Pet. 32 (citing 741 Cooperstock Decl. ¶ 99). Arguments to the contrary by Patent Owner are unsupported attorney argument and unpersuasive at this juncture.

Second, regarding Petitioner's contention of a camera included in the detector, many of Patent Owner's arguments track the unpersuasive arguments made against the combination of Jaszlics and Sofer's teachings. To the extent Patent Owner's arguments attack Ronzani alone, the arguments do not respond to Petitioner's ground addressing all the teachings combined: Jaszlics (with Rallison in the 740 IPR), Sofer, and Ronzani. *See* 740 Pet. 41–42 (addressing the combined reality system, under the proposed combination with Rallison and Sofer); 741 Pet. 36–37 (addressing the combined reality system, under the proposed combination with Sofer). In other words, arguments regarding the incompatibility of the references focus on bodily incorporation arguments rather than what would have been obvious to a person of ordinary skill in the art. Furthermore, arguments about the non-combinability of teachings because of different methods of obtaining images from a Charge Coupled Device ("CCD") camera are unsupported attorney argument. Petitioner's evidence of record at this

juncture sufficiently points out that both Sofer and Ronzani are analogous to the '559 patent, and that motivated to implement Jaszlics's teachings of the gaming system for individual mobile users, a person of ordinary skill in the art would have found it obvious to try mounting the imaging hardware on the disclosed goggles or visor with a reasonable expectation of success. 740 Pet. 36, 41–44 (citing 740 Cooperstock Decl. ¶¶ 106–109, 116–120); 741 Pet. 31, 37–39 (citing 741 Cooperstock Decl. ¶¶ 98, 109–110, 97–111).

Patent Owner's contention that the "proposed combination would not function because there would not be the two cameras to provide the required stereographic or parallax comparison" (Prelim. Resp. 49) is inconsistent with Petitioner's showing that Sofer describes two head-mounted cameras. Pet. 38-39 (citing Ex. 1008, 8, 13, Figs. 2 and 4). Whether Jaszlics's alleged method of stereographic or parallax comparisons would prove to be incompatible with head-mounted cameras, examples of which are taught by Sofer and Ronzani, is an issue of fact that cannot be resolved at this juncture. Patent Owner's argument requires evidentiary support that is lacking on the present record. Further, the claims do not require this level of detail. For example, claim 12 recites "said detector includes a camera," but does not require two cameras to provide stereographic or parallax comparison.

4. A "device for updating the physical location of said device on said physical playfield"

Petitioner asserts that Jaszlics discloses using a differential Global Positioning Satellite System or GPS, which updates the physical location as required by the claims. 740 Pet. 45 (citing Ex. 1003, 10:52–11:4, 16:30–32; 740 Cooperstock Decl. ¶ 124); 741 Pet. 39–40. Petitioner states that the GPS receiver is used during game play to capture changes in the position

and orientation of the observer. 740 Pet. 45–46 (citing Ex. 1003, 11:30–43, 10:29–34; 740 Cooperstock Decl. ¶ 125); 741 Pet. 41–43. Petitioner relies on Ronzani's disclosure of a head-mounted GPS device to argue that it would have been obvious to place a GPS receiver in the head-mounted military computer/display, because there are a finite number of locations on a person in which to mount a GPS receiver. 740 Pet. 48–51; 741 Pet. 43–46; Ex. 1009 ¶ 189, 191, Fig. 42.

Patent Owner argues that Jaszlics does not disclose a head-worn GPS receiver, nor it would be obvious to locate the GPS there because it is speculative and real-life military systems (with a GPS device mounted on the chest) undermine the assertion. 740 Prelim. Resp. 65–66; 741 Prelim. Resp. 58–60. Patent Owner also argues that it would not have been obvious to combine Jaszlics and Ronzani because it is more convenient (and evidenced by real-life military systems) to wear the GPS on a person's torso, not near the head, and Jaszlics does not present any suggestion or problems with its disclosed GPS location needing improvement. 740 Prelim. Resp. 67–69; 741 Prelim. Resp. 60–61. We are not persuaded by Patent Owner's arguments at this juncture for several reasons.

First, Petitioner proffers Ronzani as evidence is that a person of ordinary skill in the art would have been motivated to place the GPS receiver on the head-mounted gear, as one of a finite number of body locations that are obvious for receiving unobstructed GPS signals. 740 Cooperstock Decl. ¶ 129; 741 Cooperstock Decl. ¶ 119. That there might be other locations that are equally or more advantageous (under certain circumstances) for placing a GPS receiver on the body does not undermine Petitioner's

evidence. *See Intel Corporation v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1381 (Fed. Cir. 2023) (holding that a petitioner only needed to show that the replacement was a "suitable option," and not a benefit in any categorical sense).

Second, that there may be common sense drawbacks to placing a piece of equipment on head-mounted gear, as argued, such drawbacks do not necessarily show a lack of motivation to combine teachings. *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 (Fed. Cir. 2000). The Board must weigh the benefits and drawbacks of the modification against each other, to determine whether there would be a motivation to combine. *Id*. at 1349 n.8. At this juncture, we read the Cooperstock Declaration as presenting testimony that Ronzani, which describes military-based uses of a head-mounted display, teaches what was known to a person of ordinary skill in the art: that one suitable location for the GPS receiver is on a head-mounted display. 740 Cooperstock Decl. ¶¶ 133–134 (citing Ex. 1009 ¶¶ 5, 189); 741 Cooperstock Decl. ¶¶ 123–124 (citing Ex. 1009 ¶¶ 5, 189). In sum, we are persuaded that adding the head-mounted GPS device of Ronzani to the head-mounted device of Jaszlics simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, which is a head-mounted virtual reality system that includes a locating device.

5. Conclusion as to Independent Claims

Having reviewed the contentions Petitioner has presented, with supporting evidence, and in light of Patent Owner's arguments made in the Preliminary Response as well as additional briefing authorized by the panel,

we determine that Petitioner has shown a reasonable likelihood of prevailing on its contentions of obviousness for claim 1 of the '559 patent and claim 1 of the '493 patent.

6. Dependent Claims 12, 17, and 20

Petitioner contends that dependent claims 12, 17, and 20 of each of the '559 and '493 patents are unpatentable for obviousness based on the grounds presented in the Petition. 740 Pet. 52–64; 741 Pet. 46–60. Patent Owner does not offer any specific arguments with respect to these claims. In reviewing the preliminary record, we find that Petitioner sufficiently shows that the combinations teach the limitations of claims these dependent claims, and demonstrates a reasonable likelihood of showing that these claims are unpatentable over the prior art.

IV. CONCLUSION

We conclude that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one claim of the '559 patent challenged in the 741 Petition and at least one claim of the '493 patent challenged in the 741 Petition. Accordingly, we institute a trial on all claims and all grounds asserted in these Petitions. The Board has not made a final determination under 35 U.S.C. § 318(a) with respect to the patentability of the challenged claims of each challenged patent.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1, 12, 17, and 20 of the '559 patent is instituted with respect to all grounds set forth in the Petition in IPR2025-00740;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1, 12, 17, and 20 of the ’493 patent is instituted with respect to all grounds set forth in the Petition in IPR2025-00741; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the ’559 patent and the ’493 patent shall commence on the entry date of this Decision in each proceeding, and notice is hereby given of the institution of a trial.

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